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OPEN-BOOK TESTING
By Kay Burke, Ph.D.

WHY IT MAKES SENSE
Educators who allow students to take open-book tests are not teaching for the test; they are teaching for understanding. Most students agree that open-book tests are more challenging than traditional objective tests because they require high-order thinking skills rather than recall skills.

The greatest benefit from open-book testing may be that it encourages the type of thinking that will benefit students in the real world.

- Open-book tests focus on students learning important concepts rather than memorizing facts.

- They encourage students to utilize the lifelong learning skill of “accessing information” rather than memorizing data. In most jobs, people do not have to memorize formulas or discrete bits of data; they have to know how to find the important information they need in order to solve problems and complete projects.

- Open-book tests encourage students to highlight the text and organize their notes so they can find the information they need.

- Open-book tests encourage students to apply the information they have learned and transfer it to new situations, rather than just repeat the facts.

SOURCES:
Burke, K. B. The Mindful School: How to Assess Authentic Learning. Arlington Heights, IL. Skylight Professional Development


TEACHING THE INTRODUCTORY COURSE

LAYING THE FOUNDATION FOR A WELL ORGANIZED COURSE

Most of us have experienced at least one truly exciting, memorable course with smoothly flowing lectures neatly tied together by threads of conceptual continuity, audiovisual presentations that began on time and kept every student alert even though the lights were out, reserve readings that were actually available in the library, and demonstrations that brought a thrill of discovery into the classroom. Such superb educational experiences do not erupt spontaneously from mystical qualities found in a few gifted teachers. To make them possible, certain basic ingredients must be assembled and organized well before the first class meets.

We present here a systematic planning guide to preparing for the introductory course. The methods could be applied to just about any other course as well. For starters, a list of suggested administrative tasks and teaching aids should help make course preparation efficient and even pleasant. As you organize your course, an essential notion to bear in mind is that small things done at just the right time can be crucial both in preventing major difficulties and in creating the conditions that turn an adequate course into a rich encounter with a new world of ideas and information. The time sequencing suggested here should not be taken lightly. It is intended to maximize your access to first-choice resources and allow a comfortable margin for creative responses to unexpected contingencies.

GOALS OF AN INTRODUCTORY PSYCHOLOGY COURSE

Introductory psychology is designed to present a broad view of the discipline and is generally a prerequisite for all subsequent courses in the curriculum. The first step is to determine your goals for this course. What do you intend to accomplish? In what ways would you like this course to contribute to your students’ education? Walker and McKeachie (1967) offer these goals for introductory psychology:

- Communicate elementary concepts
- Communicate facts in support of concepts
- Introduce the student to the full range of subject matter
- Integrate course material
- Communicate basic attitudes of the discipline
- Communicate the intrinsic interest of the subject matter
- Present the newest developments in the field
- Provide individual guidance and monitoring
- Develop selected intellectual skills
- Provide a suitable identification model for the students

THREE MONTHS BEFORE THE FIRST CLASS MEETING

DRAFT A WORKING SYLLABUS DETAILING THE FOLLOWING:

- The sequence of topics to be covered, with approximate time blocks allocated to each
- Readings to be assigned for each topic
- New lectures you plan to prepare, with a brief summary of major points to be included in each
- Old lectures you want to improve
- Demonstrations and discussions you expect to conduct
Guest speakers you hope to schedule, with alternates in case your first choices are unavailable
Films and other audiovisual aids, with their intended use (e.g., films will be scheduled for class
time, while some audio and video tapes may be put on reserve in the library and recommended
in conjunction with appropriate topics)

FINALIZE COURSE PLANS
Finalize the syllabus except for specific dates for guest lecturers not yet committed and other details yet
unknown. It is OK to note that plans for some class periods are “in preparation.”

ONE TO TWO WEEKS BEFORE THE FIRST CLASS
- Confirm that texts have been received by the bookstore and that reserve readings will be
  available. Check for yourself.
- Review all class materials and be sure that they are in fact duplicated, satisfactory, and located
  where they can be found when needed.
- If any uncertainty remains about audiovisual materials or items needed for demonstrations,
  send out final orders and adapt your plans accordingly.
- Finalize the syllabus and have it duplicated on three-hole paper in a quantity about 25 percent
  larger than your anticipated need (students often take more than one). Also, distribute copies to
  your colleagues. They need to know what you are doing in the basic course if it is a prerequisite
  for their courses, and they may well have comments and suggestions you will find valuable.

THE FIRST CLASS

DON’T TALK ABOUT PSYCHOLOGY: SHOW ME
Introductory psychology differs from other classes because the students will be able to relate to much of the
material on a personal level. As you explain to the students that this psychology course speaks to
contemporary personal and social issues, you are on the spot to show them rather than just proclaim it.
Starting the class with a demonstration can be a first-day relief to both you and your students. If you start
the class with a brief “Candid Camera” film or a demonstration of the kind outlined in the Experiments
and Demonstrations section of this manual, you are not talking the whole time, and you and your class
together are relating to the same material. For the students, a demonstration will be a welcome relief from all
of their other first-day-of-the-term courses, which typically are “very talky” and full of logistics. To avoid the
latter, come early and follow these guidelines:
- Post on the blackboard your course title, the course number, and your name. Also note on the
  board: “Please look over the syllabus; we will discuss it at the end of the class hour.”
- Arrange to have the syllabus distributed at the entrance to the classroom, with extra copies
  available at the front and rear of the room.
- Do not begin the course with a proclamation of the usual details about course organization.
  These details are in the syllabus.
- Avoid the “Psychology Is a Science” routine, so typical in many first classes. It makes you
defensive, often antagonizes some “hard science” majors, and is unnecessary. Students should
discover the scientific foundations of psychology through their reading and your general
exposition.

For a demonstration to be especially suitable for the first class, it should be intrinsically intriguing, require
no advance knowledge by students, and be a take-off point for introducing some of the basic questions of
psychology. Several of the demonstrations suggested in the Experiments and Demonstrations section of
this manual fit these criteria.
KEEP ANTICIPATING YOUR NEEDS

GUEST LECTURERS
Contact a guest seven to ten days before his or her presentation date. Send written confirmation of the date, time, topic, and directions to the classroom if needed. Speak to the guest personally: Ask about equipment needs and for comments for your introduction. Provide the guest with a copy of the syllabus, an idea of what you have covered related to the topic, the level of sophistication of the class, and any special classroom procedures you follow. Announcements of visitors expected to be of general interest should be posted for your colleagues’ information as well.

DEMONSTRATIONS
The major virtue of a demonstration or class experiment lies in making one point, or a few points, in a vivid, memorable form. Other virtues are generating greater class interest with a more varied format, seeing psychology in action, and building up a reserve of “can’t miss” demonstrations you can rely on term after term. Nevertheless, the first time out, demonstrations take lots of planning and time. All demonstrations should be tried at least once before you attempt them in class; if possible, they should be practiced several times. This is the only way to accurately gauge the time you need, anticipate operational difficulties, and get the feel of introducing the demonstration, making transitions, and concluding it. For demonstrations that are time-consuming or demanding, videotape them so next time you are set to go through with the show if something goes amiss in the live act.

LECTURES
Lectures should be drafted in final form several days before they are to be delivered so that you can revise them as the ideas revolve in your mind. Lectures read verbatim are almost inevitably deadly boring. Never read a lecture, unless you can read like Dylan Thomas.

OUTLINES
Draw up an outline on the evening or morning before the lecture date and speak from that outline, carrying the full notes in your briefcase for reference and a sense of security. If duplicating facilities are adequate, it is helpful to distribute copies of your outline to the students as they enter the room. Otherwise, you may want to write the outline on the board or display it by overhead projection. Teachers who use an overhead projector regularly during their lectures may keep their outline visible throughout, projecting it via a second overhead projector on one side of the screen. Speaking from your outline encourages spontaneity of expression and natural nonverbal interaction with your students, while making the outline available to students in advance allows them to attend to the content of your presentation without simultaneously attempting to tease out its structure. It is also a helpful gift to students who must miss a class or leave early and so is appreciated by all. Writing the outline in advance also forces you to be organized and to avoid last-minute rushes. When you cannot prepare an outline in advance, distribute one the next session.

AUDIT OTHER PSYCHOLOGY COURSES
If there is an introductory psychology course in progress in the term before yours, sit in on it periodically. See how the teacher launches the course, handles testing and evaluation, and deals with disturbances. What might you do to get the same positive results but avoid any negative ones you observe? Try to get a sense of the time involved in routine events such as distributing and collecting papers, especially if the class is about the size you expect your own to be. Sit in the back of the room while a class is in session in the room you will be using to find out how the acoustics are and to see how large your writing on the chalkboard must be in order to be clearly legible to those in the last row. Review student course evaluations to learn what teaching qualities are viewed as desirable by administrators and students. Talk to other introductory
psychology teachers about their experiences. Your interest will be highly rewarding to your colleagues, and the advice you receive may be invaluable to you. Find out from students or colleagues who are the “star” teachers in your department. Visit some of their classes to perform your own analysis of what they are doing that works so well. Consider what you might adopt or adapt from their general style or specific performance components.

STRATEGIES FOR SUCCESSFUL TEACHING

There is no single ideal teaching style; many styles can lead to the same positive educational outcomes. The best style for you in a given teaching situation is not necessarily the one you feel most comfortable using at first. The style must allow you to achieve your teaching objectives, considering the course you are teaching and the kind of students in your class. A shy, introspective manner may work well in a small seminar of advanced students; it will not get far in a large lecture hall filled with lower-level students.

TEACHING METHODS

The key to effective delivery of your message is variation. Although lecturing continues to be the most common teaching method, it is most effective in small doses, particularly if you are not an outstanding performer. Other methods include discussion, demonstration, films and other audiovisual resources, group projects, experiments, and written or oral exercises. Keep in mind that any of these approaches can be combined. For example, team teaching certain lectures with a colleague from your department or another department, or giving a mini-lecture in a discussion section.

TRADITIONAL LECTURE SYSTEM

You give two or three lectures per week with an occasional film, demonstration, group activity, or guest speaker. Examinations are taken in class and cover both lecture and text content. You provide some new information, extend text materials, and serve as a model of enthusiasm for the subject matter. If you cannot at least role-play being enthusiastic about psychology in general, do not lecture in the traditional form. This format also demands an effective “acting-delivery” style; you must be on your “power spot” when up on the stage, or else do not choose to be a traditional lecturer. In a large class, teachers are often bothered by the impersonality of the setting. This is especially the case if the teacher lectures from a stage that creates both a physical and a psychological separation between the lecturer-as-performer and the students-as-audience.

TEAM TEACHING

Pair up with a colleague whose interests and strengths complement yours and teach the course in tandem. This is especially advisable for new teachers because the day-to-day workload is shared, it can be exciting to brainstorm about teaching, and you can arrange for feedback.

DISCUSSION SECTIONS

In lecture settings, the lecturer takes control and usually runs with the ball most of the period. In small discussion sections (from 10 to 30 students), the instructor willingly surrenders much of the control. The discussion section is a means of providing information, usually in an informal manner, with ample time allowed for questions, answers, demonstrations, and role-playing. The discussion leader involves the students in decisions about the direction of the course and how they can help to implement course objectives. Discussion sections can be valuable sources of intellectual, effective stimulation for both teacher and student when they are well designed. One variation is to combine the lecture format with a once-weekly class session devoted to student-led discussion about the current topic.
UNIT MASTERY SYSTEM

In the unit mastery system, lectures may be optional or given as special features, with the grade dependent solely on completion of all quizzes at or beyond the mastery level. The major features of this system are:

- Students progress through course assignments at their own pace.
- Instead of mass testing at prefixed lecture times, each student comes to a testing center whenever he or she is ready to take a particular exam.
- The testing center is run by student proctors, staff personnel, or the instructor.
- Tests failed may be repeated without penalty on parallel forms after a suitable time for restudy. Feedback on test performance is immediate, private, and personalized from proctor to student test-taker.
- Testing and grading are physically and psychologically separated from the lecturer and lecture setting, with the advantage of more positive attitudes toward the teacher. A unit mastery system takes considerable effort to set up, but once you have done so you are freed from all chores related to testing and evaluation. Since each student progresses at an individual rate in taking the chapter quizzes, you are also liberated from having to teach a specified amount of material before each preestablished examination date, as occurs with traditional evaluation systems.

References:


SOME BASIC MECHANICS OF TEACHING

Your decisions about teaching methods and your experiences will shape your unique style of teaching. Regardless of what that style is now or may become, some elements are common to all effective teaching styles. Here are several of those elements:

- At the beginning of class, review briefly what you talked about the last time the class met. Ask if there are any questions about previous material. Next, let the students know what your goals are for today. What you want them to get from today’s lecture? Outline the major points of the lecture on the board or on an overhead transparency.
- Correct and pass back quizzes, exams, and papers as soon as possible. Nobody likes to be left in the lurch when it comes to feedback. Getting materials back quickly to students shows that you are being considerate of them.
- Pass back exams and deal with administrative matters after your lecture. On days that you will be passing out test results, plan to cut your lecture short to leave room to answer questions. This ensures that there is time for your lecture. Passing back quizzes or exams at the beginning of class is generally a bad idea because students who are disappointed with their exam grade may tune you out for the remainder of the class period.
- Create an opportunity for students to review their exams with you, if only to ask questions about examination material. Allow students to defend their interpretation of an exam question in writing. If a student challenges a question in an unkind manner, suggest that the two of you get together after class to consider the matter. If, because of further discussion with the student, you decide that the exam question was a bad one and you will give students credit for it, announce the change to the class.
- Learn the names of your students. This can generally be quickly accomplished in a class of 25 to 50 students, but will be tough in sections of several hundred students. Learning students’ names shows that you are interested in your students and it may help them to become more interested in your class—they know that you know who they are and that their contributions to class have personal implications.
Encourage student questions. Even in large sections, a good way to start discussion—a nice break from straight lecturing—is to allow time for questions. When it comes to students’ questions, keep in mind three points. First, repeat the question for the benefit of students sitting in the back of the room who may not have been able to hear the question. Second, show genuine interest in the question either by considerately answering it yourself, or by throwing it out to the class for their response. Third, let the student who asked the question know that you appreciate his or her participation.

If you do not know the answer to a question, say so. If the question is an interesting one, tell your students that you will find the answer for them.

Pace your lectures. Make time in your lectures to explain your points in their entirety. If you have prepared too much material for the class period, DO NOT rush to get through it. Slow down, develop your points carefully and thoughtfully. One sure way to ruin an otherwise good course is to force students to cram. Let them have the time to think about the material you are presenting to them. You will be able to tell when you are lecturing too fast, confusing, or boring your students. The puzzled look on a student’s face is a sure sign that he or she is not following you. Respond by saying, “Would anybody like me to repeat that?” or “Let me say that another way.”

HOW TO PREPARE A COURSE SYLLABUS

A comprehensive syllabus can go a long way toward smoothing the operation of the course and facilitating a comfortable relationship between you and your class. It saves class time by answering most of the questions students have at the outset of the course in a form that they can keep for reference. Since the course is just one of many demanding activities for students as well as for you, the syllabus helps keep all of you aware of where you’ve been, where you should be on any given day, and where you intend to go. Here are suggestions for the content of a syllabus for the introductory psychology course, divided into “essentials” and “options.” The sample syllabus contains mostly essentials.

SYLLABUS ESSENTIALS

General information. The name and number of the course including section number, the time and location, the academic term, your name, your office location and phone number, office hours, names of Teaching Assistants (TA’s), their office locations and hours.

The name of the text and student resource manual, as well as any other supplies required for the course, such as answer sheets.

Goals or objectives.

Course requirements explaining the format of and points for exams, quizzes, and papers.

Class calendar. Reading assignments, dates of tests, due dates for papers and/or activities.

Testing format and procedures.

Class policies. Attendance, missed tests, grading, extra credit work.

SYLLABUS OPTIONS

Expanded class calendar, including lecture topics, films, and activities.

Detailed description of testing procedure.

Autobiographical information about yourself.

Where to get help, including the student health center, the learning resources center, and/or the counseling office.

Effective study habits and efficient use of study time.

Guidelines and topics for papers.

Learning objectives for each chapter.

Essay questions for each chapter or exam.

Discussion of section meetings and activities.

Research participation requirements.
☐ Extra credit options.
Psychology 101: Introduction to Psychology
Fall Semester, 2002
MWF: 11:00—12:00
Social Sciences Building

Instructor: Jennifer Gomez
Telephone: 867-5309
Office: Room 21, Kurt Lewin Hall
Office Hours: M 1:00—3:00, Th 10:00—12:00, and by appointment

TEXTS

The Student Study Guide is strongly recommended.

COURSE OBJECTIVES
The primary objective of all introductory psychology courses is to explore the subject matter of the field and to become familiar with the vocabulary and concepts of the field and with some of the research findings upon which our knowledge of human thought and behavior is based.

A goal of this class is to emphasize development of critical thinking skills and to prepare you to be a cautious and analytical consumer of information that is proclaimed scientific or based on research.

I also hope that you will derive personal benefits from the class; that at the end of the term you will have increased your understanding and acceptance of yourself and others; and that you will gain something from this class that will enrich your personal relationships and add to your success in your chosen occupation.

COURSE REQUIREMENTS
There are four regularly scheduled tests and a comprehensive final examination. Students are also expected to write four short papers during the term.

TESTS
There will be 50 multiple-choice items on each of the four midterms and 100 multiple-choice items on the comprehensive final examination. The test items will be taken primarily from the reading assignments, but you can expect some test questions based on lectures, films, or any class activity.

If you feel that the answer you chose for a test question is better than the answer keyed as correct, submit your case in writing to the instructor.

PAPERS
Four short (three-page) papers are to be written and submitted during the term. Guidelines and topics for the papers are discussed in a handout that will be distributed at the second class meeting. Generally, the
topics for the papers require you to think critically about some issue in psychology or to apply psychological knowledge to practical situations.

EXTRA CREDIT WORK
Studying the text and writing the assigned papers are assumed sufficient work for this class and grades will be assigned solely based on tests, papers, and activities that occur during class.

GRADING
Grades will be assigned based on the number of points accumulated during the semester. The maximum number of points for each midterm is 100. From the four midterms, your three highest grades will be used in calculating your final grade. If you miss a midterm, your scores on the other three will be used. If you miss more than one midterm, you may want to drop the course because midterms cannot be made up. The maximum total points for midterms is 300. The final examination will have 100 questions and contribute a maximum of 200 points toward your final grade.

The maximum number of points for papers is 100, 25 points per paper. If you get a low score on a paper, you may rewrite it—see the handout on papers for more information on this.

A maximum of 50 points will be given for participation in class activities.

The maximum number of points is 650, and grades will be assigned as follows: If you get 600 to 650 points, you will earn an A. If you get 540 to 599 points, you will earn a B. If you get 460 to 539 points, you will earn a C. If you get 400 to 459 points, you will earn a D. If you get less than 400 points, you will earn an F.

CLASS CALENDAR

Reading assignment. September 3 to September 24
Ch. 1 The Science of Psychology in Your Life
Ch. 2 Research Methods in Psychology
Ch. 3 The Biological Bases of Behavior
Chs. 4, 5 Sensation & Perception
Test 1 September 24
Paper 1 due September 26

Reading assignment. September 26 to October 15
Ch. 6 Mind, Consciousness, and Alternate States
Chs. 7, 8 Learning and Behavior Analysis & Memory
Ch. 9 Cognitive Processes
Test 2 October 15
Paper 2 due October 17

Reading assignment. October 17 to November 5
Ch. 10 Intelligence and Intelligence Assessment
Ch. 11 Human Development across the Life Span
Chs. 12, 13 Motivation & Emotion, Stress, and Health
Test 3 November 5
Paper 3 due November 7

Reading assignment. November 7 to November 28

Ch. 14 Understanding Human Personality
Ch. 15 Psychological Disorders
Ch. 16 Therapies for Personal Change
Test 4 November 28
Paper 4 due November 30

Reading assignment. November 30 to December 14

Ch. 17 Social Processes and Relationships
Ch. 18 Social Psychology, Society, and Culture
Final Examination. December 17
HOW TO PREPARE A LECTURE

Clarity is the most important quality in lectures. Clarity can only be assessed by the audience. Your students are likely to vary in abilities, needs, interests, and reasons for taking the course. Some take introductory psychology because they are interested in psychology and plan to major in it; some take the course because they hope to achieve insight into personal problems; others take it because it fulfills a requirement, or because the class meets at a time that is convenient for them. You cannot “please all the people all of the time,” but your success in teaching will depend on the degree to which you deal with the wide range of individual differences your students bring to your class.

Be aware of the intellectual level of your students, of special aspects of their backgrounds, their sophistication as well as areas of naiveté. Answer for yourself these basic questions:

- Who am I talking to?
- What two or three points do I want them to remember?
- What other points would it be nice—but not essential—for them to recall?

Students come to class with their own agendas—areas of genuine interest as well as topics they expect to be covered in an introductory psychology class. Asking your students to submit questions periodically is one way to assess their interests. Zanich and Grover (1989) surveyed student interest in 80 specific topics typically included in introductory texts and lectures. Each topic was rated on a 5-point scale from very interesting to not very interesting. According to the students, the five most interesting topics were (1) the possible function of dreams, (2) why people are attracted to each other, (3) hypnosis, (4) how to improve your memory, and (5) sexual motivation and variations in sexual behavior. In general, students had the least interest in natural science aspects of psychology. The five least interesting topics were (76) how the auditory system works, (77) learning and nonsense syllables, (78) historical roots of modern psychology, (79) theories of color vision, and (80) the endocrine system. However, it must be noted that for all students, psychology majors and non-majors, mean topic ratings reflected slightly greater than average interest for all topics, with psychology majors giving slightly higher interest ratings than non-psychology majors.

BASIC MECHANICS OF LECTURES

The quality of instruction overrides content in determining student reactions to specific topics. Teachers are more than information dispensers. They put information into perspective, give contexts so ideas may be better appreciated, offer emphasis and clarification. The task of preparing a lecture is not so much one of loading as many ideas as possible into the firing chamber as one of carefully packaging a few delicate thoughts for the difficult trip from mind to mind. You should therefore attend very seriously to “transportation and delivery” issues when you are preparing your lecture, not only to the load. Sass (1989) found that students repeatedly cite eight instructor characteristics as responsible for high motivation to master the material: enthusiasm, relevance, organization, appropriate difficulty level, active involvement, variety, rapport, and use of appropriate examples.

Within the lecture, use examples—lots of examples—to illustrate the many unfamiliar concepts introduced in the course. To maintain students’ attention, vary the pitch and loudness of your voice, use gestures and facial expression, and move. Review your lecture notes thoroughly before class so you will not be glued to the lectern. Periodically review your delivery method and voice tone by listening to a tape recording of your lecture—an invaluable and humbling experience!

Use the lecture to amplify and enrich the material in the text, to illustrate difficult concepts, to relate psychology to personal experience, or to motivate and stimulate students. Avoid duplicating the text. Too much factual information in a lecture is likely to overwhelm students and result in little or no retention.

Lectures should usually begin with an attention-getting device such as a quick demonstration, personal remark, question, anecdote, or a clear statement of a theme, problem, or paradox. The balance of the lecture should have a structure that is apparent to the students as well as to you. For example, begin with a
preview, in which the central points of the lecture are briefly indicated and reference is made to important issues or types of evidence related to each; move into main points, each of which is stated and explored by giving relevant evidence and explaining current controversies; conclude with a summary in which the central points are again stated and supporting information briefly reviewed. In effect, as a friend of ours is fond of saying, “You tell ’em what you’re going to tell ’em, you tell ’em, and then you tell ’em what you told ’em.”

**START WITH AN ATTENTION GETTER**

As a guide to lively lecture starters, we offer these suggestions:

- **Statement of thesis to be argued:** “Today I would like to try to convince you that the greatest feat of human intelligence occurs when a two-year-old child learns its native language.”
- **Question:** “Research in the area of attitude change shows that a credible communicator has more persuasive impact than a noncredible one. Can you think of any conditions when a disliked communicator can be more effective than a liked one in changing your attitudes?”
- **Paradox:** “You see me as an upright, stationary three-dimensional figure, yet my image on your retina is upside down, jiggling around, with only two flat dimensions. How do you see the real me, given your deceiving retina?”
- **Personal anecdote:** “Have you ever known someone who suddenly and without any warning lost his or her memory [became a different person]? Several years ago a cousin of mine. . .”
- **Argument:** “Freud has done more than any other person to promote the psychological study and treatment of mental illness by replacing the demons of exorcism with the respectability of medical science and the reasoned analysis of psychoanalysis. Nevertheless, as far as I am concerned, his contribution is now backfiring. The long-term consequences of the medical model and of using unconscious dynamic explanations to explain a basically ordinary process of maladaptive learning are nothing less than fraud.”
- **Relevant media:** Start your lecture by reading all or part of an article in the school or local newspaper that highlights a major point to be made in the lecture.
- **Relevant student material:** “A student from my other class came to ask me yesterday whether I might refer him to a psychiatrist. After a long discussion, it seemed evident that his problem was loneliness, and I do not know a therapist who treats that. How unusual and bizarre a problem is loneliness? Are any of you afflicted by it? Let us discuss that topic today.”
- **Concrete instances (people rather than abstract variables):** “It’s hard to imagine that we would ever be blindly obedient to authority as participants in Milgram’s experiments were. ‘Not me, I’m different,’ you say. ‘I’d be independent.’ What do you think the people in Nixon’s presidential cabinet said before the Watergate scandal? Moreover, what about the 900 people who took part in the mass suicide pact in Guyana? Were they being loyal to their leader, the Reverend Jim Jones? Dedicated to their cause? Faithful to their religious beliefs? Alternatively, were they blindly obedient fanatics who were brainwashed by a dictator? Who is absolutely certain they would not have drunk the poison at Jonestown if they had been members of the People’s Temple?”
- **Shared experiences:** “We all know people who. . .” or “I’m sure that you, like me, have been in love and maybe we have even experienced similar emotions when that union was at its height and [pause] when the relationship somehow went wrong, failed, died. Let’s examine the nature of emotions . . .”
- **Challenge:** “My daughter asked me if blind people ever dream in colors. Who has an answer I can give her?”
- **Turn of phrase:** “What’s the difference between a psychologist who studies animal learning and a magician who uses animals in his act? The psychologist pulls habits out of his rats.”
Individualize prior student input: “You recall that in our last lecture a student challenged the view that pain is a sensation comparable to other senses. Ms. Jones’ pain-as-unique sensation theory, in fact, fits some new evidence.”

WITHIN THE LECTURE
The material within the lecture should follow a logical order. Among the organizational schemes you can use are:

CAUSE AND EFFECT
Cite and explain events by referring to their origins. For example, you can discuss how the criticisms of existing theories led to the development of new perspectives.

TIME SEQUENTIAL
Arrange lecture ideas chronologically. For example, you can explain how information moves from one memory system to another through a series of steps. Information is encoded into sensory memory, the important information moves on to short-term memory (where it is rehearsed or lost), and so on.

TOPICAL
Focus on parallel elements of different discussion topics. For example, when teaching the major psychological disorders, you can discuss their similarities.

PROBLEM—SOLUTION
Follow the statement of a problem with alternative solutions. For example, you might pose the problem: What are the consequences of frustration? You could then go on to discuss the responses, such as, frustration may lead to aggression.

PRO—CON
Present a two-sided discussion of a value-laden topic. When using this method, be certain to give each side equal weight. Let the students decide for themselves which side they want to take. For example, the topic of deinstitutionalization has an inherent adversarial challenge. On the one hand, research shows that many institutionalized patients can exist and improve in a “least restrictive environment.” Letting them out of institutions, moreover, is economically beneficial to the various state and local governments and thus to the taxpayer. On the other hand, if the patients are deinstitutionalized in communities lacking sufficient services, the former patients will be forced out onto the streets to fend for themselves. Such a situation can be dangerous both to them and to the communities in which they reside.

ASCENDING—DESCENDING
Arrange lecture topics according to their importance, familiarity, or complexity. For example, arrange the major psychological disorders from most debilitating to least debilitating, or from hardest to easiest to diagnose.

TO KEEP THEIR ATTENTION FROM WANDERING
During the standard 50-minute hour, your students’ attention will frequently wander in response to external distractions (attractive fellow students, campus newspapers, outside noises) and internal distractions (hunger, fatigue from late-night parties or athletic practice, distress over an exam failed during
the preceding class period, sexual daydreams whose fantasy is much more stimulating than any lecture).
This fierce competition means that at any given time many students are unaware of the important things
you have said. (Try collecting a sample of your students’ notes from time to time to see how much of your
output was never received or was grossly distorted.)

Audience distractions may be minimized in several ways:

- **Timing**: Hold your main points to about 5 minutes each (never more than 10 minutes) and
  insert a bit of humor, an anecdote, or an opportunity for a few questions into the transition
  period preceding the next main point. An outline on the board or a mimeographed outline is
  beneficial in keeping the students—and yourself—on track.

- **Variety**: Use catchy stylistic devices (stories, clever brief demonstrations) and change your
  expressive style (volume, pacing, pregnant pauses) to add variety to the rather narrow band of
  stimuli involved in straight talk. Although you have written out your lecture, do not read it!

- **Mini-climaxes**: Draw your information together at several points throughout the lecture,
  reemphasizing relevant ideas and conceptual ties and providing those students who may have
  “zoned out” earlier with the means to reenter the flow of information.

- **Value the ending**: The conclusion of the lecture is vital to its total impact; often, due to the recency
  effect, the conclusion will be remembered best. Use it well. Never rush in the last quarter of the
  class to say quickly all of the essential points. It is better to reserve the time needed to effectively
  summarize, even if students are left to expand a few of the main points on their own.

**IN ADDITION TO LECTURE**

**DISCUSSIONS**

Discussions have limited value in introductory courses for several reasons. Classes are frequently too large
for their effective use; extroverts in the front rows may carry on a lively dialogue while their peers at the rear
call up their favorite daydreams. In addition, discussions can be a “pooling of ignorance” because students
may not have read the assigned material in the text and may lack the background necessary to contribute to
a meaningful discussion. Despite these considerations, students benefit from, and enjoy, sharing their ideas
and experiences. The goal is to make that sharing educationally beneficial. Here are some suggestions:

- Make your intention clear to the students by saying “Let’s talk about how you feel when you’ve
  been punished—when your parents criticize you or you get a ticket for a traffic violation,” or
  “What do you think influences our self-esteem? How do we form our opinions about
  ourselves?”

- Plan topics for discussion around experiences students have had, a film that has been shown,
  or a situation that you have described.

- Pause after introducing the topic or asking the question to give students time to consider a
  response.

- Tactfully summarize or repeat the point made by a student if the student has expressed himself
  or herself poorly or did not speak loudly enough to be heard by class members.

- Be receptive to students’ contributions to the discussion and reinforce them for participating.
  Reward them with verbal commendations for comments and questions, and if the point they
  have made is particularly relevant or insightful, let the class know. When students’ comments
  are erroneous or irrelevant, or when students have difficulty expressing themselves, still
  respond in a positive tone, and try to salvage some part of their comments to move the
  discussion along.

- Try breaking the class into small groups for discussion. Prepare explicit directions for the
  groups, and require each group to make a report to you or to the class.
DEMONSTRATIONS
Preparation is the key to the successful use of demonstrations. If equipment or props are required, they should be assembled and set up before class. If something goes wrong, it is better to abandon or postpone the demonstration than to fiddle with the equipment or send a student for a missing ingredient. Remember that competent people are more lovable if they make an occasional blunder, particularly if they can handle the situation with humor.

Relate demonstrations to everyday experiences. For example, if you demonstrate how additive mixtures of blue and green produce yellow, suggest that students look at their color-television screen with a magnifying glass.

Although students enjoy evaluation of their personality traits, copies of standardized tests are not included in this manual because of copyright laws. However, most psychology departments have a test file you could examine for appropriate tests. If you do use a test or tests, you should carefully explain to students that these tests have limited validity and reliability, and that any single test is a small element in the evaluation of an individual’s personality.

FILMS AND VIDEOS
Audiovisual materials are an effective and enjoyable way of communicating psychological concepts to students. A review of specific recommended films is included within the Chapter-by-Chapter section.

Films and videos available on your own campus have the advantage of being readily available both for previewing and for use in class. Remember to reserve them for the date you want to show them in class. Always preview a film or video before showing it in class. If it is of poor quality or inappropriate, you can avoid wasting class time.

SLIDES, TRANSPARENCIES, AND LASERDISCS
Slides, transparencies, and images from the laserdisc add color and visual appeal to lectures. A large image of an eyeball, an illusion, the brain, or a Rorschach inkblot is worth many words.

In some ways, transparencies are the easiest to work with because they can be used in a lighted room. In addition, it is easy to make your own transparencies. You can write directly on the masters or you can photocopy an illustration and transfer it to a transparency master using a photocopying machine.

COMPUTER-ASSISTED INSTRUCTION
Technological innovations rarely have universal appeal when they first appear on the market. However, over time, the innovative often becomes the commonplace. The once-daring use of slides, transparencies, and films is now expected in introductory psychology classes. An increasing number of elementary and high school students are learning to use the computer and enter college with a degree of computer literacy unknown to past generations. As hardware prices fall, computers become more attractive as cost-effective tools for classroom use. The use of computers in the classroom for instruction and in learning resource centers for tutorial review is still new, but holds great promise.

HOW TO EVALUATE STUDENTS

DECISIONS ABOUT ASSIGNMENTS
Will I make reading assignments from publications other than the text? Some instructors prefer to select a limited number of chapters from the text and to assign other readings related to the chosen chapters. Although this provides more in-depth coverage of some areas, it neglects other areas of psychology. As the
areas covered in the course are reduced, the course becomes less and less the broad survey it is intended to be.

At the introductory level, most professors assign all or most of the chapters in the text and little or no outside reading. Because of their familiarity with the material covered in the introductory course, instructors can underestimate the difficulty of the text for students. Students who do well in the introductory course study, rather than just read, the text. If you do want to assign some additional readings, be sure that your campus library can supply enough copies of the assigned material.

**Will I make writing assignments?**

Your decision concerning writing assignments is likely to be influenced by the size of your class and the amount of assistance you can expect for reading papers. Writing experience is an important element in education and if you have the time and resources, you should include some written work in your requirements. A good option is to assign several short papers rather than a traditional term paper.

**DECISIONS ABOUT TESTING**

**How many tests will I give?**

Due to the scope of material, it is best to test frequently in an introductory course. Tests do take class time, and if you think of tests as purely a means of evaluation, you may feel that frequent testing takes too much class time. However, tests are powerful pedagogical tools because they inspire students to study and they provide feedback on the effectiveness of students’ efforts. Marvels of modern technology, like the test bank accompanying this text, have made testing relatively easy for the instructor. You choose the items from the test bank and the computer program will print them, number them, scramble them, and provide you with an answer key, or keys if you use more than one order of items. You can also edit test questions and add your own.

**What kind of tests will I give?**

Multiple-choice tests are the standard evaluative method in introductory psychology. Many of the multiple-choice questions in the test bank that accompanies this text involve application, interpretation, or conceptualization so you need not feel that you are just assessing rote learning. If you prefer to give essay tests or combine essay questions with objective items, you will also find a supply of essay questions in the test bank.

**What will my tests cover?**

Tests in introductory classes primarily cover the text; you can select and/or edit items from the professionally written Test Bank to cover the text material. You may also prefer to let students know in the syllabus that tests will include outside-class assignments as well as anything that occurs in class, such as lectures, films, demonstrations, and experiments. Of course, you will have to write your own questions to cover these other aspects of the course.

**How long should my tests be?**

Most students can read and answer a multiple-choice question in less than a minute, so if your class lasts 50 minutes, the test should have no more than 45 items to allow a few minutes for test distribution. If your class period is longer than 50 minutes, give a longer test since reliability increases with test length. It is best to make the test the only activity of the class day.
No matter how much time is allowed for a test, some students will not be ready to hand in their paper when the allotted time is up. Tell them you are leaving, and that if they want to receive credit for the test, they must hand in their papers immediately.

**What will I do about students who miss tests?**

There is no ideal solution to this problem. One “must” is that you have a policy you can easily enforce and that you inform students of this policy in the syllabus. Ideally, do whatever you can to discourage students from missing tests. One way to do this is to require verification of illness or other legitimate reasons for absence on test days. Still another helpful hint—inform students in the syllabus that you advise them to drop the course if they miss more than one test.

The option of allowing students to take the missed test later is not advised. If you do not have another test on the material, the class will have to wait until all of the makeups are done before they get feedback. Even if you do have another test you can use, you may find yourself proctoring individual students at times that are convenient for them rather than for you.

Here are two options for dealing with the inevitable situation of missed tests:

- Assign a score for the missing test based on the student’s performance on the other tests. Substituting the lowest test score for the missing score discourages students from missing tests, but it penalizes students who miss a test for legitimate reasons. Using the average of the other test scores seems fair, but students who are good strategists will figure out that it is better to be “sick” than to take a test unprepared.
- Students drop their lowest quiz score. This is an attractive option because students who miss a test can use the missed test as their lowest score. However, this option is advised only if you give several tests during the term and only if the tests are roughly equivalent in terms of type and difficulty. One caution in this situation is that the last test score should not be dropped. If you let students drop the score on the last test, those who are satisfied with their scores on earlier tests may consider the class finished for them several weeks before the end of the term, and therefore fail to study material that will be included on the final.

**How can I prevent cheating on tests?**

This is something we do not like to think or talk about, but cheating in the classroom is a reality, and you should do what you can to prevent it. Students who do not cheat become justifiably upset if they perceive that you are not doing your best to prevent cheating. Here are some methods of cheating and some preventive measures:

- Copying from an unsuspecting neighbor. Use the computerized Test Bank to construct two or more forms of your test. Each form should be in a different scrambled order.
- Collaborating with a friend by exchanging papers. Use vigilant proctoring, watching for students to exchange papers by passing them under the seats.
- Getting a copy of the test before it is given. Keep tests in a securely locked cabinet or file drawer. Be sure stencils or discarded pages are not left in a wastebasket that is accessible to students.
- Failure to hand in the test and answer sheet and claiming absence on the day of the test. Have students sign an attendance sheet as they enter the classroom.
- Getting someone else to take the test. Most campuses that have classes large enough for this to be a problem issue identification cards with pictures. Have students bring their cards to class and show them as they hand in their tests.
- Surreptitious use of notes. Have students put all books and papers under their seats and leave them there until they are ready to hand in their papers and leave. Another solution is to make the notes legitimate—allow students to bring to an exam one page of notebook paper with
anything they want written on it. This legitimate pony has value in that preparing it is a type of active study and because clutching their pony tends to reduce anxiety for students who panic on test day.

**How will I provide feedback to students after tests?**

On the day of the test, let students know when feedback will be provided. The longer students have to wait for correct answers, the less interested they become in checking their work. Provide immediate feedback if you can. Here are two suggestions for accomplishing this:

- Students record their answers on both the test and the answer sheet. They hand in the answer sheet and keep the test, scoring it themselves from a key or keys you post immediately after the test. The computerized test bank makes it possible for you to provide feedback that includes both correct answers and page references from the text.

- Create an exam that can be completed in 30 minutes (25–30 multiple-choice questions) and devote the rest of a 50-minute class to feedback. Ask students to jot down their answers on their own paper after they complete the test. Then collect the students’ answer sheets, while students retain their notes of their answers and the test. Review the test items, allowing students to ask questions about perceived ambiguous items. At the end of the class, collect the tests and the students’ notes. With this procedure, you only have to return the graded answer sheets in order for students to receive maximum feedback.

**How can I avoid hassles about test items?**

First, select and write items carefully, being sure that you agree that the keyed answer is the best answer. Then make your key carefully. Examine the printout of scores before posting it, and check any item for ambiguity or incorrect keying if half or more of the students miss it. If you make a mistake in your choice of items or on the key, correct it graciously.

Do not spend class time arguing about test items. Have students submit their case in writing if they feel that their choice for an item is better than the keyed answer.

**DECISIONS ABOUT EVALUATION**

**Should I use numbers or letters to grade students’ work?**

Any activity that is to contribute to students’ grades should be assigned a numerical score so an unambiguous point system can be used for determining final grades. Some students have difficulty understanding that an A on a minor assignment is not weighted as heavily as a D on the final exam. If you use large numbers, particularly for a large class, the range of final totals for students is larger and the cutoff between letter grades appears reasonable.

**How will I assign final grades?**

There are two traditional methods for assigning grades, the criterion-based system and the normative-based or on-the-curve system.

In criterion-based grading, criteria are published in the syllabus. For example, if a student gets 92 percent to 100 percent of the maximum number of points, the student can be assured of an A. This method is preferred by the majority of instructors because it is easy for students to understand and accommodates variability in the performance of different classes.
In normative-based grading it is predetermined that you will, for example, give an A to the top 10 percent of students, a B to students in the next 20 percent, and so forth. This method has the advantage of not requiring you to commit yourself to absolute criteria, but it has the disadvantage of causing some students to be uncertain about where they stand during the term. Also, normative-based grading assumes that your class is a random sample of students who take introductory courses at your school and does not take into account that some classes as a whole are better than others. Identical student performance could earn an A in one class and a B in another when the normative-based system is used.

**Should I use standard scores?**

Most students have difficulty understanding standard scores. (How can a score of zero be a C? Does a negative score mean that I know less than nothing does?) Standard scores also have the disadvantage of having a small range. One situation in which standard scores should be considered is when the test means for the term are unequal and you are dropping students’ lowest test scores.

**DECISIONS ABOUT EXTRA CREDIT WORK**

Should I provide an opportunity for students to get course credit for work that is not a class requirement? If you fail to state a firm policy on extra credit work in the syllabus, you will be visited by failing students during the closing weeks of the term. They would like to write papers, or do something to raise their grades. A no-extra credit policy is advised, with the rationale that students who are failing the required work would be better off spending their time on the text rather than writing a paper that is likely to be poorly written or plagiarized.

If there are to be opportunities for extra credit, they should be available to all students, not just those who come to your office with sad stories. For your best students, extra credit work is likely to be perceived as required, and you may find that they are more likely to take advantage of opportunities to earn points than students who need them more.

Extra credit work will increase your workload. The bookkeeping for volunteer work or research participation can be a headache, and rewritten or replaced papers means more papers to read and grade. However, this should not deter you if you can provide extra credit work that is truly a beneficial experience for students.

**What kind of extra credit opportunities could I provide?**

One extra credit option that is a learning experience for students and a service to the community is volunteer work in places such as sheltered workshops, child care centers, nursing homes, and shelters for the homeless. If you can arrange this type of activity, be sure to set a limit on the amount of credit that can be earned.

Introductory students are frequently an important source of human subjects for research. If research participation is not a requirement at your school, you might consider using it as an extra credit option.

If you assign several short papers during the term, you could allow students to rewrite or replace a paper that has received a low score. Rewriting a poor paper based on your comments and corrections can be especially beneficial for students who need help with writing skills.

**WRITTEN ASSIGNMENTS IN THE INTRODUCTORY COURSE**

As student’s writing skills have deteriorated, educators have become increasingly reluctant to include writing assignments as a course requirement. If this deterioration is to be reversed, it seems apparent that
instructors in disciplines other than English must assume some of the responsibility for providing writing experiences for students.

DESIGNING WRITING ASSIGNMENTS

The assignments should be related to the objectives of the course. They should increase insight into psychological concepts, develop critical thinking skills, or stimulate personal growth. The form of the assignments can be:

- A *take-home paper* in which students answer a specific question.
- A *psychological diary*. In writing the diary, students describe everyday experiences related to what they are learning in class. For example, a student hears a commercial for a cold remedy on TV, and wonders about the basis of the claim that the product is twice as effective as remedy X; or a student notes that her father trots out all his dissonance-reducing strategies whenever something goes wrong with the lemon he bought.
- A *in-class paper*. Students write a paragraph in class expressing their opinion on an issue, evaluating a film, or describing an experience. It is probably best not to grade these mini-papers, but it may encourage attendance if students are rewarded with a few points for participation.

The assignment should be clearly worded and specific. Instruction about the form of the paper should give detailed instructions on how the paper is to be prepared. The topics of papers should be described in such a way that the possibility of misinterpretation is minimized. You may need to give a systematic plan for a paper or to enumerate the points you expect to be covered. You can select questions from those provided in the test bank or create your own. Here is a list of verbs you may find useful as you create effective essay questions:

- advise
- compare
- contrast
- apply
- illustrate
- evaluate
- criticize
- summarize
- relate
- design
- analyze
- predict
- trace
- justify
- take sides on the controversy between
- explore the implications of

Specify a specific purpose or audience for the paper. The instructor is the traditional audience for student papers, and since you know so much, students tend to expect that you will not need important information or explanation. An example of a specific purpose would be “to encourage a friend to see a behavior therapist about a particular phobia.” The targeted audience could be students who have not taken introductory psychology, the readers of *Parents’* magazine, or a person who has written to *Dear Abby* about a psychological problem.

Inform students about how their papers will be evaluated. This information, as well as other details, can be specified in a handout, “All you need to know about writing assignments.” This can be part of the syllabus or distributed separately. Suggestions for the handout are outlined below.

- General discussion of written assignments: In this section inform students how many papers are required, how long they are to be, how topics are to be selected, and whether papers that receive a low score can be rewritten. Students should not be allowed to write more than one paper.
related to a chapter. Assign specific due dates for the papers throughout the term to prevent students from handing in all their papers on the last day of the term.

- **Specific guidelines for preparation of papers:** In this section tell students such things as: use 8½ by 11 paper; write on one side only; put the title, assignment number and your name at the top of the first page; type using double-spacing and one-inch margins; don’t use plastic covers or binders. It is a good idea to discuss plagiarism in this section and to indicate how students should handle quoted material.

- **Evaluation criteria:** The three traditional criteria for evaluation of papers are content or ideas, organization, and mechanics. You may want to assign weights to each of these criteria. For example, if the maximum number of points for a paper is 25, you might assign 12 for content, 8 for organization, and 5 for mechanics.

- **Topics:** Provide a chapter-by-chapter list of the topics from which students can choose. Having this list at the beginning of the term gives students a chance to make tentative choices of topics that interest them.

### EVALUATING STUDENT WRITING

There are two extremes to be avoided in evaluating papers. One is over grading or providing excessive feedback and the other is putting a grade on the paper with no marks or comments to justify your evaluation.

To avoid both extremes, it is best to devise an evaluation plan that is relatively easy to use and to communicate to students. One author suggested drawing a straight line under ideas or other aspects of a paper that you particularly like and drawing a wavy line under passages that are poorly written or confusing. This system can be extended by developing a code to indicate the reason for a wavy line; for example, G for poor grammar, U for unsupported generalization, I for irrelevance, and E for erroneous information or conclusion.

Critical thinking is an aspect of student writing that you may want to emphasize in evaluating papers. Here is one set of guidelines for evaluating critical thinking:

- Ask questions; be willing to wonder.
- Define the problem.
- Examine the evidence.
- Analyze assumptions and biases.
- Avoid emotional reasoning: “If I feel this way, it must be true.”
- Do not oversimplify.
- Consider other interpretations.
- Tolerate uncertainty.

There may be nothing you can do for your students that will benefit them as much as writing assignments. Many students find writing distasteful but are aware of their deficiency in written communication and apprehensive about the implications of the problem for future employment.

### WHAT TO DO WHEN THE EARTHQUAKE COMES

Even the best-laid plans of effective teachers occasionally go awry. If you are not uptight and excessively formal about what should and ought to happen in your class, these events can often be turned to your advantage, to reveal your human side or to capitalize on the attention and emotional involvement they generate to bring some academic points home more forcefully than you could normally. Here are some suggestions to help you go with the flow:
YOU HAVE MADE A MISTAKE
Admit it, laugh at it, correct it, consider why you made it, and thank the person who discovered it. If you are unsure of what is wrong, ask some specific person in the audience to tell you why the students are reacting as they are.

RULE VIOLATION
When the class is disrupted by deliberate rebellion—individual or collective—or when someone is violating some implicit rule of yours, handle the problem directly and immediately. Do not ignore it. Do not try to continue with planned material. Determine first what the nature of the disruption is, how representative it is of the whole class, and whether the apparent explanation is a valid one (e.g., students who are leaving early are on their way to some required athletic activity or students are inattentive due to a hearing difficulty). Assume it is a valid protest until proved otherwise. If, for example, you are distressed by a student reading the newspaper right in front of you, stop and say so. Say it is upsetting, ask the student to put it away, or alternately, ask the student to leave and read it outside. It is not necessary to embarrass the student, but you can set a firm but gentle example of the classroom decorum you expect. It is always advisable to speak personally to any such disrupting student afterward to explain your action in a nonthreatening manner. Many potential sources of trouble are won over with such demonstrations of personal attention and caring.

CHALLENGES TO YOUR AUTHORITY
You will encounter a variety of “problem” students. Do not use your position as an authority to beat them down in class. Such students often respond positively to a personal meeting after class to discuss the nature of the problem. This open recognition may be all that is necessary; the student may be calling for help, may want to be given some limits, or may be able to tell you where you are going wrong and losing student interest. The best way to establish your intellectual authority is through establishing an open, democratically run class, not an authoritarian one.

SUMMARY: TEN TIPS FOR SUCCESSFUL TEACHING
For most students, the introductory psychology course will be the only psychology course they will ever take. While a good text and helpful ancillaries certainly contribute to a successful introductory course, the teacher often makes the difference between a bad and a good class or between a good class and an outstanding one. Personal variables—such as the respect you show for the subject matter, the concern you show for students’ understanding of psychology, and the care with which you prepare your class presentations—are critical factors that will influence your students’ impressions of psychology throughout the term and beyond. Your classroom behavior also has important practical implications, because it determines whether some of your students enroll in other psychology classes or become psychology majors. In sum, you are a representative of psychology as both a science and career, and as such, your actions reflect the field’s professional values and standards. Below are ten tips for teaching introductory psychology.

BE PREPARED
There is simply no substitute for knowing your subject matter. Contrary to popular opinion, introductory students are very perceptive. A teacher who is ill prepared to discuss the subject material or to field students’ questions will soon be discovered, resulting in large-scale student apathy. Beyond knowledge of the subject matter, it is also important to schedule enough time for adequate preparation. A teacher cramming for a presentation is likely to meet with the same result as a student cramming for an
examination—failure. If you plan to use audiovisual aids, get to class a few minutes early to ensure the equipment is working properly, the slides are right side up, the microphone is working properly, etc. Students resent your taking class time for such preparation; their time is as valuable as yours—make sure it is used for teaching purposes and not your last-minute preparation. Similarly, it is unwise to use class time for a bull session because you are not adequately prepared to lecture. Your presentations should always be substantive and informative.

KNOW YOUR STUDENTS
Most students appreciate and, indeed, welcome personal contact with their instructors. You may wish to arrive a few minutes early to class each day and visit with the students present. You will become more familiar and comfortable with them, and they will become more familiar and comfortable with you. The more comfortable students feel with you, the more likely they will be to make valuable contributions to class discussions. Beyond knowing some (hopefully most) of your students personally, be aware of campus and local issues that concern students. This allows you to incorporate those examples in classroom presentations in a meaningful way. Other than the students themselves, the best sources of information on these matters are the campus and local newspapers.

BE HONEST
Students appreciate instructors who keep their word with respect to course policies and class assignments. If your office hours are from 10 to 12 on Tuesdays and Thursdays, be there. If an emergency arises, leave a note to that effect on the door. Follow through on your promises to bring in outside material. Your credibility as a teacher will be enhanced.

ACCEPT CRITICISM
Each time a new teaching term begins, you acquire a new set of critics. Students may evaluate your style of dress, your manner of speaking, your sense of humor, and a variety of other elements that may or may not relate to your ability to convey information about introductory psychology. If only one or two students make similar criticisms, you may or may not want to take the criticism seriously. If, however, several students have similar criticisms, you should heed their advice and address their criticisms.

BE RESPECTFUL
Students like everyone else appreciate being treated with common courtesy and respect. Say “hello” when you pass students in the hall, and respond to in-class questions with openness and respect. Disrespect is a sure way to put cool distance between you and your students.

KEEP YOUR CLASSROOM PRESENTATION SIMPLE
In addition to having a sound understanding of the subject matter, it is important to know your audience. Your presentations should be geared to their level. Build your lecture around four or five major points and use plenty of thoughtful and representative examples.

BE ENTHUSIASTIC
Your level of enthusiasm for the subject matter will be obvious on the first day of class and will determine the tone for the entire term. More important, your attitude will have a strong influence on your students’ attitudes about the course. Your enthusiasm for psychology can make even the driest topic palatable.
ESTABLISH COURSE OBJECTIVES
What is it that you wish to accomplish in your class? What kinds of knowledge should your students possess at the end of the term? How do you plan to achieve your goals? These are essential questions to ask while organizing your syllabus. Once you have provided answers to these questions, put them on the first page of your syllabus. Filling students in on the class objectives and your plans for meeting them allows the students to prepare better for your class presentations, discussions, and examinations.

BE PATIENT
As teachers, we have neither the time nor the energy to do everything for our students. We must place the responsibility for their understanding of introductory psychology squarely on their shoulders—after we have done our part to expose them to the knowledge we possess. Some students will catch on quickly, others more slowly, and still others, perhaps never. In any case, patience is a virtue; students must be given the opportunity to succeed or fail on their own.

BE CORDIAL
Students appreciate an instructor who is approachable. Let your students know that you are genuinely interested in seeing them succeed and that you welcome their questions and comments. However, be forewarned: Becoming too “chummy” with your students may create special problems (e.g., students may develop inaccurate expectations of the difficulty of the course or the quality of their course performance).

Some students may bring personal or family problems to you and expect your help. If the situation warrants more than a friendly ear, refer the student to an appropriate clinician or counselor.
WHY READ THIS INSTRUCTOR’S MANUAL?

Why should you read and ultimately make use of this Instructor’s Manual? There are two simple reasons. First, this manual will make you a better, more passionate teacher. No matter how long you have been teaching, your students will learn more, will have more fun, and will leave your class inspired about psychology by your teaching. Teaching more effectively will also inspire you, and will undoubtedly be reflected in exceptional teaching evaluations. Second, this manual will make your life easier. This manual presents a treasure trove of instructional material, compiled from outstanding teachers worldwide, in as accessible format as possible. We have done the grunt work for you, freeing you so that you have the time to add and modify material, as you deem appropriate. Because the foundation of a superior course is contained in this manual, you will have the time to make the course truly your own.

One of the strengths of Psychology and Life, 16th Edition is that we have had years to refine and develop an instructor’s manual that is comprehensive in scope and complementary in nature. When used in conjunction with Psychology and Life, 16th Edition, we believe that your classroom experience will be an immensely rewarding one for both you and your students.

THIS INSTRUCTOR’S MANUAL INCLUDES THREE SECTIONS:

I. A PRIMER ON TEACHING INTRODUCTORY PSYCHOLOGY

The previous section addresses pragmatic topics, such as instructional techniques, methods of evaluating students, administrative issues, and preparing lectures, handouts, and syllabi.

II. INDIVIDUAL CHAPTER MATERIALS

This section provides specific instructional material for each chapter of Psychology and Life, 16th Edition. Within each chapter, material is further broken down into specific types of material. These include:

Learning Objectives: Provides clear, consistent goals and guides for both teaching and learning.

Chapter Outline: Arranges material in a concise, organized format that can be used “out of the box” as lectures or that can serve as the basis for the development of more personalized lectures.

Discussion Questions: Suggests provocative questions to pose to your students, which can be used as the basis of classroom discussion, written assignments, and essay questions.

Supplemental Lecture Material: Contains additional material designed to add depth and richness to lectures.

Biographical Profiles: Provides biographical sketches of prominent psychologists, briefly tracing their life and contributions to the field.
Timeline: Presents a chronological overview of important events and people from the history of psychology and related historical events.

Suggestions for Further Readings: Suggests references for both you and your students for finding more information on each chapter topic.

Discovering Psychology: Lists volumes of a video telecourse, Discovering Psychology, keyed to chapter content. Philip Zimbardo designed, wrote, and narrated the 26 programs in this PBS TV series.

Films and Videos: Lists current media appropriate for the chapter.

Case Study Lecture Launcher: Includes vignettes that originally appeared in an earlier edition of Psychology and Life. We continue to include them this Instructor’s Manual due to their demonstrated appeal to both students and instructors. The current edition of Psychology and Life employs new, provocative first-person quotes to introduce each chapter.

III. EXPERIMENTS AND DEMONSTRATIONS
(By Philip G. Zimbardo)
This section describes a set of projects and demonstrations that can be used in class or in separate sections to illustrate relevant psychological principles. The student’s portions of these exercises are included in the Student Study Guide that accompanies Psychology and Life, 16th Edition. Additional copies of the student handouts can be made from the copies in this manual.

IV. ADDITIONAL INSTRUCTIONAL RESOURCES

TEST BANK
Psychology and Life, 16th Edition is accompanied by an extensive test bank. Expertly authored, completely revised, and reviewed by Richard Gerrig and Philip Zimbardo, this bank contains more than 2,000 multiple-choice and essay items. These questions are page referenced, are of balanced but varied difficulty, and are identified by chapter, question type (factual, applied, or conceptual), question topic, and skill level.

OVERHEAD TRANSPARENCIES
This completely revised set of color transparencies includes the best illustrations from the publisher’s current introductory psychology textbooks, designed to be accurate, brilliant, and interesting projections.
## Chapter 1 At-a-Glance

### The Science of Psychology in Your Life

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| **The Evolution of Modern Psychology (p. 8)** | Discussion Questions: Determinism, free-will, and scientific psychology | Transparencies: Intro 03 | Mind Matters: Unit 1: Psychology’s Roots Unit 1: Recent Trends in Psychology |  |
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## Mind, Consciousness, and Alternate States

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| **The Contents of Consciousness** (p. 154)  
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Accessibility to Consciousness  
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| **Sleep and Dreams** (p. 161)  
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Why Sleep?  
Sleep Disorders  
Dreams: Theatre of the Mind | Discussion Questions: How much sleep do your students need?  
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The Stuff of which Dreams are Made  
The Paradoxical Nature of REM | Transparencies:  
Consc 01  
Consc 02 | Discovering Psychology Video:  
Program 13: The Mind Awake and Asleep  
Video: Understanding the Dream World: Moving Beyond Freud  
Video: Wake up, America: A Sleep Alert |  |
| **Altered States of Consciousness** (p. 168)  
Lucid Dreaming  
Hypnosis  
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**Discussion Questions:** Discuss how radical behaviorism might be used to explain cognitive development.

**Supplemental Lecture Material:** The Effects of Corporal Punishment Operant Conditioning the Easy Way

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## Memory

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**Sensory Memory** (p. 221) Iconic Memory Echoic Memory

**Supplemental Lecture Material:** Reasons For Memory Loss With Age

**Study Guide:** Chapter 8

**Transparencies:** Mem 03

**Digital Media Archive v2.0** Topic 5: Memory

**Short-Term Memory And Working Memory** (p. 223) The capacity Limitations of STM Accommodating to STM Capacity Working Memory

**Experiments & Demonstrations:** Strategies for Enhancing Memory

**Transparencies:** Mem 01 Mem 05

**Mind Matters:** Unit 5: Learning and Memory

**Digital Media Archive v2.0** Topic 5: Memory

**Long-Term Memory: Encoding And Retrieval** (p. 228) Context and Encoding Retrieval Cues The Processes of Encoding And Retrieval Improving Memory for Unstructured Information Metamemory

**Supplemental Lecture Material:** The Zeigarnik Effect

**Transparencies:** Mem 02 Mem 04 Mem 05 Mem 06

**Mind Matters:** Unit 5: Learning and Memory

**Digital Media Archive v2.0** Topic 5: Memory

**Structures In Long-Term Memory** (p. 239) Memory Structures Using Memory Structures Remembering as a Reconstructive Process

**Supplemental Lecture Material:** The Lost Memories of Early Childhood

**Transparencies:** Mem 07 Video: Memory: Fabric of the Mind

**Biological Aspects of Memory** (p. 247) Searching for the Engram Amnesia Brain Imaging

**Learning Objectives:** Describe the nature and functions of long-term memory

**Transparencies:** Mem 08 Mem 09 Video: Memory

**Additional Resources** Biographical Profiles: Hermann Ebbinghaus Endel Tulving Elizabeth Loftus Timeline

Interactive Web Site and Companion Web Site at: [www.ablongman.com/gerrig](http://www.ablongman.com/gerrig)
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| **Additional Resources** | Biographical Profiles:  
Wolfgang Köhler  
Herbert Simon | | Interactive Web Site and Companion Web Site at:  
[www.ablongman.com/gerrig](http://www.ablongman.com/gerrig) | |

Additional Resources:

- Biographical Profiles:
  - Wolfgang Köhler
  - Herbert Simon

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Alfred Binet  
Lewis Terman  
Sir Francis Galton  
Timeline | Transparencies:  
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www.ablongman.com/gerrig |
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| Additional Resources | Biographical Profiles:  
Clark Hull  
David McClelland  
Abraham Maslow  
Timeline |  | Interactive Web Site and Companion Web Site at:  
[www.ablongman.com/gerrig](http://www.ablongman.com/gerrig) |  |
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## Chapter 15 At-a-Glance

### Psychological Disorders

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| **Major Types of Psychological Disorders (p. 477)** | Supplemental Lecture Materials: Narcissistic Personality Disorder | Transparencies: Dis 04 Dis 05 Dis 06 Dis 07 Dis 08 Dis 09 Dis 10 Dis 11 | Video: The Psychopathic Mind Video: Schizophrenia: New Definitions, New Therapies | |
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| **The Stigma of Mental Illness (p. 498)** | Experiments & Demonstrations: Suicide: Intentions and Acts | Study Guide: Chapter 15 | Digital Media Archive v2.0 | **Notes** |

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# Chapter 17 At-a-Glance

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# Chapter 18 At-a-Glance

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CHAPTER 1
The Science of Psychology in Your Life

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Explain why the study of psychology is important
2. Define what Psychology is and identify what topics psychologists address
3. Define Behavior and the methods psychologists use to study it
4. Explain psychology’s relationship to sociology and social, biological, cognitive, and health sciences
5. Identify the goals of psychology (To Describe, Explain, Predict, and Control behavior. And, for the applied psychologist, to use this knowledge to improve the quality of human life)
6. Briefly explicate the historical development of modern psychology
7. Define structuralism and functionalism, and the conflict between these competing views
8. Describe the conceptual approaches that dominate contemporary psychology (Biological, Psychodynamic, Behavioristic, Humanistic, Cognitive, Evolutionary, and Cultural)
9. Understand how social and technological changes influence the questions asked and research methods used by psychologists

CHAPTER OUTLINE

I. The Main Purposes of Psychology and Life, 16th Edition
   A. To guide you on an empirically rigorous journey through the intricacies of your human experience; to give you greater control over the forces that shape your life

II. What Makes Psychology Unique?
   A. Basic Definitions
      1. Psychology: The scientific study of the behavior of individuals and their mental processes
      2. The Scientific Method: The scientific method consists of a set of orderly steps used to analyze and solve problems
      3. Behavior: The means and actions by which organisms, including both animals and humans, adjust to their environment
      4. Mental Processes: The private, internal workings of the human mind
   
   B. The Goals of Psychology
      1. The goals of the psychologist conducting basic research are to Describe, Explain, Predict, and Control behavior. Applied psychologists have a fifth goal, to improve the quality of human life.
2. **Describing Behavior**: The first task of the psychologist is to make accurate observations about behavior

   a) In collecting behavioral data, which are reports of observations about the behavior of organisms and the conditions under which the behavior occurs, psychologists must ensure objectivity and choose an appropriate level of analysis

   b) Level of analysis refers to whether the observations concern broad, general and global aspects or whether the observations concern minute details of the object under study

   c) Objectivity refers to a desire to collect facts as they really exist, not as we hope them to exist. Objectivity helps ensure that subjective personal biases, prejudices, and expectations do not distort data collected.

C. **Explaining Behavior** requires that explanations deliberately go beyond what can be observed. Psychological explanations for behavior often recognize that organismic, dispositional, and situational (or environmental) variables each play a role in determining behavior.

   1. **Organismic** variables operate within the individual, such as genetic makeup, motivation, intelligence, and self-esteem

   2. **Dispositional** variables are organismic variables that exist within humans

   3. **Situational** (or environmental) variables are external events that influence behavior

D. **Predicting Behavior** involves statements about the likelihood that a certain behavior will occur or that a given relationship will be found

   1. **Scientific** prediction is based on an understanding of the ways events relate to one another, and suggests what mechanisms link those events to certain predictors

   2. **Causal** prediction specifies conditions under which behaviors will change

E. **Controlling** behavior is the central, most powerful goal of many psychologists. Controlling behavior means causing a behavior to happen or not to happen and influencing the nature of the behavior as it is being performed.

F. **Improving the Quality of Life** is the result of the first four goals of psychology. All therapeutic programs and interventions, such as those designed to help individuals stop smoking, stop doing drugs, or lose weight, are attempts to use psychological principles to control behavior. Psychological principles can be used not only to help individuals live more successfully, but also to improve the functioning of groups of people and societies.

III. The Evolution of Modern Psychology

   A. At the core of this historical review is one simple principle: **Ideas Matter**. Ideas influence the manner in which people think, feel, and behave, and, ultimately, the manner in which they lead their lives.

   B. Psychology’s Historical Foundations

      1. In 1879, in Leipzig, Germany, Wilhelm Wundt founded the first formal laboratory devoted to experimental psychology
2. In 1883, the first experimental psychology laboratory in the United States was founded at Johns Hopkins University by G. Stanley Hall.

3. Edward Titchener, a student of Wundt, became an influential early psychologist with his laboratory at Cornell University.

4. In 1890, William James, brother of novelist Henry James, wrote the two-volume work, *The Principles of Psychology*, which many experts consider the most important psychology text ever written.

5. In 1892, G. Stanley Hall founded the American Psychological Association.

6. With the emergence of the field of experimental psychology, debate began over the proper methods and subject matter of the new field. Two important opposing ideas were *structuralism* and *functionalism*.

C. Structuralism: The Contents of the Mind

1. Edward Titchener used a method for examining the elements of conscious mental life called *introspection* to understand the “what” of mental contents, rather than the “why” or “how” of thinking. Titchener’s approach came to be known as structuralism, the study of the structure of mind and behavior.

2. Structuralism was based on the assumption that all human mental experience could be understood as the combination of simple events or elements.

3. The goal of structuralism was to reveal the underlying structure of the human mind by analyzing the basic elements of sensation and other experiences that form mental life. Titchener hoped to create a periodic table of mental elements, similar to the periodic table of physical elements used by chemists and physicists.

4. Structuralism was attacked primarily on three grounds:
   a) It was *reductionistic* because it reduced all complex human experience to simple sensations.
   b) It was *elemental* because it sought to combine parts into a whole rather than study the variety of behaviors directly.
   c) It was *mentalistic* because it studied only verbal reports of human conscious awareness, ignoring the study of individuals who could not describe their introspections, including animals, children, and the mentally disturbed.

5. One alternative to structuralism, pioneered by the German psychologist Max Wertheimer, focused on the way in which the mind understands experiences as gestalts—organized wholes—rather than the sums of simple parts. Gestalt psychology will be discussed in Chapter 5.

6. A second major opposition to structuralism was *functionalism*.

D. Functionalism: Minds with a Purpose

1. William James disagreed that mental life was composed of simple events or elements that, when added together, formed mental life. Instead, he viewed mental life as a stream of consciousness, a system in continual interaction with the environment.

2. Functionalism focused on learned habits that enable organisms to adapt to their environment and to function effectively. The essential question for
functionalists was “What is the function or purpose of a behavior?”

3. John Dewey, an American philosopher, founded the school of functionalism, which led to many advances in education.

4. **The Legacy of Structuralism and Functionalism**: Both live on. Today psychologists employ a variety of methods to study both the structure and the function of mental life and behavior.

E. **Current Psychological Perspectives**

1. Contemporary psychology is dominated by seven perspectives or conceptual approaches: *Biological, Psychodynamic, Behavioristic, Humanistic, Cognitive, Evolutionary,* and *Cultural.* Each of these approaches espouses points of view and sets of assumptions that influence both what will be studied and how it will be investigated. Most psychologists blend and borrow from several of these perspectives. At the end of the description of each perspectives is an analysis of that approach to understanding the causes of aggression.

2. **Biological Perspective**: The biological perspective attempts to explain behavior in terms of the influence of genes, the brain, the nervous system, and the endocrine system by examining underlying physical structures and processes
   a) From the biological perspective, even the most complex behavior can be understood by decomposing the behavior into smaller units, such as the firing of neurons in the brain
   b) A unifying theme for biological researchers is that, although the environment and experience can modify behavior by altering underlying biological structures and processes, behavior originates from biological forces
   c) **How biological psychologists study aggression**: By examining the genetic and biochemical bases of aggressive behavior in both normal individuals and abnormal individuals prone to aggression

3. **Psychodynamic Perspective**: The psychodynamic perspective holds that behavior is determined by powerful inner forces, such as instincts and biological drives, and by attempts to resolve conflicts between personal needs and society’s demands. The purpose of behavior, according to this view, is to reduce tension.
   a) Psychodynamic principles of motivation originated with *Sigmund Freud,* a Viennese physician, and his work with mentally disturbed patients. Freud’s ideas have had a greater influence on more areas of psychology than any other person has.
   b) Freud emphasized the primacy of early childhood in mental development, but more recent psychodynamic psychologists have broadened Freud’s theory to include social influences and interactions that occur over the individual’s lifetime
   c) **How psychodynamic psychologists study aggression**: By examining the unconscious drives and conflicts that are expressed in aggressive behavior and attempting to understand how aggression reduces psychological tension
4. **Behaviorist Perspective:** Behaviorists seek to understand how environmental contingencies and stimuli control behavior in terms of three essential aspects: Antecedent, behavioral response, and consequence

   a) **Antecedent** environmental conditions refer to the state of the environment before a behavior is performed

   b) **Behavioral response,** the main object of study, refers to the action to be understood, predicted, and controlled

   c) **Consequence** refers to what results from the behavioral response

   d) Behaviorists are interested in observable behavior and often use nonhuman animals so that they can control the conditions of experimentation more completely than they can with human participants

   e) Behaviorists argue that principles derived from research with nonhuman animals apply to humans as well

   f) Behaviorist principles have yielded more humane approaches to the education of children and to the treatment of behavior disorders

   g) **How behaviorists study aggression:** By examining the stimulus causes and consequences of aggressive behavior. Specifically, they ask how the behavior has been reinforced in the past.

5. **Humanistic Perspective:** Humanistic psychology, a more optimistic alternative to the psychodynamic and behaviorist models, suggests that humans are innately good and that the main task of humans is to strive for growth and development of their potential.

   a) Humanists are *phenomenologists* in that they study the individual actor’s personal view of events, focusing on the subjective world experienced by the person, not an objective reality

   b) Unlike behaviorism, humanistic psychology examines the human as a whole (holistic approach) and does not attempt to reduce mental life to elemental parts

   c) **How humanists study aggression:** By examining maladaptive values, social conditions, and goals that hinder growth and self-actualization

6. **Cognitive Perspective:** In contrast to behaviorism, which focused primarily on observable behavior, cognitive psychologists are most interested in human thought and all the processes of knowing, such as attending, thinking, remembering, and understanding

   a) Cognitive psychologists view behavior as partly determined by past experiences but also influenced by an individual’s inner world of thought and imagination about the ways that the world could be. To cognitive psychologists, an individual’s subjective reality is more important than the objective reality that behaviorists strive to capture.

   b) Cognitive psychologists often use the computer as a metaphor for the human mind and study higher mental processes such as perception, memory, language use, problem solving, and decision making

   c) **How cognitive psychologists study aggression:** By examining thoughts associated with aggressive behavior and the influence of
viewing violence on television and video on attitudes toward aggression

7. **Evolutionary Perspective:** The evolutionary perspective extends the idea of natural selection to explain how mental abilities evolved over millions of years, just as physical abilities did

   a) Evolutionary psychologists identify adaptive problems that early humans may have encountered such as avoiding predators, finding food, reproducing, and raising children, and then generate inferences about the mental processes that might have evolved in response to these problems

   b) Evolutionary psychology is different from other perspectives in that it has a much longer temporal focus (millions of years) than other perspectives

   c) **How evolutionary psychologists study aggression:** By examining the possible evolutionary advantage that could have been derived from aggressive behavior in the past

8. **Cultural Perspective:** Cultural psychologists investigate cross-cultural differences in the causes and consequences of behavior. Partly in response to American psychology’s reliance on white, middle-class college students as the subject matter of psychology, cultural psychologists cross national boundaries in an attempt to understand how cultural groups differ on standard measures of mental processes and to understand what new measures and concepts might more accurately capture and describe the mental life of various cultural groups.

   a) Important concepts investigated by cultural psychologists include perceptions, human development, emotions, social norms, and the notion of “the self”.

   b) Cultural psychologists point out that psychological principles derived from one cultural group cannot be automatically applied to other cultural groups. A famous example of this is the application of psychodynamic principles, based on the traditional western roles of mothers and fathers, to the Trobriand Islanders of New Guinea, for whom parenting roles are much different and the mother is the main authority figure.

   c) **How cultural psychologists study aggression:** By examining how aggression differs across cultures. Questions cultural psychologists might ask include: Are the same types of aggressive behaviors performed with the same frequency in each culture? How is aggression dealt with culturally? What types of aggression are culturally sanctioned? What does aggressive behavior mean in different cultures?

**IV. What Psychologists Do**

A. Surveys suggest that there are over 500,000 psychologists worldwide. Approximately 62,000 to 82,000 work as researchers. Psychologists often specialize in subfields, such as clinical, cognitive, personality, developmental, social, industrial, educational, sports, health, and cultural psychology. When most people think of a psychologist, however, they think of a clinical psychologist who works
with clients with psychological problems and with problems of living. Clinical psychologists, in turn, are often confused with psychiatrists, who are medical doctors that have specialized in the treatment of mental illness.

B. Early in its history, research and practice in psychology was dominated by men. In the last decade, however, women have received the majority of Ph.D.’s awarded in psychology.

C. Even when women were few in number, they still made substantial contributions to the field of psychology.

1. Margaret Washburn graduated from Cornell University in 1894 to become the first woman to receive a Ph.D. in psychology.

2. Mary Calkins completed all the requirements for a Harvard Ph.D., but Harvard refused to grant her a Ph.D. because she was a woman. She later became the first woman president of the American Psychological Association.

3. Anna Freud, the daughter of Sigmund Freud, developed important advances in the practice of psychoanalysis.

V. Psychology in the 21st Century: The Future Is Now

A. Technological innovations influence both the questions that psychologists wish to answer and the manner in which researchers are able to answer those questions. Innovations in content and practice of psychology continue to shape the field.

DISCUSSION QUESTIONS

1. What do students hope to get from your class? “Why are you here, today, in this course?” This is a great way to start class, because it gets students involved in issues and ideas that interest them.

2. What role does the scientific method play in contemporary psychology? What are the limitations of the scientific method, and are there any better alternatives available? Students are often skeptical of the scientific method and are eager to point out its flaws, such as the slow incremental progress it generates, its reliance on measurable phenomena, its susceptibility to experimenter biases, and its sterile methodology. Students often fail to realize, however, that, although flawed, the scientific method is the best tool we have to generate valid, reliable knowledge and that it has provided us with a wealth of discoveries.

3. Is the importance of psychological knowledge likely to increase or decrease in our postmodern world? Experimental psychology is still a baby, only a little over 100 years old. As such, there is incredible room for psychology to grow in terms of both sophistication and diversification. As the speed at which the world changes continues to increase, humans will be forced to respond to these changes not through slow evolutionary changes, but through rapid psychological adjustments. Evolution via natural selection may no longer operate fast enough to allow us to adapt to the rapidly changing world that we have created. Within this context, psychology, and psychological adaptation, is certain to play a more prominent role.

4. What psychological principles have become part of the larger culture, have penetrated our thinking and language? Psychological principles permeate advertising, marketing, television, movies, sales, self-help books, fashion, politics, and folk wisdom, to name a few, but students are often unaware of this influence. Pointing out this influence is a good way to keep your students’ interest. For example, the concept of “psychological stress,” so prevalent in our cultural landscape, was rarely mentioned 50 years ago.

5. Ask your students how many of them believe in determinism. Then ask them how many of them believe in free will. Insist that they cannot have it both ways. You will be surprised to find that
many, if not most, students believe in free will. This is a terrific discussion starter, because it conflicts with one of the fundamental assumptions of science and psychology, determinism. You might ask your students what science can hope to reveal if the world is not determined. You might also suggest that what feels like free will to us may be thinly disguised determinism. This simple discussion is often enough to change the manner in which students view themselves and the manner in which they view those around them.

**SUPPLEMENTAL LECTURE MATERIAL**

**Clinical Psychology versus Psychiatry**

Because clinical psychology, a subfield of psychology, and psychiatry are both professions that deal with matters of mind and behavior, the public often confuses them. The major distinction is in the type of advanced training received in each profession. Psychiatry is a medical specialty requiring an M.D. and additional study, while clinical psychology is considered part of an academic discipline that requires a Ph.D. from an accredited graduate program. Although medical training is not required, clinical psychology graduate programs are one of the, if not the, most difficult graduate programs to be accepted into, including law, business, and medical school. Psychiatrists’ medical training allows them to prescribe drugs and tends to lead them to more biologically based explanations for abnormal behavior than those to which psychologists often adhere. Most states do not allow psychologists to prescribe medication, although some are pushing for a change. In general, psychiatrists are professional therapists who treat patients with mental and emotional problems in either a hospital or private practice setting. With few exceptions, psychiatrists are more likely to be practitioners than researchers.

The basic model of training for psychiatrists is the medical model, which focuses on underlying physiological problems, such as imbalances in neurotransmitters, brain lesions that can be treated medically, or “mental disease” that can be cured in much the same way that an infection can be cured. Clinical psychologists receive training in human behavior; they are taught to look at the chain of events leading to specific behaviors and the resultant behaviors and outcomes, relative to the impact of those behaviors on the individual client and on the client’s social environment.

Training in clinical psychology can prepare the student for a career as a researcher and scholar (often combined with teaching at a university), or in any number of areas of applied psychology. Clinical psychologists, like psychiatrists, are usually therapists, treating clients in either hospitals or private practice. Assessment of psychological disturbance by means of various standardized tests is one task of the clinical psychologist. A psychoanalyst may be a psychiatrist, a psychologist, or other college graduate that has received specialized training at a psychoanalytic institute where the ideas and therapeutic methods of Freud and his followers are taught. It requires that the prospective therapist undergo personal psychoanalysis as well.
Class Exercise: Psychology’s Goals Applied to Matchmaking
(This class exercise was adapted from an Experience Break originally included in *Psychology and Life*, 15th Edition, by Philip Zimbardo and Richard Gerrig.)

Based only on the descriptions provided below, ask your class to guess which pairs of the people listed below belong together. There are no right or wrong answers—tell them to go with their instincts.

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<tr>
<td>David</td>
<td>Dana</td>
<td>Chris</td>
<td>Anita</td>
<td>Sandy</td>
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<td>Age: 21</td>
<td>Age: 23</td>
<td>Age: 29</td>
<td>Age: 35</td>
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Now lead your class in a discussion of their matchmaking decisions with respect to the goals of psychology:

- How would they describe the behaviors they engaged in while trying to settle on appropriate matches?

Did they read all the descriptions before they began? Did they find the decisions easy to make? Did they change their mind several times?

- How would they explain their behavior?

What rules do they believe they used to match up the couples? Were they most concerned about age? About occupations? About leisure activities? Did they use some combination of all three descriptions? What inferences did they make in their decisions, such as perceived gender? What does the factor(s) that they used most say about them personally and their selection of a partner?

- How might their explanation allow them to predict which real-world relationships would succeed?

Suppose that based on their day-to-day observations of relationships, they focused on occupations
while doing their matchmaking. Are they willing to generalize from the predictions they made on this task to predictions in the real world? Can they begin to imagine the types of research they might carry out to test those predictions?

- Does their explanation allow them to control or improve their own relationship-seeking behavior or to give better advice to others?
  Have they learned from this exercise what matters most to them in a relationship? What more would they like to learn from research?
- Could they learn something that would allow them to improve the quality of their own or other people’s lives?
  If their research reveals the factors that help determine which relationships, in general, will endure, they should be able to improve the quality of people’s lives.

**BIOGRAPHICAL PROFILES**

**Wilhelm Wundt (1832–1920)**

Born in Neckarau, Germany, Wilhelm Wundt was the fourth child of a Lutheran minister. Despite coming from a family that boasted numerous scholars, scientists, and physicians, Wundt initially was not a good student. After he dropped out of one high school, a teacher suggested that a reasonable goal for Wundt would be a career in the postal service. Wundt’s scholastic abilities improved, however, and in 1855 he graduated at the top of his class in medical school. Wundt then went to Berlin to study physiology with Johannes Müller, and he subsequently decided to become an experimental physiologist himself. Wundt then returned to the University of Heidelberg, where he worked as an assistant for Herman von Helmholtz. It was at Heidelberg that Wundt taught his first course in psychology. The year was 1862.

In 1879, at the University of Leipzig, where he held a chair in philosophy, Wundt established the Institute for Experimental Psychology, the first laboratory whose formal purpose was the scientific investigation of the human mind. Wundt is one of the most prolific contributors to the field of psychology ever. It is estimated that between the years of 1853 and 1920, Wundt wrote 53,735 pages of text. Wundt was not only a voracious writer; he was also responsible for training numerous researchers, some of whom, such as Edward Titchener, brought versions of Wundt’s psychology to America.

**Sigmund Freud (1856–1939)**

Sigmund Freud was born in Pribor, Czechoslovakia, in 1856. Although Freud was a gifted student, it took him eight years to finish his medical degree at the University of Vienna, partly because he was interested in so many topics. Freud first pursued a career as a neurologist, but financial concerns forced him into general medical practice. In cooperation with his friend Joseph Breuer, Freud began to treat hysterical women. This is unusual, because at the time there was no known cure for hysteria, which is now known as a conversion disorder. Through trial and error and feedback from his clients, Breuer and Freud developed the technique known as psychoanalysis. Its fundamental rule is honesty; clients must relay all thoughts and feelings uncensored to the analyst. Clients then follow their stream of thought wherever it may lead, a process known as free association. In the course of free association, clients often uncover traumatic events in the past, and, upon reliving these events, often experience relief from their symptoms. Freud’s first major work, *The Interpretation of Dreams* (1900) detailed the process of dream interpretation, which he felt was the “royal road to the unconscious.” Although it took six years to sell the first 600 copies printed, this work was reprinted eight time during Freud’s lifetime.

Although the technique of psychoanalysis is perhaps Freud’s most important legacy, he made many other
substantial contributions to psychology. These include the recognition of the importance of sexuality and unconscious processes, a fully developed system of personality, and an appreciation for the conflict between individual desires and the constraints of society. His work has influenced so many aspects of our thinking that he is often not given full credit for the development of his ideas. Freud’s many detractors are quick to point out that his theories are not based on empirical research. While this is true, just because they lack empirical evidence does not mean that they are wrong, only that they are less likely to be right. Because of the breadth of his intellectual contributions, he remains the most cited psychologist in Psychology and Life, 16th Edition, and most comparable texts.

William James (1842–1910)

William James, often considered the father of American psychology, was born in New York City, but spent much of his childhood traveling between the United States and Europe, where he attended several private schools. James’ interest in such varied fields as philosophy, religion, and science were cultivated at home in an enriched environment shared with his brother Henry James, the famous author. William James struggled to find a vocation that mated his various interests, trying his hand at art (his paintings have appeared on the cover of recent editions of the American Psychologist), chemistry, and, finally, medicine. He received his M.D. from Harvard in 1868.

In 1872, James began teaching physiology at Harvard, but was preoccupied by his ongoing and deep interest in such philosophical issues as free will and determinism. Though James considered himself a temporary dabbler in the discipline of psychology, his two-volume textbook, Principles of Psychology (1890), stood as the field’s definitive textbook through the first half of this century. It is still considered one of the best-written texts on psychology and a source of many original ideas. James’ contributions to psychology include the notion of a stream of consciousness, the importance of habit and instinct, a complex theory of the self, theory of emotion, and opening the boundaries of psychology to include topics such as religious beliefs.
### TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1781</td>
<td>Immanuel Kant published <em>Critique of Pure Reason.</em></td>
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<tr>
<td>1811</td>
<td>Charles Bell and Francois Magendie discovered that there are two types of nerves: sensory and motor nerves.</td>
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<td>1827</td>
<td>Ludwig von Beethoven died.</td>
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<td>1838</td>
<td>Johannes Müller articulated his “Doctrine of Specific Nerve Energies.”</td>
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<tr>
<td>1846</td>
<td>Ernst Weber derived the quantitative relationships between subjective experience and physical stimulation, known as Weber’s Law.</td>
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<td>1848</td>
<td>Marx and Engels published the <em>Communist Manifesto.</em></td>
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<tr>
<td>1859</td>
<td>Charles Darwin published <em>On the Origin of Species by Natural Selection,</em> a culmination of his research and thinking about evolution via natural selection.</td>
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<tr>
<td>1860</td>
<td>Gustav Fechner published <em>Elements of Psychophysics,</em> which outlined the experimental study of the relationship between subjective experience and physical stimulation.</td>
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<tr>
<td>1861</td>
<td>Paul Broca discovered that damage to a specific area of the left hemisphere of the brain impairs language abilities.</td>
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<tr>
<td>1861-1865</td>
<td>The American Civil War was fought.</td>
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<td>1872</td>
<td>Claude Monet painted <em>Impression – Sunrise, Le Havre,</em> the painting that lent its name to the Impressionist movement.</td>
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<tr>
<td>1879</td>
<td>Wilhelm Wundt established the first psychology laboratory at the University of Leipzig, Germany.</td>
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<td>1883</td>
<td>The first psychology laboratory in the United States was established at Johns Hopkins University by G. Stanley Hall.</td>
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<tr>
<td>1885</td>
<td>Hermann Ebbinghaus published his empirical research on memory.</td>
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<tr>
<td>1890</td>
<td>William James published <em>The Principles of Psychology,</em> a two-volume text that became the standard reference for psychology students.</td>
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<tr>
<td>1892</td>
<td>The American Psychological Association was founded by G. Stanley Hall, who subsequently became its first president.</td>
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<tr>
<td>1896</td>
<td>Thomas Edison invented the motion picture.</td>
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<td>1898</td>
<td>Edward Thorndike conducted the first systematic experiments on animal learning.</td>
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<td>1905</td>
<td>Alfred Binet and Theodore Simon developed the first useful intelligence test.</td>
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<td>1906</td>
<td>Charles Sherrington published <em>Integrative Actions of the Nervous System,</em> which set forth the basic principles and terminology used today, to describe the structure and function of the nervous system.</td>
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<tr>
<td>1913</td>
<td>John Watson published “Psychology as the Behaviorist Views It,” sometimes referred to as the Behaviorist Manifesto, an influential paper asserting that psychology should restrict its subject...</td>
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<tr>
<td>Year</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1917</td>
<td>Wolfgang Köhler published <em>The Mentality of Apes</em>, a report of his research on the problem-solving abilities of non-human primates.</td>
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<tr>
<td>1928</td>
<td>Ivan Pavlov published <em>Lectures on Conditioned Reflexes</em>, a survey of his research on classical conditioning.</td>
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<tr>
<td>1938</td>
<td>B. F. Skinner published <em>Behavior of Organism. An Experimental Analysis</em>, which outlined the basic principles of operant conditioning.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<tr>
<td>1946</td>
<td>The American Psychological Association was reorganized to include practitioner psychologists as well as research psychologists.</td>
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<tr>
<td>1957</td>
<td>Noam Chomsky published <em>Syntactic Structures</em>, inaugurating an era of productive collaboration between psychologists and linguists. Psycholinguistics soon became a flourishing field of psychology.</td>
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<tr>
<td>1962</td>
<td>David Hubel and Thorston Weisel published their research on how specific features of visual stimuli excite specific neurons in the visual cortex.</td>
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<tr>
<td>1963</td>
<td>John F. Kennedy was assassinated in Dallas.</td>
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<tr>
<td>1981</td>
<td>Roger Sperry received the Nobel Prize for his pioneering work on the split-brain phenomenon.</td>
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SUGGESTIONS FOR FURTHER READINGS


DISCOVERING PSYCHOLOGY

PROGRAM 1: PAST, PRESENT, AND PROMISE

Overview

An introduction to and an overview of psychology, touching on a range of issues from the origins of psychology as a science to psychopathology; from the biochemistry of the brain to applied research.

Key Issues

Public versus private behavior, the nature of prejudice, the P300 brain wave, the biology of racism, molecular versus molar levels of analysis, and the origins of psychology.

Archival Demonstrations

Demonstration of a client with Multiple Personality Disorder.
Candid Camera clip demonstrating the difference between public and private behavior.

Archival Interviews

Emanuel Donchin examines the relationship between P300 brain waves and surprise.
Robert Rosenthal discusses body language.

New Interviews
Christine Ijima Hall considers the nature of prejudice.

**FILMS AND VIDEOS**

*Career Encounters in Psychology (1991). American Psychological Association, 30 minutes*

Several psychologists from diverse subfields discuss their work and careers.

*Landmarks in Psychology*

Highlights the contributions of Freud, Jung, Adler, Pavlov, Sullivan, Homey, Maslow, Watson, and Skinner. Using historical narrative and case study dramatizations, the interpersonal, behavioral, humanistic, and existential approaches to psychology are explored.

**CASE STUDY LECTURE LAUNCHER**

*Case Study Lecture Enhancers* originally appeared in *Psychology and Life, 13th Edition* as openings for each chapter. They were subsequently omitted from the 14th edition to save space. The best of them are included here, because both instructors and students expressed an interest in using them again. This material is ideal for starting a lecture or for use as a major transition within a lecture.

As the runners lined up to start the 1986 NCAA 10,000-meter championship, Kathy O. was the odds-on favorite. She had broken high school track records in three distances and recently set a new American collegiate record for the 10,000-meter race. Her parents, who were always supportive fans, watched from the sidelines. Kathy got off to a slow start, but was only a few paces behind the leaders. Her fans knew she could soon catch up. However, this time Kathy did not bolt to the lead as she had done before. Instead, she veered away from the other runners. Without breaking her stride, she ran off the track, scaled a 7-foot fence, raced down a side street, and jumped off a 50-foot bridge. Ten minutes later, her coach found her on the concrete flood plain of the White River. She had two broken ribs, a punctured lung, and was paralyzed from the waist down. Not only would she never run again, she might never walk again.

What happened to Kathy? Why did she quit the race and nearly self-destruct? As a star athlete and premedical student on the Dean’s list, she had everything going for her. She had been valedictorian of her high school class. Teachers and coaches described her as sweet, sensible, diligent, courteous, and religious. Nobody understood her behavior. It did not make sense. Kathy’s father thought the tragedy “had something to do with the pressure that is put on young people to succeed.” Teammates felt the pressure may have come from within Kathy herself “She was a perfectionist,” said one of them. Determined to excel at everything, Kathy had studied relentlessly, even during team workouts.

How did Kathy explain her actions? She told an interviewer that she was overcome by the terrifying fear of failure as she began falling behind in the race. “All of a sudden ... I just felt like something snapped inside of me.” She felt angry and persecuted. These negative reactions were new to Kathy, and made her feel as if she were someone else. “I just wanted to run away,” she recalled. “I don’t see how I climbed that fence.... I just don’t feel like that person was me. I know that sounds strange, but I was just out of control.... I was watching everything that was happening and I couldn’t stop” (UPI, 12/22/86).

The case of Kathy O. raises fascinating questions for psychology. Personality, social, and developmental psychologists might ask how athletic ability, intelligence, parental support, competition, motivation to achieve, and personality traits combined to make Kathy a superstar in the first place. Clinical psychologists would want to know why something snapped in Kathy at this race, why feelings of anger were so foreign to her, and why she felt persecuted. Those who study the nature of consciousness would try to understand Kathy’s perception that she was outside of herself, unable to stop her flight toward death. Health psychologists and those who work in the area of sports psychology might try to identify signs of stress and clues in earlier behaviors that could have signaled an impending breakdown. Psychologists who emphasize the biological basis of behavior might consider the role of brain and hormonal factors in her
sudden, abnormal reaction. Are there any circumstances under which you might quit as Kathy O. did?

We may never completely understand what motivated Kathy’s behavior, but psychology provides the tools—research methods—and the scaffolding—theories about the causes of behavior—for exploring basic questions about who we are and why we think, feel, and act as we do. Psychologists are challenged to make sense of cases such as this one that violate ordinary conceptions about human nature. Their motivation is not only intellectual curiosity, but also a desire to discover how to help people in ways that might prevent such tragedies in the future.
LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Explain why the empirical study of psychology is important
2. Describe the theory behind and the benefits of the scientific method
3. Understand the importance of the scientific method to psychology
4. Elaborate on the role of control and bias in psychological research
5. Understand the importance of determinism to psychology in particular and science in general
6. Explain how psychologists attempt to eliminate alternative explanations through the use of control procedures
7. Understand the concept of correlation and its use in psychology
8. Explain why correlation does not imply causation
9. Appreciate how the approach taken by psychologists can be applied to aspects of students’ lives outside the classroom

CHAPTER OUTLINE
I. The Context of Discovery

A. The goal of this chapter is to improve students’ critical thinking skills by teaching them how to ask the right questions and how to evaluate answers about causes, consequences, and correlates of psychological phenomena. Ultimately, this chapter should make your students wiser, more skeptical consumers of psychological information specifically and all information generally.

1. The initial phase of research is observation, during which beliefs, information, and general knowledge suggest a new way of thinking about a phenomenon

2. Some research questions originate from direct observation, while others stem from “great unanswered questions” that have been passed down through history

3. A theory is an organized set of concepts that explains a phenomenon or set of phenomena

4. Determinism rests at the core of psychology. Determinism is the belief that all events, whether physical, mental, or behavioral, are the result of, or determined by, specific causal factors. Because of determinism, all behavior and mental processes must follow lawful patterns. Psychologists attempt to reveal these lawful patterns in psychological principles.

5. A hypothesis is a tentative, testable prediction about the relationship between causes and consequences, or about how two or more variables are related. Research psychologists test hypotheses.
6. The scientific method demands that psychological researchers have an open, critical, skeptical mind. This open-mindedness makes conclusions provisional, subject to modifications by subsequent findings, and makes researchers open to new and controversial ideas.

7. Within experimental psychology, when evidence collected through quality research conflicts with the opinions or ideas of experts, the evidence, or data, wins.

8. Public verifiability is fundamental to psychology. Secrecy is forbidden, and psychologists must have the opportunity to inspect, criticize, replicate, or disprove the data and methods of other researchers.

II. The Context of Justification: Safeguards for Objectivity

A. The scientific method is a set of procedures for gathering and interpreting evidence in ways that help ensure that psychological research generates valid, reliable conclusions by minimizing sources of error.

B. Psychology is considered a science to the extent that it follows the scientific method.

C. Observer bias is an error due to the personal motives and expectations of the viewer. Personal biases of observers act as filters through which some things are noticed as relevant and significant, while others are ignored as irrelevant and unimportant.

D. The Remedy for Observer Bias: Standardization

   1. Standardization means using uniform procedures in all phases of the research process. All participants should experience exactly the same procedure, and other researchers should be able to replicate the procedure exactly.

   2. An operational definition standardizes the meaning of an event or procedure within an experiment. It is a specific definition of what is meant by a concept such as “self-esteem.” An operational definition may state that participants that score above a certain number on a self-esteem measure are considered “high,” while those that score below that number are considered “low.” All variables in an experiment must be given an operational definition.

   3. A variable is any factor that varies in amount or kind. Self-esteem is an example of a variable. Participants’ scores can vary from high to low. There are two types of variables.

      a) A variable that is free to vary and is manipulated by the experimenter is known as an independent variable. It is also the predictor variable in nonexperimental (e.g. correlational) research.

      b) A variable whose values are the result of changes in independent variables is known as a dependent variable. It is also the variable that is predicted in nonexperimental research.

      c) The experimental method — used to overcome causal ambiguity — manipulates an independent variable and then looks for an effect on a dependent variable.

   4. Alternative Explanations are simply other ways of explaining the results of an
experiment. The more alternative explanations that exist without refutation, the less confident a researcher can be that his or her predicted explanation or hypothesis is the correct one.

a) **Confounding variables** are extraneous influences not intended by the research to be a part of an experiment, but that may unwittingly affect experimental results. Because confounding variables are not accounted or controlled for, researchers cannot be certain whether their experimental manipulation or a confounding variable is responsible for experimental results. Two types of confounds apply to almost all experiments: *Expectancy and Placebo Effects*.

(i) **Expectancy effects** occur when a researcher subtly communicates to the participants the results that he or she expects to find. Participants may then behave in the desired manner.

(ii) **Placebo effects** occur when participants’ beliefs about the efficacy of a procedure lead to improvement in the participant. Participants can be given chemically inert pills, and, if they believe that the pills will make them improve, participants often do improve, due simply to the placebo effect. A component of the placebo effect is the belief that a manipulation will lead to improvement. This belief does not need to be grounded in reality. In many studies, about a third of participants are found to be positive placebo responders.

E. **Experimental Methods in Psychology**

1. **Control procedures** are methods that attempt to hold constant all variables and conditions other than those related to the hypothesis under investigation

   a) A **double-blind control** refers to a procedure in which both the participant and the experimental assistant administering a treatment are blind to, or unaware of, the experimental condition to which the participant is assigned.

   b) A **placebo control** is an experimental condition in which participants believe that they are receiving a treatment that may be effective, but in which they are actually receiving a treatment that is known not to be effective. By comparing the placebo control group with the group of participants that received the actual treatment, researchers can determine how much change in the participants is due to their beliefs (placebo effect) and how much is due to the treatment itself.

2. **Research designs**: Properly designed experiments are another way of ensuring that alternative explanations are kept to a minimum. By determining which alternative explanations are likely to be serious competitors to the explanation directly under investigation, researchers can incorporate conditions that test these alternative explanations in their research.

3. **Random assignment** is one of the most important aspects of research design. It helps ensure that the participants in each condition are as similar to each other as possible, because each participant has the same chance of being in each condition.

4. Because researchers would like to be able to generalize their findings from their sample, the participants in their study, to the larger population from
which the sample was drawn, the sample should be representative of the population, or a representive sample

5. In between-subjects designs, participants are randomly assigned to one experimental condition or one control condition. There may be more than one experimental condition, in which participants are exposed to different treatments, and there may be more than one control condition, in which participants are not exposed to those treatments. This allows researchers to account for alternative explanations. However, each participant is only in one condition.

6. In within-subjects designs, each participant serves as his or her own control, as they are assigned to at least two conditions, a control condition and an experimental condition. In a within-subjects experiment, a participant may be given a placebo, such as an inert sugar pill, and then given a treatment that is hypothesized to be effective. By comparing each participant’s change between the control (placebo) condition and the treatment condition, researchers can determine the efficacy of the treatment much more accurately.

7. A third type of research design is known as the A-B-A design. In the A-B-A design, each participant is assessed in a baseline condition, then given an experimental treatment, and then reassessed in the baseline condition. The A-B-A design is a within-subjects design.

F. Correlational methods are used to determine to what extent two variables, traits, or attitudes are related

1. The standard measure of correlation is a statistic called a correlation coefficient represented by “r”. r can vary between -1.0 and +1.0, where -1.0 represents a perfect negative correlation, and +1.0 represents a perfect positive correlation. A correlation of 0 indicates that there is no relationship between the variables. In much research on personality traits, r’s are modest—between .10 and .30.

2. A positive correlation means that as one set of two scores increases, so does the other set. For example, as height increases, weight also tends to increase.

3. A negative correlation means that as one set of scores increases, the other set decreases. For example, as physical exercise increases, weight tends to decrease.

4. A critical caveat to the correlational method is that correlation does not imply causation. Simply because a researcher finds that two variables are related does not mean that one variable necessarily causes the change in the other variable. This warning is important because it is difficult, if not impossible, to know which variable is causing the change in the other, and there is always the possibility that a third, unknown, variable is causing the change in both or is the key mediating variable between them.

   a) Psychological researchers have used the experimental method to demonstrate that subliminal self-help tapes offer nothing more than placebo effects.
III. Psychological Measurement

A. Two main challenges to psychological measurement: Achieving **Reliability** and achieving **Validity**

1. Reliability refers to the consistency or dependability of results from research. If we consider throwing darts at a dartboard, reliability would be measured by how closely the darts group together. If the darts reliably hit the same spot, even if it is not the bull’s-eye, the throws are reliable.

2. Validity refers to how accurately the research actually measures the psychological variable under study. For instance, does the self-esteem scale used in research accurately measure self-esteem, or does it measure something closer to self-presentation style? If we again consider throwing darts, validity would be measured by how closely the darts came to the spot that the thrower wanted to hit. If you wanted all of your darts to hit the bull’s-eye and they did, your throws would have been both valid (they hit the intended mark) and reliable (all of them hit the same mark).

B. **Self-Report Measures**

1. **Self-report measures** are written or spoken responses to questions posed by the researcher

   a) A **questionnaire** is a self-report measure on which a respondent replies to a written list of questions

   b) Questions on self-report measures may be **open-ended**, which allow respondents to answer freely in their own words, or **forced choice**, which provide respondents with a number of alternatives, such as “yes,” “no,” and “undecided,” from which to choose.

   c) An **interview** is an interactive dialogue between a researcher and an individual for obtaining detailed information. Good interviewers establish positive rapport with interviewees, which facilitates self-disclosure and responses that are more honest.

C. **Behavioral Measures and Observations**

1. **Behavioral measures and observations** are ways to study overt actions and observable, recordable reactions
a) Planned, controlled, systematic observation is an important source of behavioral data

b) Direct observation involves observation of behavior that is clearly visible and easily recorded

c) Naturalistic observation occurs in a natural setting, such as the playground or in the wild, rather than in an artificial, highly contrived laboratory setting

2. Case study research focuses on a single individual rather than on large numbers of participants.

IV. Ethical Issues in Human and Animal Research

A. At the core of the ethical treatment of both humans and animals is the question of whether the potential gains from the proposed research outweigh the expected or potential costs. Colleges have established review boards to help researchers make this decision, and the American Psychological Association (APA) has established guidelines to ensure that research is conducted ethically. For humans, these guidelines include the following:

B. Informed Consent

1. Whenever possible, participants must be informed about the nature of the experiment in which they may participate and, after being informed, must consent to participate. They are also informed that their consent is conditional and that they can withdraw it at any time without penalty.

C. Risk/Gain Assessment

1. Not only do researchers have a responsibility to weigh potential risks of an experiment against its potential benefits, they also have a responsibility to do everything in their power to minimize risk to participants, whether they are human or nonhuman, and to optimize the possible benefits to the participants and to society

D. Intentional Deception: APA guidelines make it clear that intentional deception is justified only if:

1. The study has sufficient scientific and educational importance to warrant deception
2. There is no equally effective alternative to deception
3. Participants are not deceived concerning aspects of the experiment that would affect their willingness to participate
4. The deception, and the reasons for it, is fully explained to the participants at the conclusion of the research

E. Debriefing

1. At the conclusion of participation in an experiment, each participant must be
told the rationale for the experiment. This debriefing gives the participant an opportunity to learn about psychology and themselves, and allows them to appreciate more fully their experience in the experiment.

F. Issues in Animal Research: Science, Ethics, Politics

1. The benefits of animal research include: development and assessment of drugs that treat anxiety, mental illness, and Parkinson’s disease; knowledge about drug addition and neuromuscular disorders, and possible treatments and cures for AIDS. Animal research not only benefits humans, but has led to many important vaccines for animals as well.

2. Despite these accomplishments, some believe that it is immoral and inappropriate to use animals in research.
   
   a) Animals cannot be informed about the nature of the experiment and thus cannot give their informed consent, as the APA requires with humans.

b) Because of the sensitive nature of the debate and the fact that animals cannot give informed consent, reasoned proponents of animal rights create a moral context in which individual researchers must judge their research under the highest level of compassion and scrutiny.

   c) Just as it has for human participants, the APA has set strict guidelines for the treatment of nonhuman participants. These guidelines state that:

   (i) Facilities for nonhuman participants must be adequate in size, be well maintained, and have qualified staff.

   (ii) The health of the animals and their general well-being must be monitored.

   (iii) Every effort must be made to minimize pain and discomfort for the animals.

   (iv) Alternative, less stressful procedures, such as computer modeling, must be used whenever possible.

V. Becoming a Wiser Research Consumer

A. One goal of *Psychology and Life, 16th Edition* is to help your students become more critical thinkers. Critical thinking goes beyond the information given and delves beneath slick appearances, with the goal of understanding substance without being seduced by style. Some general rules to keep in mind to be a more critical thinker include:

1. Avoid the assumption that correlation equals causation. It does not.

2. Be sure that critical terms and concepts are operationally defined so that you can be sure of their meaning.

3. Before seeking confirming evidence for a theory, look for disconfirming evidence. Confirming evidence is easy to find when you are looking for it.
4. Always seek alternative explanations that explain results more simply or completely, especially when researchers have a stake in the proposed explanation. Occam’s Razor is a rule of thumb that proposes that parsimonious, simple explanations are preferable to complex ones.

5. Be alert for signs that personal biases may have distorted the research process and findings

6. Be suspicious of simple answers to complex problems

7. When confronted with claims that something is more effective, better, or superior, be sure that you understand to what it is being compared

8. Maintain an open mind and a healthy skepticism. All conclusions are subject to revision, and some truly novel, bizarre ideas will be correct.

9. Challenge authority that is unjust, values opinion over evidence, and is not open to constructive criticism

10. Of course, all of these suggestions should be applied to your reading of *Psychology and Life!*
DISCUSSION QUESTIONS

1. What role does the scientific method play in contemporary psychology? What are the limitations of the scientific method, and are there any better alternatives available? Students are often skeptical of the scientific method and are eager to point out its flaws, such as the slow incremental progress it generates, its reliance on measurable phenomena, its susceptibility to experimenter biases, and its sterile methodology. Students often fail to realize, however, that, although it may be flawed, the scientific method is the best tool we have to generate valid, reliable knowledge and that it has provided us with a wealth of discoveries.

2. What psychological principles have become part of the larger culture, have penetrated our thinking and language? Psychological principles permeate advertising, marketing, television, movies, sales, self-help books, fashion, politics, and folk wisdom, to name a few, but students are often unaware of this influence. Pointing out this influence is a good way to keep your students’ interest. For example, the concept of “psychological stress,” so prevalent in our cultural landscape, was rarely mentioned 50 years ago.

3. Ask your students how many of them believe in determinism. Then ask them many of them believe in free will. Insist that they cannot have it both ways. You will be surprised to find that many, if not most, students believe in free will. This is a terrific discussion starter, because it conflicts with one of the fundamental assumptions of science and psychology—determinism. You might ask your students what science can hope to reveal if the world is not determined. You might also suggest that what feels like free will to us may be thinly disguised determinism. This simple discussion is often enough to change the manner in which students view themselves and the manner in which they view those around them.

SUPPLEMENTAL LECTURE MATERIAL

The Ethics of Animal Research

The use of animals in research is a controversial topic, and one certain to generate animated class discussion. One reason that it is controversial is that it touches on fundamental values, attitudes, and ethical and moral issues. Psychologists are interested in these issues from both a scientific and a human perspective. As scientists, psychologists may ask why others are so emotionally captivated by the issue, why some individuals seem more concerned with protecting animals than with protecting humans, why a secure life in a cage is worse than an uncertain life in the wild, and what scientific justification there is to preclude research on animals. As humans, psychologists may be moved by compassion for caged animals, feel empathy at the animals lack of understanding of what is happening to them, and be morally convinced that researchers have no more right to force an animal to participate in research than they do in forcing humans to participate.

Of course, there are no easy answers to these questions, but there is an interesting way to view animal research that many people have not considered. Animal research benefits humans to the extent that findings from research with them are generalizable to humans. Because of this problem of transfer of results from animals to humans, the most beneficial research is often done on animals that are most closely related to humans, such as chimpanzees. For example, much research on FHV and ADDS is done on monkeys, because their immune systems function much like humans and because they are susceptible to a virus, SIV, that is closely related to FHV. These monkeys, however, share 99 percent of their genetic material with humans. If the reason that we do not use humans in some types of research is because it is unethical, it would seem that the more closely an animal was related to humans, the less ethical it would be to use them in similar research. An argument can be made that the more closely an animal is related to humans, the more like a human it should be treated. According to this reasoning, chimpanzees should be treated like human participants. Thus, there is a quandary between how generalizable animal research is to humans...
and how much like humans animals should be treated. What do your students think about this line of reasoning?

**Experimental Design**

The overarching goals of the following exercise are to demonstrate how psychology and the scientific method can be used to address issues that interest your students, to teach them how the concepts they are learning influence experimental design, and to impress on them an appreciation for the challenges faced by experimental psychologists. Lead your class through the process of designing an experiment. Start with a hypothesis generated through brainstorming by the class. Allowing your students to provide the hypothesis ensures that it will interest them and that they will stay engaged. Students may start with topics such as alien abduction, crop circles, and the Loch Ness monster. Welcome this, as it gives you a terrific opportunity to talk about alternative explanations, existence proofs, and the fact that some topics, such as the proof of the existence of God, remain firmly outside the boundaries of science. The scientific method is not a panacea; it is a highly structured method for testing measurable factors and relationships. After your class has agreed on an issue to test, lead them toward a consensus, testable hypothesis about the issue. Once your class has clearly defined a hypothesis, lead them through a discussion of possible alternative explanations. Challenge their hypothesis and their beliefs. Are there other possible explanations that are more simple and more likely? What assumptions and possible biases underlie their hypothesis? How would the hypothesis (and their assumptions and biases) generated by your class be different than explanations put forward by people from different cultures and different times? You might want to mention that spirit possession was a widely held explanation for mental illness until relatively recently. After listing a number of possible alternative explanations, allow your class to suggest a very basic methodology for testing the hypothesis and eliminating the alternative explanations. You might want to give them a head start by suggesting the kind of data that they would need to collect to measure the variables of interest. Depending on the hypothesis chosen and the sophistication of your class, outlining a reasonable experiment may be a difficult process. If the class begins to show signs of overload, you can quickly switch gears and use the exercise to demonstrate the difficulty in designing and executing well-controlled experiments.
**BIOGRAPHICAL PROFILES**

**Sir Francis Galton (1822–1911)**

Few psychologists are credited with more firsts than Galton, the cousin of Charles Darwin. A child prodigy, Galton could read by 2½ years old and by six was reading Shakespeare for pleasure. He graduated from Cambridge University in 1843, but never obtained a graduate degree. Because he was independently wealthy, as were many early psychologists, Galton was free to follow his passion, and his passion led him to measurement, first of geography and then of humans. Galton first gained fame as a cartographer for the Royal Geographical Society on a trip to Africa. On his return to England, Galton took his cousin’s notion of the importance of individual differences to evolution, and set about measuring these differences in humans. Galton was the first to use questionnaires, the first to study the nature–nurture controversy, the first to use a word-association test, the first to study twins, and the first to study intelligence testing seriously. Galton’s work also spawned the creation of the ubiquitous correlation coefficient, \( r \), by his student Charles Spearman.

**Edward Titchener (1867–1927)**

Edward Titchener attended Oxford from 1885 to 1890, where he became interested in experimental psychology and translated Wundt’s *Principles of Physiological Psychology* into English. After graduating from Oxford, Titchener spent two years studying with Wundt in Leipzig. After receiving his Ph.D. in 1892, Titchener took a job at Cornell University, where he remained for his entire career. While at Cornell, Titchener developed a thriving department and became the leading exponent of structuralism in America. Titchener adopted Wundt’s technique of introspection to the study of observable conscious events and sought to describe the contents of mental life. Although not successful in his goal of creating a periodic table of mental events, much like the periodic table of physical elements, Titchener exerted a profound influence over the development of psychology in America, through both his ideas and the ambitious research program that he led at Cornell.
### TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1811</td>
<td>Charles Bell and Francois Magendie discovered that there are two types of nerves: sensory and motor nerves.</td>
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<td>1827</td>
<td>Ludwig von Beethoven died.</td>
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<td>1838</td>
<td>Johannes Müller articulated his “Doctrine of Specific Nerve Energies.”</td>
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<td>1846</td>
<td>Ernst Weber derived the quantitative relationships between subjective experience and physical stimulation, known as Weber’s Law.</td>
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<td>1848</td>
<td>Marx and Engels published the <em>Communist Manifesto</em>.</td>
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<tr>
<td>1860</td>
<td>Gustav Fechner published <em>Elements of Psychophysics</em>, which outlined the experimental study of the relationship between subjective experience and physical stimulation.</td>
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<tr>
<td>1861-1865</td>
<td>The American Civil War was fought.</td>
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<tr>
<td>1872</td>
<td>Claude Monet painted <em>Impression – Sunrise, Le Havre</em>, the painting that lent its name to the Impressionist movement.</td>
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<tr>
<td>1885</td>
<td>Hermann Ebbinghaus published his empirical research on memory.</td>
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<tr>
<td>1890</td>
<td>William James published the <em>Principles of Psychology</em>, a two-volume text that became the standard reference for psychology students.</td>
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<tr>
<td>1896</td>
<td>Thomas Edison invented the motion picture.</td>
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<td>1898</td>
<td>Edward Thorndike conducted the first systematic experiments on animal learning.</td>
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<td>1905</td>
<td>Alfred Binet and Theodore Simon developed the first useful intelligence test.</td>
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<tr>
<td>1906</td>
<td>Charles Sherrington published <em>Integrative Actions of the Nervous System</em>, which set forth the basic principles and terminology used today to describe the structure and function of the nervous system.</td>
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<tr>
<td>1913</td>
<td>John Watson published “Psychology as the Behaviorist Views It,” sometimes referred to as the Behaviorist Manifesto, an influential paper asserting that psychology should restrict its subject matter to observable behavior.</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<td>1928</td>
<td>Ivan Pavlov published <em>Lectures on Conditioned Reflexes</em>, a survey of his research on classical conditioning.</td>
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<tr>
<td>1938</td>
<td>B. F. Skinner published <em>Behavior of Organism: An Experimental Analysis</em>, which outlined the basic principles of operant conditioning.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<td>1946</td>
<td>The American Psychological Association was reorganized to include practitioner psychologists,</td>
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as well as research psychologists.

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<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1957</td>
<td>Noam Chomsky published <em>Syntactic Structures</em>, inaugurating an era of productive collaboration between psychologists and linguists. Psycholinguistics soon became a flourishing field of psychology.</td>
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<tr>
<td>1962</td>
<td>David Hubel and Thorston Weisel published their research on how specific features of visual stimuli excite specific neurons in the visual cortex.</td>
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<tr>
<td>1981</td>
<td>Roger Sperry received the Nobel Prize for his pioneering work on the split-brain phenomenon.</td>
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**SUGGESTIONS FOR FURTHER READINGS**


**DISCOVERING PSYCHOLOGY**

**PROGRAM 2: UNDERSTANDING RESEARCH**

**Overview**

An examination of the scientific method and the ways in which data are collected and applied— in the lab and in the field — with an emphasis on sharpening critical thinking regarding research findings.

**Key Issues**

The power of belief, the placebo effect, the double blind procedure, the scientific method and psychology, and lie detection.

**New Interviews**

Christina Maslach takes an in-depth look at applied research.
**FILMS AND VIDEOS**

*Flatland (1965). Contemporary Films, 12 minutes*

When a “square” from the two-dimensional world of Flatland tries to convince others of the existence of a third dimension, he is harshly persecuted. This animated film illustrates beautifully the scientific ideals of objectivity and openness to change.
CHAPTER 3
The Biological Bases of Behavior

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Understand how biology contributes to the creation of unique individuals
2. Appreciate the complex interplay among the brain, mind, behavior, and environment that creates the unique experience of being human
3. Understand the nature versus nurture and the heredity versus environment controversies
4. Explain Darwin’s Theory of Natural Selection and its relevance and importance to the field of psychology
5. Offer examples when given the statement, “Genes do not code for destinies; they code for potential”
6. Describe the various methods for exploring the functions of the nervous system
7. Identify the structures and functions of the central nervous system, the peripheral nervous system, and the autonomic nervous system
8. Describe the major structures of the brain, and identify their function
9. Explicate the basic functions of the glands in the endocrine system, and explain the role of neurotransmitters

CHAPTER OUTLINE

I. Heredity and Behavior
   A. End points of Causal Explanation
      1. Nature versus Nurture
      2. Heredity versus Environment
   B. Evolution and Natural Selection
      1. Natural Selection: Fundamental assumption of psychology
         a) Charles Darwin published *The Origin of the Species* in 1859
         b) Survival of the fittest: Only those organisms most adapted to the environment survive
      2. Genotypes: A specific genetic structure
      3. Phenotypes: Outward appearance and repertory of behaviors
      4. Genotype and the environment interact to yield a particular phenotype
   C. Human Evolution
      1. Human evolution favored two adaptations: Bipedalism and Encephalization
CHAPTER 3: THE BIOLOGICAL BASES OF BEHAVIOR

a) Bipedalism: the ability to walk upright
b) Encephalization: increases in brain size

2. Language: A third critical evolutionary milestone for humans
   a) Language is the basis of cultural evolution—the ability of cultures to respond adaptively, through learning, to environmental change. Works much more quickly than genetic evolution.

D. Variation in the Human Genotype
1. Basic Genetics
   a) Genes: Organized packets of DNA that contain the instructions for the production of proteins
   b) Genes are found on rod-like structures known as chromosomes. Humans contain 46 chromosomes, 23 from the mother and 23 from the father.
   c) Estimates of the number of genes in the human genome range from 30,000 to 150,000
   d) The X and Y sex chromosomes determine sex. One X comes from the mother, and either an X or a Y comes from the father. XX = female. XY = male.

2. Genes and Behavior: the interaction of psychology and genetics
   a) Biology (genes) is (are) not destiny
   b) Genes only determine the range of effects that the environment can have in shaping phenotype and behavior
   c) The person that you become is jointly determined by genes and the environment, by nature and nurture

3. Sociobiology focuses on evolutionary explanations for social behavior and social systems of humans and other animal species

II. Biology and Behavior
A. Early Explanations of Behavior
   1. Rene Descartes argued that human physiology could be studied empirically, that humans are just an animal machine, and that human action is a mechanical response to the environment
   2. Sir Charles Sherrington provided evidence for Descartes’ ideas and suggested that the human nervous system involves both excitatory and inhibitory processes
   3. Santiago Ramón y Cajal detected the physical gaps between adjacent neurons
   4. Donald Hebb proposed that the brain is not merely a mass of tissue but a highly integrated series of structures, or cell assemblies, that perform specific functions
   5. Neuroscience is one of the most rapidly growing areas of research today

B. Eavesdropping on the Brain
   1. Broca’s Area: The region of the brain that translates thoughts into speech
2. Producing brain lesions
   a) Not done on humans for obvious ethical reasons
   b) Helpful in treating some neurological disorders such as epilepsy
3. Electrical stimulation
   a) Walter Hess found that sleep, sexual arousal, anxiety, and terror could be turned on and off by electrically stimulating specific areas of the brain
4. Recording and imaging brain activity
   a) Electroencephalogram (EEG) records large, integrated patterns of brain electrical activity
   b) Positron-Emission Tomography (PET) scans construct a dynamic portrait of the brain by detecting how radioactive (but safe) substances are processed in the brain during different cognitive and behavioral activities
   c) Magnetic Resonance Imaging (MRI) uses pulses of energy to cause atoms to align with a magnetic field. Special radio receivers then monitor the rate at which atoms decay from alignment once the energy pulse is complete. Computers analyze this information to create dynamic models of brain activity.

C. The Nervous System
1. Comprised of two major divisions
   a) The central nervous system (CNS), comprised of all the neurons in the brain and spinal cord
   b) The peripheral nervous system (PNS), comprised of all the neurons forming the nerve fibers that connect the CNS to the body
2. The Central Nervous System (CNS)
   a) Integrates and coordinates all bodily functions, processes all incoming neural messages, and sends commands to different parts of the body
   b) Relies on PNS for information from sensory receptors
3. The Peripheral Nervous System (PNS)
   a) Provides the CNS with sensory information and relays commands from the brain to the body’s organs and muscles
   b) Composed of two subdivisions
      (1) The Somatic Nervous System (SNS), which regulates the actions of skeletal muscles
      (2) The Autonomic Nervous System (ANS), which sustains basic life processes, further divided into two subdivisions:
         (i) The Sympathetic Division governs response to emergencies
         (ii) The Parasympathetic Division governs routine operation of internal bodily functions

D. Brain Structures and Their Functions
1. The brain is the most important component of the CNS and is composed of three layers: the brain stem, the limbic system, and the cerebrum
2. **The Brain Stem**
   
a) The *Medulla*, located at the top of the spinal cord, controls breathing, blood pressure, and the heart

b) The *Pons*, located directly above the Medulla, provides inputs to other structures of the brain stem and to the cerebellum

c) The *Reticular Formation*, located between the Medulla and Pons, arouses the cerebral cortex to new stimulation and keeps the brain alert even during sleep

d) The *Thalamus*, located above the Pons, receives input from the reticular formation and channels incoming sensory information to the appropriate area of the cerebral cortex

e) The *Cerebellum*, located attached to the brain stem at the base of the skull, coordinates bodily movements and plays a role in some types of learning

3. **The Limbic System** mediates motivated behaviors, emotional states, and memory processes and is composed of three structures:
   
a) The *Hippocampus* plays an important role in the acquisition of explicit memories—memories that you are aware of retrieving

b) The *Amygdala* plays a role in emotional control and the formation of emotional memories, especially those related to threat and danger

c) The *Hypothalamus* plays a role in maintaining homeostasis such as body weight, temperature, and the endocrine system

4. **The Cerebrum** regulates higher emotional and cognitive functions
   
a) The *Cerebral Cortex* is the thin outer layer of the cerebrum

b) The cerebrum is also divided into two symmetrical halves, the *cerebral hemispheres*

c) The two cerebral hemispheres are connected by a thick mass of nerve fibers called the *corpus callosum*, which relays messages between hemispheres

d) Grooves in the cerebrum, called the *Central Sulcus* and the *Lateral Fissure*, help divide each cerebral hemisphere into four lobes

e) The *Frontal lobe* is located at the front of the cerebrum and is involved in motor control and cognitive activities such as planning, decision making, and goal setting

f) The *Parietal lobe* is located at the top of the cerebrum and is responsible for the sensations of touch, pain, and temperature

g) The *Occipital lobe* is located at the back of the cerebrum and is responsible for visual processing

h) The *Temporal lobe* is located at the side of the cerebrum and is responsible for auditory processing

i) The hemispheres and lobes of the brain do not function independently, rather they work as an integrated unit similar to an orchestra
j) The Motor Cortex, located in front of the central sulcus, controls movement of the body’s voluntary muscles

k) The Somatosensory Cortex, located behind the central sulcus in the parietal lobes, processes information about temperature, touch, body position, and pain

l) The Auditory Cortex, located in the temporal lobes, processes auditory information

m) The Visual Cortex, located in the occipital lobes, processes visual information

n) The Association Cortex, which includes all of the cortex that is unlabeled, works to interpret and integrate information from many parts of the brain

5. Hemispheric Lateralization
   a) Roger Sperry and Michael Gazzaniga devised situations that could allow visual information to be presented separately to each hemisphere.
   b) Information from the right visual field goes to the left hemisphere, and information from the left visual field goes to the right hemisphere.
   c) Speech may be the most highly lateralized of all brain functions. For most people, speech is a left hemisphere function.
   d) The left hemisphere tends to be more analytical, processing information bit by bit.
   e) The right hemisphere tends to be more holistic, processing information in global patterns.
   f) There may be gender differences in lateralization. When making judgments, the left hemispheres of males showed more activity, while both hemispheres of females showed activity.

E. The Endocrine System

1. A highly complex communication system comprised of a network of glands that supplements the work of the nervous system
   a) Hormones—“the messengers of life”—are chemicals secreted by the glands of the endocrine system. They influence sexual development, physical growth, moods, arousal level, immune functioning, and metabolism rate.

2. The Hypothalamus serves as an intermediary between the endocrine system and the nervous system. Messages from the brain cause the hypothalamus to release hormones to the pituitary gland.

3. The Pituitary Gland, the “master gland,” secretes about ten different types of hormones, which influence the functioning of all other endocrine system glands, and influences growth
   a) In males, the pituitary gland activates secretion of testosterone, which leads to sperm production.
   b) In females, the pituitary gland activates secretion of estrogen, which is essential to the release of eggs from the ovaries.
III. The Nervous System in Action

A. The Neuron

1. The neuron is a cell specialized to receive, process, and transmit information to other cells. There are at least 200 different types of neurons, which are typically comprised of dendrites, soma, axon, and terminal buttons.

   a) *Dendrites* are branched fibers that extend outward from the body of the neuron and that receive messages from other neurons

   b) The *Soma*, or cell body, integrates information received by the dendrites and passes it along to the axon

   c) The *Axon* is a single extended fiber that conducts information to terminal buttons

   d) *Terminal buttons* are bulblike structures that secrete neurotransmitters which influence other neurons

2. There are three major classes of neurons: sensory neurons, motor neurons, and interneurons

   a) *Sensory neurons* carry messages from sense receptors toward the CNS

   b) Motor neurons carry messages from the CNS to the muscles and glands

   c) Interneurons carry messages between different neurons

3. *Glia cells*, derived from the Greek word for “glue,” outnumber neurons in the brain by about five or ten to one and perform three primary functions: housekeeping, insulation, and protection of the brain

   a) *Development*: Glia cells help guide newborn neurons to appropriate locations in the brain

   b) *Housekeeping*: Glia cells clean up after neurons die and absorb excess neurotransmitters

   c) *Insulation*: Glia cells form a myelin sheath around the axon of some types of neurons, greatly increasing the conduction speed of the axon

   d) *Protection*: Glia cells form a blood-brain barrier that prevents toxins from reaching the brain

B. Action Potentials

1. Neurons send messages in an all-or-none fashion through action potentials traveling down the axon, and they receive messages in the form of graded potentials through the dendrites

   a) *Excitatory input* increases the likelihood that a neuron will fire

   b) *Inhibitory input* decreases the likelihood that a neuron will fire

   c) *Graded Potentials* are generated by excitatory inputs and vary in size according to the magnitude of the stimulation. One graded potential is often not enough to cause a neuron to fire
d) *Temporal Summation* involves several excitatory or inhibitory inputs from the same source over time.

e) *Spatial Summation* involves several excitatory or inhibitory inputs from different sources at the same time.

2. The Biochemical Basis of Action Potentials

   a) *An Action Potential* begins when excitatory inputs are strong enough to overcome inhibitory inputs and involves depolarization of the neuron by sodium ions rushing into the cell.

   b) *Resting Potential* is the slightly negative voltage of a neuron in a resting state.

   c) *Ion Channels* in neuron membranes respond to changes in excitatory and inhibitory input. Excitatory input causes the ion channels to allow sodium ions into the neuron, allowing the neuron to fire. Inhibitory input causes the ion channels to keep the neuron negatively charged, preventing the neuron from firing.

   d) The action potential then travels down the axon as adjacent areas of the axon successively depolarize.

   e) When the fluid inside the neuron becomes positive, the sodium ion channels close and potassium ion channels open, allowing potassium ions to exit the cell, restoring negative charge of the neuron.

   f) Action potentials obey the *All-or-None Law*. The size of the action potential is not influenced by the intensity of stimulation beyond the threshold level.

   g) After firing, neurons enter a *Refractory Period*, a period during which they cannot fire or will only fire with more intense stimulation than normal.

C. Synaptic Transmission

1. Transmission of neural impulses between neurons involves the movement of neurotransmitters across the synaptic cleft.

   a) A *Synapse* is a small physical gap between neurons.

   b) Once an action potential reaches an axon terminal button, vesicles release neurotransmitters into the synaptic gap chemical substances that stimulate other neurons. The neurotransmitters then traverse across the synaptic gap and attach to receptor molecules embedded in the postsynaptic neuron membrane.

D. Neurotransmitters and Their Functions

1. At least 60 substances are suspected to function as neurotransmitters in the brain.

2. *Acetylcholine*, a neurotransmitter found in both the central and peripheral nervous systems, is implicated in memory loss associated with Alzheimer’s disease and in some types of respiratory failure.

3. *Gamma-Amino Butyric Acid (GABA)* is thought to be related to anxiety, as depressants bind to receptor molecules sensitive to GABA and cause sedation.

4. *Catecholamines* such as dopamine and norepinephrine play prominent roles in mood disturbances and schizophrenia.
 CHAPTER 3: THE BIOLOGICAL BASES OF BEHAVIOR

a) Decreased levels of norepinephrine have been related to depression
b) Increased levels of dopamine have been related to schizophrenia

5. Serotonin is involved in autonomic processes, arousal, and depression

6. Endorphins are neuromodulators that modify the activities of postsynaptic neurons and may play an important role in emotional behaviors

DISCUSSION QUESTIONS

1. A fundamental, yet often overlooked, assumption of this chapter is that Darwin’s Theory of Natural Selection accurately explains how humans reached our current stage of development. Indeed, it has become so well accepted that few students will stop to wonder how this chapter would be different if it were incorrect. But what if it was wrong? What other possible explanations could be put forward to explain how we are and how we got this way? Such questions lie at the heart of religion, psychology, and what it means to be human. Just over 100 years ago, Lamark’s theory of acquired characteristics was relatively well accepted. Five hundred years ago asking such questions was blasphemous. How may we look at human evolution, creation, or development differently 100 years in the future?

2. A second important question relating to natural selection is whether humans continue to evolve. Fewer and fewer genes are being removed from the gene pool as environmental threats are identified and eliminated. Because fewer individuals succumb to environmental threats, most humans are able to survive to reproductive maturity and perpetuate their genes. What does this successful elimination of environmental threats portend for the long-term survivability of our species?

3. A third related question is what comes after natural selection after environmental threats are eliminated and everyone reproduces? What forces will shape the development of humans in the absence of environmental threats? Social Darwinism? Cultural evolution? Technological forces? Eugenics?

4. To what extent can individuals be held accountable for their biology? Should an individual with a tumor that causes extraordinarily high levels of testosterone to be released receive the same sentence for a violent crime as someone without such a tumor? What if the tumor caused a mental disorder such as schizophrenia? Could the insanity defense be used?

5. Parents want what is best for their children. They often go to such lengths as choosing homes near good schools and sending their children to all sorts of musical, athletic, and academic lessons. What if the need for all of these expensive lessons would be eliminated if the parents chose their children’s genes wisely before the children were born? What if your parents had selected your genes so that you were better looking, smarter, more athletic, or more artistically inclined? Would such decisions be ethical? Would you want to make them for your children? Would you have wanted your parents to make them for you? Why or why not?

6. With the advent of modern brain imaging and scanning technologies, the way in which “death” is often determined has also changed. Where as years ago death was determined by the cessation of breathing and the lack of a pulse, now it is additionally determined by the lack of brain activity. This has made the determination of when someone has actually died much more complicated in many cases. Cases are commonly reported of people who have drowned or have been frozen, who have not breathed for dozens of minutes and who have had no heartbeat when found, who were revived, and sometimes have made complete recoveries. On the other hand there are also tragic
cases of people who have been injured in accidents who are breathing and have a pulse, but are labeled “brain dead.” You might discuss what “brain death” means and explore both the medical and moral issues related to these situations.

7. Have students pick at least one task that they would normally do with their dominant hand, and have them do it with the other hand. Writing a short in-class assignment can be fun. But you can brainstorm and see what ideas they come up with. Ask students to discuss what problems they encountered while trying to do things with the opposite hand.

SUPPLEMENTAL LECTURE MATERIAL

Protecting the Brain

Although the bony skull usually does a good protective job, many brains are still injured in auto and motorcycle accidents, sports, and even at the hands of parents. Failure to wear seat belts, motorcycle or bicycle helmets, or the right protective sports equipment can result in permanent damage to some of the brain’s functioning.

“Many slow-learning and clumsy children with IQs in the 90s,” says pediatrician John Caffey, might have been intelligent and normally mobile children with IQs of 120, had they not been habitually shaken and whiplashed during infancy.” Overenthusiastic bouncing of a baby before its neck muscles are strong enough to support the head may result in broken vessels that deprive the brain of blood and thus retard the growth of parts of the brain. Angry slaps on the head and neck can have similar negative consequences, even for older children.

Drugs that alter brain functions can have permanent effects if taken in excess. Some drugs, like the chemicals in glue, when inhaled can lead to death or a lifetime of mental retardation. Brains, especially young ones, need lots of oxygen and good nutrition. They are adversely affected by pollutants in the environment, especially when children chew on flakes of paint that contain lead.

Although children sustain head trauma in various ways, the most common source is from blows to the head by an adult, followed by falls from bicycles. Sadly, in a fall from a bicycle or motorcycle, the area of the brain most likely to be traumatized is the frontal lobe, the area of the brain responsible for planning, organization, and decision-making.

Aphasias: Frontal and Temporal Lobe Injuries

An aphasia, by definition, is difficulty in producing or comprehending speech when that difficulty is not produced by deafness or a simple motor deficit, but caused by brain damage. Paul Broca first identified this deficit in his observations of patients who had been injured in the area of the brain known today as the left frontal lobe. Although Broca was unable to conduct ablations on his patients, at the autopsies following their deaths, he repeatedly found an injury to the same area of the brain in those patients who had manifested difficulty in the production of speech. His work was eventually connected to that of Karl Wernicke, who found a similar area in the left temporal lobe and observed that trauma to this area resulted in poor comprehension of speech. Taken together, we now refer to the areas pinpointed by Broca and Wernicke as the “language center” of the brain. Individually, we refer to these areas as Broca’s area and Wernicke’s area.

Neuroglial Cells: The Glue of Life

The term glia is derived from the Greek word for glue and is an appropriate name for the cells that surround
all neurons, sealing them together. Glial cells outnumber neurons ten to one, and, though tiny in size, make up half of the bulk of the brain. Unlike neurons, glia do not possess excitable membranes and so cannot transmit information. Glia can take up, manufacture, and release chemical transmitters, and in so doing may help to maintain or regulate synaptic transmission. Another hypothesis is that glia can manufacture and possibly transmit other kinds of molecules, such as proteins. The anatomy of some glial cells is striking in this regard, for they seem to form a conduit between blood vessels and neurons, and may bring nourishment to the neurons. It is thought that these cells may have important functions during prenatal development and recovery from brain injury. One role of glia is known definitely: Certain kinds of glia, called by the tongue-twisting name of oligodendroglia, form the myelin sheath that insulates axons and speeds conduction of the nerve impulse. A counterpart called a schwann cell performs the same role for the peripheral nerves.

The study of glia is difficult because these tiny cells are inextricably entwined with neurons. As the most numerous type of cell in the brain, their potential importance is vast, and investigation of their function seems likely to yield exciting results in the near future.

Charles Darwin and Natural Selection: A Taproot of Contemporary Psychology

Charles Darwin, and his theory of natural selection, had a greater impact on the development of modern psychology than anyone else, and continues to have a profound effect on all of the natural sciences. Natural selection is the one assumption with which most natural scientists agree, although its exact mechanisms may be disputed. Darwin, a naturalist, published his theory of evolution in a book entitled *On the Origin of the Species by Natural Selection* in 1859, about 20 years before the birth of experimental psychology.

Darwin’s ideas have shaped contemporary psychology in the following ways:

1. **Continuity between Animals and Humans.** This idea was difficult for society to accept, because humans assumed that they were the crowning glory of creation and not subject to the natural laws as were members of the animal kingdom. Even those scientists who applauded Darwin’s theory had some difficulty in accepting the idea that evolution applied to humankind.

2. **Individual Differences.** The various members of a given species may have many characteristics in common, but there are also differences among those members—individuals—that can determine whether the “fitness” of their offspring will enable them to compete successfully in the battle for survival.

3. **The Importance of Adaptability.** Survival depends on the ability of an organism to adapt to the environment and to changes in that environment. Failure to adapt means extinction. Ninety-nine percent of all organisms that have even lived on earth are already extinct.

4. **The Importance of the Environment.** The surrounding environment changes, over time, and “fitness” means making the various physical and behavioral changes that are appropriate for survival.

5. **Emphasis on Change.** Before evolutionary theory, the commonly held view was that the earth and its inhabitants were immutable and static. Darwin’s portrayal of nature is dynamic, mutable, and interacting.

Darwin’s ideas influenced many psychologists, including Freud, Watson, Skinner, and James. The most apparent legacy from Darwin to Freud’s theory was the idea of the continuity of animals and humans. Freud thought humans were driven by the same instincts that motivate other animals—insects to survive
and reproduce. According to Freud, people have no inherently higher nature than do animals, and whatever in humans may be higher (sympathy, altruism, unselfishness) is a product of the processes of repression and reasoning. In Freud’s perspective, the dominant force in the structure of personality is the id (the representation of the instincts for survival and reproduction), but humans develop other aspects of personality to control these instincts in order to adapt to communal lifestyles. Communal living is important in terms of adaptive behavior for humans because humans are rather weak creatures compared to the large predators.

The idea of continuity between animals and humans also influenced the behaviorist theories of Watson and Skinner. Watson began his career as an animal psychologist believing, as later did Skinner, that the basic principles of behavior can be discovered by studying the behavior of animals. Though behaviorists do not deny individual differences in genetic endowment, they do tend to place greater emphasis on environmental determinants of behavior. Skinner emphasized learning rather than innate factors as being the antecedent of behavior, believing that through a process of trial and error, organisms learn which behaviors lead to reinforcement—things that ensure survival and reproduction—and which behaviors are futile, and are followed by loss or punishment. Thus, according to behaviorists, learning is our primary tool for adaptation, and it is the environment that shapes behavior, rather than “mind” or “consciousness” within the organism.

Behaviorism also emphasizes change. Both Watson and Skinner suggested that a utopian society could be built by imposing proper control on environmental conditions. Emphasis on change is one of the hallmarks of our society: we are convinced that we can be better, thinner, smarter, richer, and happier. Psychologists have been in the forefront in convincing us that change is possible, though not necessarily easy.

The idea of adaptation to the environment was the central Darwinian theme in the functionalism of William James and the originators of the functionalist approach. Human behavior (James used the term “habits”) was considered in terms of how it served the goal of adaptation. Like the behaviorists, the functionalists saw learning as the primary mechanism for human adaptation and survival.

A precursor of functionalism was the British intellectual giant, Sir Francis Galton. Using Darwin’s theory, Galton developed a keen interest in individual differences and strived to devise ways to measure these differences. American psychologists eagerly adopted his ideas, with their emphasis on individualism. Psychological testing developed from this facet of functionalism and continues to be an active area in American psychology. We have developed psychological tests to measure almost any trait you can imagine. Ironically, the founder of psychology as a science, Wilhelm Wundt, was not significantly influenced by Darwin’s theory, and when Wundt’s branch of psychology, structuralism, migrated to America, it was unable to adapt and survive.

**BIOGRAPHICAL PROFILES**

**Rene Descartes (1596—1650)**

Born of wealthy parents in La Haye, France, Descartes was one of the most influential thinkers of the Renaissance. He contributed to mathematics, philosophy, psychology, and physiology. Descartes, a very private man, enjoyed solitude and was iconoclastic. While enrolled at a Jesuit school, he convinced the school authorities to allow him to sleep until 11 A.M., because he did his best thinking while in bed.

Perhaps because of this individualistic nature, Descartes began to doubt all that he had learned in school. This skepticism soon spread to all areas of his life. Descartes doubted everything. Of one thing, however, Descartes had no doubt: that he was doubting. This led to his famous conclusion, “Cogito, ergo sum.” “I think, therefore I am”, which suggests that all that is certain concerning the human condition is that each of us exists. Descartes also made significant contributions to physiology. He believed that what distinguished living from nonliving material was “animal spirits”. Animal spirits, according to Descartes, gave humans
their ability to move and worked mechanically, like hydraulics. Although his notion of animal spirits has been shown incorrect, his study of both animals and humans paved the way for future discoveries. Descartes also addressed the mind–body problem. He thought that there was a physical body that could be studied scientifically and that there was a mind that was not physical and that could not be studied scientifically. He felt that the mind and body interacted in the pineal gland, which sits at the center of the base of the brain. His position was thus dualistic and interactionist.

Because of interference by the Catholic Church and increased demands on his time because of his growing fame, Descartes moved to Sweden in 1650 to tutor Queen Christina. Unfortunately for humanity, Queen Christina insisted on being tutored at 5 A.M., well before Descartes’ 11 A.M. wake-up time. Within six months of his arrival in Sweden, Descartes contracted pneumonia and died.

Paul Broca (1824—1880)
Born in Sainte-Foy-la-Grand, France, Broca was the only son of a physician, and followed his father’s lead, becoming professor of surgery and anthropology in Paris in 1861. During an autopsy on a patient who had suffered from severe speech deficits, Broca discovered a lesion in the left frontal lobe. This discovery was the first evidence supporting Franz Gall’s notion of localization of brain function, a concept that is generally viewed as accurate by current standards.

Broca was also responsible for developing the early science of craniometry, the measurement of the skull, and the anthropological study of the prehistoric practice of trephining, in which small holes were made in the skull of presumably mentally ill individuals in an attempt to allow demons to escape. He was elected to the French Senate in 1879 and his radical political views included the recommendation that public high schools open their doors to females.

Franz Gall (1758—1828)
Gall was born in Baden, Germany, but settled in Vienna as a physician. He was a distinguished anatomist, responsible for much of our early understanding of the nervous system, particularly the distinction between the function of the white (myelinated) and gray (nonmyelinated) matter of the brain. Along with his student, Johann Spurzheim, Gall promoted the science of phrenology, in which a person’s character, and emotional and intellectual dispositions could be inferred from an assessment of the various bumps and contours of the head. Although long since discredited as legitimate science, phrenology was extremely popular in its day. (Darwin was nearly kept off the HMS Beagle because of the shape of his nose.) Nearly 30 phrenological societies were in existence in England in 1832, and a number of professional periodicals concerning phrenology flourished curing the mid-1800s.

Gregor Mendel (1822—1884)
Born in Heizendorf, Austria, Mendel’s father was a peasant, his mother a gardener. After studying philosophy at the University of Olmutz, Mendel entered the Augustinian monastery, where many of his teachers also taught science and philosophy at the Gymnasium or Philosophical Institute. Mendel was put in charge of the experimental garden, where he began the studies that would come to be identified as the founding of the science of genetics. Conducting impressively systematic and thorough experiments of hybridization of peas, Mendel accumulated evidence contradicting the current theory that inheritance was a “blending” or combining process.

Mendel’s research was first presented at a scientific meeting in 1865 and in published form in 1866, but went unnoticed. In 1900, however, three separate scientists reported similar findings, despite having been ignorant of Mendel’s work.
Roger Sperry (1913–1994)
Sperry obtained his M.A. in psychology at Oberlin College, followed by a Ph.D. in zoology from the University of Chicago in 1941. He conducted postdoctoral research under Karl Lashley at Harvard and at the Yerkes Primate Center. His early research challenged the traditional notion that nerves from sense organs attach to brain areas in nonspecific ways. Later, he and his students advanced the psychological study of split-brain patients by developing laboratory tasks that allowed for precise assessment of the frequently subtle impairments experienced by recipients of the radical operation. In 1981, he was awarded the Nobel Prize in physiology, primarily for his pioneering work during the 1960s on split-brain phenomena. Sperry wrote later about the mind-body relationship and the ethical implications of modern research on brain physiology and behavior.
## TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1662</td>
<td>Rene Descartes, a French philosopher—mathematician, published <em>Trait de L’homme</em>, introducing the idea of reflexive behavior.</td>
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<td>1687</td>
<td>Isaac Newton published <em>Principia</em>.</td>
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<td>1739</td>
<td>David Hume published <em>Treatise on Human Nature</em>.</td>
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<td>1831</td>
<td>Charles Darwin set sail on the five-year voyage of the <em>HMS Beagle</em>.</td>
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<tr>
<td>1861-1865</td>
<td>The American Civil War was fought.</td>
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<td>1865</td>
<td>Gregor Mendel reported his findings on genetic transmission of traits in garden peas.</td>
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<td>1870</td>
<td>Gustav Fritsch and Eduard Hitzig used electrical stimulation to study the cerebral cortex.</td>
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<td>1875</td>
<td>Walther Flemming, Strasburger, and others discovered chromosomes.</td>
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<td>1884</td>
<td>Oscar Hertwig suggested that nucleic acid was the material responsible for the transmission of hereditary traits.</td>
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<td>1914-1918</td>
<td>World War I was fought.</td>
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<td>1929</td>
<td>Karl Lashley published <em>Brain Mechanisms and Intelligence</em>, a monograph outlining his ideas on the relation between the brain mechanisms and learning.</td>
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<td>1933</td>
<td>Ramón y Cajal published <em>Neuron Theory or Reticular Theory?: Objective Evidence for the Anatomical Unity of Nerve Cells</em>, arguing that the nervous system is comprised of neurons. Twenty-one years later, scientists using the electron microscope show Ramón y Cajal’s arguments are correct.</td>
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<td>1944</td>
<td>Oswald Avery, Colin Macleod, and Maelyn McCarty discovered that DNA (Deoxyribonucleic Acid) was the material of which genes are made.</td>
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<tr>
<td>1953</td>
<td>James Watson and Francis Crick discovered the double helix structure of DNA.</td>
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<tr>
<td>1957</td>
<td>The Russian satellite Sputnik was launched.</td>
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<tr>
<td>1978</td>
<td>Louise Brown, the world’s first “test-tube baby” is born in England.</td>
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## SUGGESTIONS FOR FURTHER READINGS


**DISCOVERING PSYCHOLOGY**

**PROGRAM 3: THE BEHAVING BRAIN**

**Overview**

The structure and composition of the brain: how neurons function, how information is collected and transmitted, and how chemical reactions determine every thought, feeling, and action.

**Key Issues**

The biology of the brain, how the brain processes information, the electroencephalogram (EEG), neurometric evaluation, the effects of drugs on the functions of the brain, the brain’s own manufactured chemicals, and neurotransplantation.

**Demonstrations**

Multiple brain wave recording to reveal various types of brain malfunction.

Effects of chemicals on learning and memory in rats.

**New Interviews**

John Gabrieli illustrates how the brain stores and retrieves information.

**PROGRAM 4: THE RESPONSIVE BRAIN**

**Overview**

How the brain controls behavior and, conversely, how behavior and environment influence the brain’s structure and functioning.
Key Issues

The effect of human touch on the growth of premature babies, the effect of the mother’s touch on the growth of rats, psychosocial dwarfism, the effect of stress on memory and learning in rats, how behavior modifies the physiology of the African Cichlid fish, and the effects of social status on the health of baboons

Archival Demonstrations

Effects of change in social status on sexual reactions and growth of fish.
Effects of social status on hormones and behavior in wild baboons.

Demonstrations

Effects of physical stimulation on growth of brain, body and health of rats.
Relationship between early stimulation and adult resistance to stress-induced decline in memory of rats.

Interviews

Tiffany Field explains the benefits of touch on the cognitive and motor development of premature babies.
Saul Shanberg underscores the importance of contact by the mother in the process of growth and development in rats.
Michael Meaney examines the effects of stress on memory and learning in rats.
R. Fernald examines the effects of behavior on the physiology of the brain and the effects of the brain on behavior in African Cichlid fish.
Robert Salopsky discusses the direct effects of social status on the health of wild baboons.

FILMS AND VIDEOS

The Brain (1993). Encyclopedia Britannica Educational Co., 50 minutes
This program describes the structure and function of the brain. Using a variety of video techniques, the viewer is shown the major anatomical structures of the brain, and the function of each of these is discussed.

The Brain, Mind, and Behavior Series (1984). IU (FI), 60 minutes
A PBS series that examines the mysteries and intricacies of the human brain. Because the role of the brain is the focus of each program, any of these can be a helpful supplement to your coverage of brain structure and function. An excellent series.

Program 1: The Enlightened Machine
A general introduction to the brain’s functions. Uses models, graphics, animation, and real-life action. Examines the mysteries of consciousness.

Program 2: Vision and Movement
Explains how people perceive the world and how the brain coordinates vision and movement. Includes appearances by champion diver Greg Louganis and Nobel Prize winners Hubel and Weisel.

Program 3: Rhythms and Drives
Uses examples from both the animal world and human society to explain instinctive, unconscious rhythms and drives, and the working of the primitive portion of the human brain. Shows the behavioral changes that result from injury to the hypothalamus and shows the effects of seasonal and circadian rhythms on some people.

Program 4: Stress and Emotion
Explains the interrelationship of pain, anxiety, behavior, and the brain. Uses two case studies, one about a man who suffered an accidental frontal lobotomy, the other about a stress-ridden professional, to tell the story.
Program 5: Learning and Memory
Discusses how humans remember, and why they forget. Focuses on brain organization, activity at the synapse, and workings of the hippocampus to explain memory.

Program 6: The Two Brains
Explores the cortical hemispheres, the relation of thought and language, and sex differences of the human brain. Illustrates lateral specialization through the research conducted with split-brain patients.

Program 7: Madness
Explores the lives of schizophrenics and their families to explain how much brain researchers know and what they have yet to accomplish to understand schizophrenia fully.

Program 8: States of Mind
Surveys the current state of our knowledge about the brain and what lies in the future. Examines how this knowledge will be applied in the coming years to the fields of medicine and artificial intelligence.

Decision (1985). IU (FFHS), 27 minutes
Demonstrates how the brain organizes input and output to make simple but life-saving decisions. Explains how the cortex assesses incoming information, sends outgoing messages to the muscles, and stores maps of the world and the body. Shows how circuits of nerve cells operate in the brain and how individual nerve cells function.

Odyssey: Lucy and the First Family (1980). PBS, 59 minutes
The study of 3.5 million-year-old Lucy, one of the most complete human skeletons that has been discovered, has led to a controversy regarding evolution. This videotape provided a link between the field of anthropology and the social sciences.

Our Talented Brain (1985). IU (FFHS), 27 minutes
Explores the physiological brain capacity of human beings, their use of memory, and their use of symbols. Explains how these capacities relate to the neural structure of the brain.

The Infinite Voyage: Fires of the Mind (1988). WQED and the National Academy of Sciences, 58 minutes
Covers the development of human intelligence, and how cells, electric signals, and chemicals make up the creative mind of man. Features a study of the cells of Einstein’s brain.

The electrochemical nature of neural transmission and neural action in reflexive behaviors is examined in this film.

CASE STUDY LECTURE LAUNCHER
Five-and-a-half weeks before her twins were due, Christine felt the first sharp pains of labor. Her husband drove her to the hospital where, for 16 hours, the two of them followed the breathing instructions given to them during their natural childbirth class. Then a fetal monitor showed that the heartbeat of one of the babies was weakening. Doctors quickly performed a Cesarean section. Within minutes, 4-pound Nicole and 3-pound 14-ounce Alexis entered the world.

Immediately after birth, Nicole and Alexis joined half a dozen other babies in the Neonatal Intensive Care Unit. For two-and-a-half weeks, electronic devices monitored their vital signs. Experienced nurses tended to their physical needs and held them frequently. Christine spent a good part of each day with her babies, holding and rocking them and feeding them her breast milk from bottles, awaiting the day when she could...
actually breastfeed them. Wearing diapers barely the size of cocktail napkins, the twins looked fragile and unfinished. With no layers of baby fat, every little rib showed.

Had Nicole and Alexis been born 20 years earlier, their first few weeks of life would have been quite different. Until the late 1970s, premature infants were touched as little as possible. Parents and medical personnel feared that any unnecessary contact with the outside world might harm the babies. Fortunately for Nicole and Alexis, we now know better.

Research with infant rats and humans has led scientists to conclude that brain functioning can be altered by touch, and that, for newborns, touch is essential for normal growth and development. Biologist Saul Schanberg found that when rat pups were removed from their mothers, the levels of an enzyme important for growth decreased dramatically. The longer they were deprived of maternal contact, the less responsive the pups became. The effects of maternal deprivation could be reversed in only two ways: by returning them to their mother, who immediately started to lick them, or by having a researcher vigorously stroke them with a small paintbrush. Shanberg concluded that, “the need for a mother’s touch is really brain based. It is not just nice to have it. It’s a requirement for the normal development and growth of the baby.”

Psychologist Tiffany Field, who had collaborated with Schanberg, conducted similar stimulation studies of premature human infants. Her research team randomly selected 20 preemies to receive periodic massages throughout the day, while 20 others received normal hospital treatment in the intensive care unit, treatment that did not include massage. According to Field, “The premature babies who were massaged for 45 minutes a day for ten days before they were discharged gained 47 percent more weight than the babies who did not get massaged. They were more active. They were more alert.” Eight months later, the massaged babies had maintained their weight advantage and were more advanced in motor, cognitive, and emotional development. This research is being extended and replicated in larger samples of preemies in order to establish the power of human touch on biological and psychological health.

In the United States, more than 0.25 million infants are born prematurely each year. Those who are touched and cuddled leave the hospital several days sooner than usual, reducing care costs by about $3,000 per child. Unfortunately, not all hospitals apply what scientists have learned about the positive effects of early touch on development. If they did, the lives of thousands of children would be improved, saving billions of dollars each year – both practical benefits of this basic research.

When Nicole and Alexis left the hospital, they were still small, but were developing so well that doctors felt confident they would be all right. At home, the babies shared a crib in the living room, where relatives and friends who remarked on their tiny size were encouraged to pick up the babies gently and cuddle them. Christine and her husband were acutely aware of the important role played by human touch in the optimal development of the brain and the mental and psychical processes that it controls.
CHAPTER 4
Sensation

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Understand the basic processes through which sensory stimuli are converted into neural events
2. Describe Müller’s doctrine of specific nerve energies
3. Relate the differences in thresholds (absolute and difference) and know why these concepts are relevant
4. Discuss the concepts of response bias and signal detection theory
5. Identify the parts and functions of the human visual system
6. Understand the basic processes involved in color vision, and the theories supporting those processes
7. Describe the physiological components of the auditory system
8. Explain the two theories of pitch perception
9. Define pheromones and describe their role in olfaction

CHAPTER OUTLINE
I. Sensory Knowledge of the World
   A. Sensation is the process by which stimulation of sensory receptors produces neural impulses that represent experiences inside or outside the body
   B. This chapter deals with sensory processes, with the sense organs and peripheral aspects of the nervous system that put you in contact with the world around you
   C. Your senses have two basic functions
      1. Survival
      2. Sensuality
   D. While some animals specialize in one sensory medium, such as the sight of hawks, humans are equipped with a variety of sensory mechanisms
   E. Psychophysics
      1. The study of the relationship between physical stimuli and the behavior or mental experiences the stimuli evoke. The oldest field in psychology.
      2. Gustav Fechner (1801–1887)
         a) The most significant figure in psychophysics
b) Coined the term “psychophysics” and developed procedures to relate the intensity of physical stimulus to the magnitude of the sensory experience.

3. Absolute Thresholds and Sensory Adaptation
   a) The absolute threshold for stimulation is the smallest, weakest stimulus energy that the organism can detect
   b) Operationally defined as the stimulus level at which a sensory input is detected half of the time
   c) Sensory Adaptation is the diminishing responsiveness of sensory systems to prolonged stimulus input. Sensory systems are more sensitive to change in stimulus input than to steady input.

4. Response Bias
   a) The systematic tendency for an observer to favor responding in a particular way that is unrelated to the qualities of the sensory stimulus. For instance, tending to say “yes” or “no” all of the time. There are at least three sources of response bias.
      i) Desire
      ii) Expectation
      iii) Habit

5. Signal Detection Theory
   a) A systematic approach to the problem of response bias
   b) Focuses on the process of making a judgment about the presence or absence of a stimulus
   c) Unlike classical psychophysics which conceptualized a single absolute threshold, Signal Detection Theory identifies two distinct processes in sensory detection: Sensory Processes and Decision Processes
      i) Sensory Processes reflect an observer’s sensitivity to the stimulus
      ii) Decision Processes reflect an observer’s response bias to the stimulus

6. Difference Thresholds
   a) The difference threshold for stimulation is the smallest physical difference between two stimuli that can still be recognized as a difference
   b) Operationally defined as the point at which the stimuli are recognized as different half of the time
   c) The difference threshold value is known as the Just Noticeable Difference (JND)

7. Weber’s Law
   a) The JND between stimuli is a constant fraction of the intensity of the standard stimulus
F. From Physical Events to Mental Events

1. Sensory Physiology
   a) The study of the way biological mechanisms convert physical events into neural events
   b) Transduction is the conversion of one form of energy, such as light, into another form, such as nerve impulses

2. The Doctrine of Specific Nerve Energies
   a) Proposed by Johannes Müller in 1826
   b) Different sensory experiences, such as sight and smell, do not produce different types of nerve activity. Rather they produce the same type of nerve activity, but in different regions of the brain.
   c) All sensory systems share the same basic flow of information. Environmental events are detected by specialized sensory receptor neurons, called stimulus detector units, which convert the physical energy received from the environment into neural signals that can be processed by the central nervous system.

II. The Visual System

A. The Importance of Vision
   1. The most complex, highly developed, and important sense for humans and most other mobile creatures
   2. Provides a tremendous evolutionary advantage

B. The Human Eye
   1. Light enters the eye through the cornea, a transparent bulge on the front of the eye
   2. Light then passes through the anterior chamber, which is filled with a clear liquid called aqueous humor
   3. Then through the pupil, an opening in the opaque iris
   4. Then through the lens, which focuses the incoming light
   5. Then through the vitreous humor, another clear liquid
   6. And then finally strikes the retina, a thin sheet of neuron that lines the rear wall of the eyeball

C. The Pupil and the Lens
   1. The iris makes the pupil dilate to control the amount of light entering the eye. The lens focuses the light on the retina, reversing and inverting the light as it does so. The lens is responsible for focusing to account for the distance to the object.
   2. Accommodation is the change in the thickness of the lens. Problems with accommodation are responsible for many vision problems, such as near- and far-sightedness.

D. The Retina
CHAPTER 4: SENSATION

1. The retina is composed of specialized photoreceptor cells called rods and cones that convert light energy into nerve energy
   a) Rods function best in low light
   b) Cones function best in bright light

2. Dark adaptation is the gradual improvement of the eyes’ sensitivity after a shift in illumination from light to near darkness
3. The area of sharpest vision is called the fovea, a small area near the center of the retina that contains only densely packed cones
4. Bipolar cells are nerve cells that combine information from many receptor cells and send the results to ganglion cells
5. Ganglion cells then integrate the information from bipolar cells into a single firing rate
6. The axons of the ganglion cells comprise the optic nerve, which carries visual information to the brain
7. Horizontal and Amacrine cells do not send information to the brain but rather integrate information across the retina
   a) Horizontal cells connect receptors to each other
   b) Amacrine cells connect bipolar cells to bipolar cells and ganglion cells to ganglion cells
8. The optic disk or blind spot is the area where the optic nerve exits the retina. It contains no receptor cells. Blindness is not experienced at this spot because the blind spots for each eye are different areas of the visual field and because the brain automatically fills in the blind spot.

E. Pathways to the Brain

1. After processing by other brain regions, the ultimate destination of much visual information is the part of the occipital lobe known as the visual cortex
2. The axons of the millions of ganglion cells that form the optic nerve come together at the optic chiasma, where they are divided into two bundles called optic tracts
3. Half of the nerve fibers from each retina stay on the side from which they originated. The other half cross over to the other side of the brain.
4. Much visual information then flows to the primary visual cortex, where roughly 30 anatomical subdivisions of the primary visual cortex process information concerning form, color, position, and depth

F. Seeing Color

1. Visible light (wave length of 400-700 manometers) is just a small portion of the electromagnetic spectrum, which includes X rays, microwaves, and radio waves
2. *Wavelength* refers to the distance between crests of two consecutive waves. Wavelength determines the color perceived.

3. All experiences of color can be described in terms of hue, saturation, and brightness
   a) *Hue* captures the qualitative experience of color of the light stimulus
   b) *Saturation* captures the purity and vividness of color sensations
   c) *Brightness* captures the intensity of the light

4. Humans can discriminate about 7 million different colors

5. The combination of all wavelengths of light yields white light

6. Wavelengths of light that appear directly across from each other on the color wheel are called complementary, and create the sensation of white light when mixed

7. *Color Blindness* is the inability to distinguish colors. More males than females are color blind, and most color blindness involves the inability to distinguish red from green.

8. There are two primary theories of color vision: The Young-Helmholtz Trichromatic Theory and the Opponent-Process Theory
   a) The *Trichromatic Theory* of color perception, proposed by Sir Thomas Young and Hermann von Helmholtz, suggests that all colors perceived are produced by just three types of color receptors in the eye: red, green, and blue. All other colors are combinations of these. This theory adequately explains color blindness and people’s color sensations, but did not explain afterimages and certain types of color blindness.
   b) The *Opponent-Process Theory* of color perception, proposed by Ewald Hering, suggests that color results from three systems, each of which includes two opponent elements: red versus green, blue versus yellow, or black versus white. Hering argued that afterimages were produced when one element of a system became fatigued, due to over stimulation, and thus led to the over contribution of its opponent element. This theory also better explained why color blindness is usually found in pairs.

9. After debating the relative merits of these two theories, scientists came to agree that they are not in conflict, but rather describe different stages in color perception

10. A modern version of the Opponent-Process Theory, proposed by Hurvich and Jameson, suggests that the two members of each color pair work in opposition by means of neural inhibition. Some ganglion cells are excited by light that appears red and inhibited by light that appears green. Other cells are excited by green light and inhibited by red light.

G. *Complex Visual Analysis*

1. David Hubel and Torsten Wiesel won a Nobel Prize for their work on receptive fields in the visual cortex in 1981
2. Hubel and Wiesel found there are several types of receptive cells
   a) *Simple cells* respond most strongly to bars of light in their “favorite” orientation
   b) *Complex cells* respond most strongly to moving bars of light in their “favorite” orientation
   c) *Hypercomplex cells* respond most strongly to moving bars of light of a particular length or angle

III. Hearing

   A. Hearing is the Principle Sensory Modality for Human Communication

   B. The Physics of Sound

      1. Sound travels as a vibrational sine wave through a medium, usually air, at a rate of about 1100 feet per second
      2. Sine waves have two basic properties: frequency and amplitude
         a) *Frequency* measures the number of cycles the wave completes in a given amount of time and is usually measured in Hertz (Hz), or cycles per second
         b) *Amplitude* measures strength of the wave in peak to valley height

   C. Psychological Dimensions of Sound

      1. *Pitch* is the highness or lowness of a sound as determined by a wave’s frequency. High frequencies produce high pitch, while low frequencies produce low pitch.
      2. *Loudness* is the physical intensity of a sound as determined by a wave’s amplitude. Small amplitude waves are experienced as quiet sound and large amplitude waves are experienced as loud sound.
      3. *Timbre* reflects the complex components of a sound wave. A pure tone has only one frequency and one amplitude. Most sounds, however, are not pure tones, which is reflected in timbre.

   D. The Physiology of Hearing

      1. In order for hearing to occur, four basic energy transformations must take place
         a) First, airborne sound waves must be translated into fluid waves within the cochlea of the ear. Sound waves travel into the ear until they reach the end of the canal. There they encounter the tympanic membrane or eardrum. The sound waves move the eardrum, and the eardrum transmits the vibrations from the outer ear to the middle ear, which contains the hammer, the anvil, and the stirrup. These tiny bones transmit the vibrations from the eardrum to the primary organ of hearing, the cochlea in the inner ear.
         b) Second, the fluid waves must stimulate mechanical vibrations of
the basilar membrane. Vibration of fluid in the cochlea causes a
cooled tube membrane in the cochlea, the basilar membrane, to
move in a wavelike fashion.

c) Third, these vibrations must be converted into electrical impulses.
The wavelike motion of the basilar membrane bends tiny hair cells
connected to the membrane. As the hair cells bend, they stimulate
nerve endings, transforming the wave motion into neural activity.

d) Fourth, the impulses must travel to the auditory cortex from the
cochlea via the auditory nerve. Information from one ear goes to
both sides of the brain.

2. There are two types of hearing impairment, each caused by a defect in
one or more components of the auditory system: conduction deafness
and nerve deafness

a) *Conduction deafness* is the less serious of the two and involves a-
problem in the conduction of air vibrations to the cochlea. It can
often be corrected by the insertion of artificial anvil or stirrups.

b) *Nerve deafness* is more serious and involves a defect in the neural
mechanisms that create nerve impulses or that relay them to the
auditory cortex

E. *Theories of Pitch Perception*

1. Two major theories have been posited to explain sensations of pitch:
place theory and frequency theory

a) *Place theory*, proposed first by Helmholtz and later modified by
     Bekesy, suggests that different portions of the basilar membrane
move depending on the frequency of the sound wave. High-
frequency tones produce greatest motion at the base of the cochlea,
while low-frequency tones produce the greatest motion at the
opposite end.

b) *Frequency theory* suggests that the rate of vibration of the tone is
reflected in the rate of vibration of the basilar membrane. If a tone
vibrates at 100 Hz, the basilar membrane will also vibrate at 100
Hz and will cause neurons to fire at 100 Hz. For high-pitched
sounds, however, this is impossible, because they cannot fire more
than 1,000 times per second. The volley principle may overcome
this limitation.

2. The *Volley Principle* suggests that several neurons could work together
and could fire in a volley to match higher cycles per second

3. Frequency and Place Theories are not mutually exclusive. Place theory
accounts well for pitch perception of frequencies above 1,000 Hz, while
frequency theory accounts well for pitch perception of frequencies below
5,000 Hz.

F. *Sound Localization*

1. Some animals, such as bats, use *echolocation* instead of vision to
determine distances, locations, sizes, textures, and movements of objects.
Humans lack this ability, but do use sound to determine location
through two primary mechanisms, assessment of relative timing and relative intensity.

2. **Relative timing** involves the comparison of the relative times at which incoming sound reaches the ear. For example, a sound to your right reaches your right ear before it reaches your left ear.

3. **Relative intensity** involves the comparison of the relative intensity at which incoming sound reaches the ear. The head casts a sound shadow over the ear farthest from the sound that weakens the sound.

IV. Your Other Senses

A. **Smell**

1. Odors first interact with receptor proteins on the membranes of tiny hairs (olfactory cilia) in your nose

2. As few as eight molecules of a substance can initiate a nerve impulse, but at least 40 nerve endings must be stimulated before a substance can be smelled.

3. Once initiated, nerve impulses convey odor information to the olfactory bulb, located just above the receptors and just below the frontal lobes of the cerebrum

4. **Olfactory neurons**, unlike most neurons, are constantly dying and being replaced

5. Although it is thought that smell developed primarily as a means of detecting food, it can also be used for active communication by the secretion of pheromones

6. **Pheromones** are chemical substances used by a specific species to signal sexual arousal, danger, territorial boundaries, and food sources

B. **Taste**

1. Many tastes are really smells, as the two work closely together when we eat

2. The surface of the tongue is covered with **papillae**

3. Many papillae contain clusters of taste receptor cells called **taste buds**

4. Taste buds respond best to one of four primary taste qualities: sweet, sour, bitter, and saline

5. Taste buds may be damaged by alcohol, smoke, and acids, but the taste system is the most resistant to damage of all sensory systems, as taste receptors are replaced every few days, even more often than smell receptors

C. **Touch and Skin Senses**
1. **Cutaneous senses** are sensations produced by the skin, such as pressure, cold, and warmth. Because the skin responds to so many types of stimuli, many different types of receptors are located near the surface of the skin.

2. Meissner corpuscles respond best when something rubs against the skin.

3. Merkel disks are most active when a small object exerts steady pressure on the skin.

4. The skin has separate receptors for hot and cold.

5. **Erogenous zones** are areas of the skin that give rise to erotic, sexual sensations.

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**D. The Vestibular and Kinesthetic Senses**

1. The **vestibular sense** tells how the body is oriented in the world with respect to gravity through tiny hairs in fluid-filled sacs and canals in the inner ear.
   a) The *saccule* and *utricle* detect acceleration and deceleration.
   b) The *semicircular canals* are at right angles to each other and can thus detect movement in any direction.
   c) *Motion sickness* occurs when information from the visual system conflicts with information from the vestibular system.

2. The **kinesthetic sense** provides constant sensory feedback about what the body is doing during motor activities. There are two sources of kinesthetic information: receptors in the joints and receptors in muscles and tendons.
   a) Receptors in the joints respond to pressures that accompany different positions of the limbs and to pressure changes that accompany movements.
   b) Receptors in the muscles and tendons respond to changes in tension that accompany muscle shortening and lengthening.

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**E. Pain**

1. Pain is the body’s response to noxious stimuli that are intense enough to cause damage or threaten to do so. Pain is critical to survival. People with insensitivity to pain often become scarred and their limbs deformed from injuries that could have been prevented had they been sensitive to pain.

2. Pain mechanisms:
   a) **Nociceptive pain** is the negative feeling induced by a noxious external stimulus, such as a hot stove.
   b) **Neuropathic pain** is caused by the abnormal functioning or over activity of nerves.
c) The network of pain receptors is a fine mesh that covers the entire body. Some receptors respond only to temperature, while others respond to chemical or mechanical stimuli.

d) Peripheral nerve fibers transmit signals to the central nervous system in two ways:
   i) Fast-conducting, myelinated nerves
   ii) Slower, smaller, nonmyelinated nerves

e) Pain impulses start at the spinal cord, are relayed to the thalamus, and then to the cerebral cortex

3. The Psychology of Pain
   a) Emotional responses, context factors, and subjective interpretation can be as important as actual physical stimuli in determining how much pain is experienced
   b) Phantom limb phenomenon is the experience of sensation or pain in a limb that is no longer there. It occurs in up to 10 percent of amputees.
   c) Pain is partly a psychological response and, thus, can be influenced by psychological processes, such as hypnosis, deep relaxation, and thought distraction. The Lamaze preparation for childbirth is an excellent example of the psychological control of pain.
   d) The Gate-Control Theory of pain, proposed by Ronald Melzack, suggests that cells in the spinal cord act as neurological gates, interrupting and blocking some pain signals and letting others through to the brain. The brain and receptors in the skin send messages to the spinal cord to open or close the gates.
   e) In recent years Melzack proposed an updated neuromatrix theory of pain which incorporates the reality that people often experience pain with little or no physical cause.

**DISCUSSION QUESTIONS**

1. What other senses might there be that humans lack? How would we know that they existed? How might humans develop devices, such as binoculars, night-vision scopes, and hearing aids, which allow us to experience these senses?

2. How similar are sensory experiences between people? Do all individuals experience the color “blue” the same? How would we know if we did not, and would it matter?

3. Have the class think of real-life examples of dichotic listening. Is this a phenomenon with which they are familiar and of which they have a basic understanding?

4. Discuss attention from the perspectives of its being goal-directed or stimulus-driven perception. Generally speaking, do more students seem to be goal-directed attendees or
stimulus-driven perceivers? What might contribute to this phenomenon?

5. Discuss the premises of Gestalt psychology with the class. Point out that Kurt Lewin’s Field Theory was a result of the Gestalt movement. What other theoretical constructions might have a relationship to the Gestalt movement?

6. Discuss the wide variance that exists among people in their sensitivity to pain. The sensation of pain is a complex process involving multiple nerve pathways. But to some degree, responses to pain might be learned. In the 19th century, writers often noted that Native Americans were remarkably stoic in the face of what Whites considered overwhelming pain. Other researchers have also noted cultural differences in pain threshold. While individual differences can easily be chalked up to differences in biological makeup, cultural differences are more difficult to pass off as exclusively biological in origin.

7. Could it be that to some degree we learn how to respond to pain messages based on factors such as how much attention we receive for crying in response to pain when we are infants? Many parents of young children have remarked about incidents where their child has fallen, and then looked up at the parents as if asking “How should I react?” If the parents start to make a big fuss over the fall, the child immediately starts to cry. If the parents smile and stay calm, the child ignores the fall and returns to playing. If a parent constantly overreacts to small falls, and lavishes attention on a child every time he or she cries, could they be reinforcing a tendency to react negatively to any pain and use overblown reactions to pain as a means of getting attention? Could this influence those children to be more sensitive to any painful stimuli in that they learn to attend more to pain messages and subsequently notice them more? Ask students these questions to see what they think.

8. Many people believe the myth that when people lose one of their physical senses, their other senses become more sensitive to compensate for the missing sense. The idea that blind people have hearing that is more acute than others has been around for ages. Ask students if they have heard this and if they believe it. This myth is technically wrong in that there is no actual increase in physical ability to detect sound when someone goes blind. But blind people may learn to pay more attention to subtle differences in sound than do sighted people, therefore making it seem as if their hearing has increased in its sensitivity. Similarly, losing one’s hearing does not increase one’s visual acuity, but deaf people often pay more attention to certain visual cues than do those who can hear, allowing them to learn more from those cues.

9. Usually these myths focus around hearing and sight. If the myths were true, what sense might become more acute if the sense of taste is lost? Smell? Taste?

10. What sense would become more acute if the sense of touch was lost? Again, people can sometimes compensate for the loss of a sense in a variety of ways, but there is no compensatory increase in physical ability in the remaining senses.

SUPPLEMENTAL LECTURE MATERIAL

Sensation and Perception

Why do we study sensation and perception? Primarily because it is through the sensory systems that we make and maintain our contact with the environment. What are some of the reasons that figure into this contact with the environment? There are many reasons, but some of the more pertinent follow.
1. For purposes of communication to and from the brain, between our internal and external environments.

2. For organizational and functional principles that are applicable across the various sensory and perceptual systems.

3. For comprehension of anatomical structure at a physiological level.

4. For assistance with deficits in the various systems, such as abnormalities, deficiencies, prosthetics, and so on. This is especially important in vision and audition, in that “normal” individuals get 80 percent of their sensory input through vision and 15—18 percent through audition. The remaining 2—5 percent is distributed across the other various systems.

5. Finally, for philosophical reasons, to what extent is our world experience predicated on sensation and perception? On what else could it be predicated?

Other principles and properties that are characteristic of all sensory systems include the following:

1. **Limited Receptivity.** Human senses are structurally designed to respond to a certain type of energy, and, within that type of energy, to a limited range of output. All senses respond to some form of energy. Human vision responds to electromagnetic radiation (light), from just above the ultraviolet to just below the infrared portions of the spectrum. This is known as the visible range of light. Audition responds to pressure, from about 50 Hz to about 15,000 Hz in humans. The range for dogs is much higher, up to about 100,000 Hz. The individual ranges for all types of receptivity are species-specific.

2. **Specific Irritability.** Within a given system, there are subsystems with specialized functions. In the visual system, rods are more sensitive to shorter wavelengths of light; cones are more sensitive to longer wavelengths. Gustation, the sense of taste, relies on chemical energy. The tongue has four basic types of taste receptors: sweet, salty, bitter, sour. Each of these subsystems is sensitive to different chemicals.

3. **Adaptation.** Sensory systems are designed such that they will not respond to steady, repetitive, nonchanging stimuli, which carry no further information. This permits our senses to respond over a wide range of energy potential, such as from dark to bright light. Adaptation permits resetting of the system threshold, over a vast range of energy and intensity, as needed.

4. **Contrast.** Sensory systems are designed to respond to change relative to a mean level.

5. **Threshold, Saturation, and Dynamic Range.** The threshold is the minimum amount of energy required for the system to respond. Once above a threshold level, as intensity increases, so does the subjective sensation of that intensity, across the specific range to which the system responds. Beyond a certain level, further increase in physical intensity no longer produces a subjective change in intensity, because the system is saturated.

6. **Response Latency.** Every system is a transducer, in that it converts energy from one medium to another so that it can be processed. This transduction process takes about 20—30 milliseconds, and about 200—500 milliseconds following the stimulus, you become aware of the sensation. Thus, we live 200 milliseconds in the past.

**The Sensory System**
In learning about sensation, it is important for your class to be aware that we have three different types of sensory systems, each of which performs different functions.
1. **Exteroceptors.** These sensory receptors take data from the external world. Types of exteroceptors include distal and proximal receptors. Distal receptors include those associated with vision. Objects rarely make direct contact with the eye, rather they are discerned at a distance, with no need for contact in order to experience the sensation. Proximal receptors are associated with touch, taste, and possibly olfaction. Thermal radiation does not always require proximity; you can tell that the sun is warm via your distal receptors—you do not have to touch it. In most instances, proximal systems require direct contact with the stimulus.

2. **Interoceptors.** These are internal system monitors; they work to keep you aware of the internal working of your body, such as letting you know when you are hungry, thirsty, in pain, nauseated, fatigued, and so on.

3. **Proprioceptors.** These receptors monitor the position of the body or limbs relative to some reference point. They let you know where you are physically located in space. Proprioceptors are found in the vestibular system, where they permit maintenance of your physical position, in the pressure receptors of the skin, in the muscle stretch receptors of your muscles, and in the joint movement receptors of your limbs.

**Auditory Localization**

We use our ears to point our eyes in the direction of sound-producing events. For this to happen, the auditory system must be able to perceive the direction from which a sound is originating, and the system’s perception of space must be integrated with the visual system’s perception of space. Unlike the eye, the ear has no direct coding of spatial direction. Information about the sound’s direction is perceived by comparing the stimulation in one ear with that in the other. In this respect, sound localization is much like the visual-depth cue of binocular disparity.

There are two basic sources of information about sound coming from the left or right; the sound entering one ear differs from that entering the other in both intensity and time. When a sound comes from directly in front of your head, its intensity is equal at your two ears. In the case of high-frequency sounds coming from the side, your head creates a sound shadow, making the sound less intense at the ear farthest away from the sound than at the ear closest to the sound. It is only for high frequencies that there is information about how far to one side or another a sound is located.

The other major source of information about the horizontal direction of a sound is the time at which it arrives at your two ears. When a sound comes from directly in front of your head, the arrival times are the same because your two ears are the same distance away from the sound. However, when the sound comes from the side, the sound wave must travel farther to reach the ear on the far side. Even though this extra distance takes only a little extra time—less than one-thousandth of a second—it is enough to tell us which side sound is coming from.

The direction of sounds from left to right, or right to left, is probably the most important part of spatial hearing, but it is not the only part. You can also tell whether a sound is coming from above or below — the sound of a jet streaking overhead or of an object dropped at your feet. You are not able to perceive vertical direction from simple arrival times or intensities, however. It is the shape of the external ear that allows you to perceive the vertical dimension of space. Notice that your ear is asymmetrical. There are many complex, sound-reflecting folds in the pinna above the ear canal, and few below it. These differences in the shape of the external ear make subtle changes in the sound wave that enters your ears, depending on the vertical direction of the sound source. Somewhere in the auditory centers of the brain, these differences are detected and decoded, allowing you to perceive upward and downward directions of environmental sounds.

We are left with the problem of perceiving the third dimension of depth — how far away the source of a sound is from us. A sound that is near is louder than one that is far away, so you might think
that intensity would provide all the information you need about the distance (or depth) of the source of a sound. Unfortunately, it is not that easy. A low-intensity sound at the ear might have come from either a loud sound far away or a soft one nearby. This situation is analogous to the relations among retinal size, object distance, and object size in visual perception. If the sound is one whose usual intensity you know, such as someone speaking in a normal voice or the sound of an average car engine, you can perceive its approximate distance by sound using intensity information. If the sound is one whose usual intensity you do not know, you cannot tell how far away it is by hearing it; you have to look. Because you can locate the direction that the sound is coming from using your ears, you can use them to point your eyes in the correct direction, which can then do the job of judging distance.
**BIOGRAPHICAL PROFILES**

**Hermann von Helmholtz (1821–1894)**

Hermann Von Helmholtz obtained his M.D. in Berlin and served subsequently as an Army surgeon for seven years. Following his military service, he studied math and physics and held academic appointments over the next 30 years at Bonn, Heidelberg, and Berlin, initially as a physiologist, later as a physicist. Helmholtz, whose versatility and intellectual brilliance manifested itself in various disciplines, is considered one of the true giants in the history of science.

Helmholtz’s prominence in physiology came chiefly from his discovery of the rate of neural conduction, a finding that surprised many of his contemporaries who had assumed that nerve impulses must travel at or near the speed of light. In addition, he invented the ophthalmoscope while researching vision, and was involved in the development of theories of color vision and pitch perception that remain influential today. His published works include the three-volume series *Physiological Optics* (1856—1866).

**Ernst Heinrich Weber (1795—1879)**

Ernst Weber taught anatomy and physiology at the University of Leipzig, Germany, from 1820 until the end of his career. He is remembered in psychology for his studies of psychophysical relations, especially for the sensations of temperature and touch. Weber was the first to investigate the two-point threshold for touch, observing that sensitivity to touch varied across different parts of the body and demonstrating that regions of the body are differentially sensitive to tactile stimulation. Weber’s analysis of difference thresholds led to the finding that the size of the difference threshold remains a constant fraction of the stimulus intensity, an orderly relationship referred to as Weber’s Law.

**Ronald Melzack (b. 1929)**

Ronald Melzack was raised and educated in Montreal, Canada, obtaining his Ph.D. from McGill University in 1958. He conducted research in pain sensation at the University of Oregon Medical School from 1954 to 1957. Following this, he was a visiting lecturer at University College, London, and spent a year conducting physiological research in Italy at the University of Pisa. He was appointed to the faculty of the Massachusetts Institute of Technology (MIT) in 1959, but returned to McGill University in 1963.

Melzack’s doctoral research on pain in experimental animals resulted in his collaboration with Patrick Wall. Out of this effort emerged the gate-control theory of pain, which remains today the most widely accepted theory of pain sensation and regulation. Its implications have influenced not only basic research on pain but also the clinical practice of pain management. Melzack continues to refine and modify this successful theory.
## TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1838</td>
<td>Johannes Müller formulated his doctrine of specific nerve energies, which states that sensory experience depends not on the stimulus, but on the part of the nervous system that is activated.</td>
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<td>1843</td>
<td>Søren Kierkegaard published <em>Either/Or.</em></td>
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<td>1846</td>
<td>Ernst Weber postulated that the difference threshold is a constant proportion of the initial stimulus intensity, a notion later formalized as Weber’s Law.</td>
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<td>1855</td>
<td>Walt Whitman published <em>Leaves of Grass.</em></td>
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<td>1857</td>
<td>Based on the earlier work of Thomas Young, Hermann von Helmholtz proposed that color vision is due to three different types of color receptors (cones), each of which is sensitive to a specific range of wavelengths of light.</td>
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<td>1860</td>
<td>Gustav Fechner published <em>Elemente der Psychophysik,</em> marking the founding of psychophysics, the study of the relationship between subjective experience and physical stimulation.</td>
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<td>1898</td>
<td>The Spanish-American War was fought.</td>
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<td>1929</td>
<td>The Great Depression began with the stock market crash.</td>
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<td>1938</td>
<td>H. Keffer Hartline discovered that optic nerve fibers respond to stimulation from different receptive fields.</td>
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<td>1950-1953</td>
<td>The Korean War was fought.</td>
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<td>1954</td>
<td>Tanner and Swets proposed the application of signal detection theory to the study of thresholds.</td>
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<td>1954</td>
<td>The first hydrogen bomb was exploded.</td>
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<tr>
<td>1957</td>
<td>S. S. Stevens demonstrated that changes in one’s subjective impression of stimulus magnitude are a power function of the actual stimulus magnitude.</td>
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<td>1957</td>
<td>Leo Hurvich and Dorothea Jameson, building on the work of Ewald Hering, postulated the theory that color vision is based on opposing neural processes, the opponent-process theory of color vision.</td>
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<tr>
<td>1959</td>
<td>David Hubel and Torsten Wiesel discovered that cells in the visual cortex of cats (and, in 1968, of monkeys) respond differentially to form and movement.</td>
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</tbody>
</table>
**SUGGESTIONS FOR FURTHER READINGS**


Kosslyn, S., & Koenig, O. (1992). *Wet Mind: The New Cognitive Neuroscience*. New York: Free Press. A comprehensive, integrated, and accessible overview of recent insights into how the brain gives rise to mental activity. Examines a large number of syndromes that occur following brain damage, and accounts for them according to an analysis of the operation of a normal brain. The authors also present an interesting theory of consciousness.

Link, S. (1994). *Rediscovering the Past: Gustav Fechner and Signal Detection Theory*. Psychological Science, 5(6), 335-340. Suggests that the origins of experimental psychology are found in the theoretical works of Gustav Fechner and that Fechner is not given the credit that he is due for his contributions. Argues that his works spawned many new ideas and theories, including the response bias found in signal detection theory.


**DISCOVERING PSYCHOLOGY**

**PROGRAM 7: SENSATION AND PERCEPTION**

**Overview**

Explores how we make contact with the world outside our brain and body. See how biological, cognitive, social, and environmental influences shape our personal sense of reality, and gain an understanding of how psychologists use perceptual errors to study how the constructive process of perception works.

**Key Issues**

Visual illusions, the biology of perception, the visual pathway, how the brain processes information during perception, sensory feedback in visual perception, and perceptual constancy.

**Demonstrations**

Sensory feedback in visual perception. A Stanford student demonstrates the problems that football quarterbacks face in the adjustment to special kinesthetic cues with distortion goggles that displace feedback from the perceived visual field.

Perceptual constancy. Philip Zimbardo demonstrates visual misperception in the Ames distorted room in the Exploratorium in San Francisco.
Interviews

Nobel Prize winner David Hubel (Harvard University) explains the mapping of the reaction of receptor cells along the visual pathway of primates. Hubel’s award-winning experiment of the response of neurons to electrical activity in the visual cortex of a cat illustrates his point.

Misha Pavel uses computer graphics to demonstrate how the visual system of the brain breaks down and recombines visual stimulation into recognizable, coherent images.

FILMS AND VIDEOS

A Touch of Sensitivity (1981). BBC, 50 minutes
This NOVA presentation discusses the importance of touch and the effects of touch deprivation. This film examines the importance of touch for development at various ages. Many interesting areas of research are cited.

Reviews the influence of the mind on people’s ability to control pain, and on their ability to promote physical healing. An excellent film. Traces the progress of a woman through a three-week clinic program to reduce chronic pain. The changes in her movement and affect are dramatic. Demonstrates the placebo effect, and shows how cues, such as a doctor’s white coat, can trigger the release of endorphins to reduce pain. In the final segment, a cancer patient discusses how the interaction of cognitive therapy and physical therapy increased her life expectancy and quality.

The Senses: Eyes and Ears (1985). FFHS, 26 minutes
Visual and auditory distance receptors are discussed. Demonstrations of how each processes information are also shown.

The Senses: Skin Deep (1985). FFHS, 26 minutes
The sense receptors that depend on immediate contact with the world—taste buds, olfactory cells, and touch sensors—are examined.

CASE STUDY LECTURE LAUNCHER

Five months before her second birthday, Helen Keller was stricken with a mysterious illness that deprived her of both sight and hearing. Helen’s other senses became highly developed—a phenomenon experienced by many people who suffer long-term sensory deprivation—and her sensory experiences were eloquently documented: “I cannot recall what happened during the first months after my illness. I only know that I sat in my mother’s lap or clung to her dress as she went about her household duties. My hands felt every object and observed every motion, and in this way, I learned to know many things. . . . Sometimes I stood between two persons who were conversing and touched their lips. I could not understand, and was vexed” (Keller, 1902, pp. 26—27).

In her seventh year, Helen Keller became the pupil of Annie Sullivan, a young woman whose vision was partially impaired. In letters to a matron at the Perkins School in Boston where Annie had been educated, she wrote of the pleasure Helen derived from her remaining senses: “On entering a greenhouse her countenance becomes radiant, and she will tell the names of the flowers with which she is familiar, by the sense of smell alone. . . . She enjoys in anticipation the scent of a rose or a violet; and if she is promised a bouquet of these flowers, a peculiarly happy expression lights her face” (Sullivan, 1954, p. 294).

Helen herself wrote about the way that her sense of smell gave her advance warning of storms. “I notice first a throb of expectancy, a slight quiver, a concentration in my nostrils. As the storm draws
near my nostrils dilate, the better to receive the flood of earth odors, which seem to multiply and extend, until I feel the splash of rain against my cheek. As the tempest departs, receding farther and farther, the odors fade, become fainter and fainter and die away beyond the bar of space.” (Keller, Ackerman, 1990, p. 44).

Annie Sullivan reported that Helen’s “whole body is so finely organized that she seems to use it as a medium for bringing herself into closer relations with her fellow creatures.” Annie was puzzled at first by Helen’s “inexplicable mental faculty” for picking up emotions and physical sensations. She soon realized, though, that Helen had developed an exquisite sensitivity to the muscular variations of those around her. “One day, while she was out walking with her mother, . . . a boy threw a torpedo, which startled Mrs. Keller. Helen felt the change in her mother’s movements instantly, and asked, ‘What are we afraid of?’” (Sullivan, 1908, p. 295). During a hearing test, Helen astonished a roomful of people when “she would turn her head, smile, and act as though she had heard what was said.” However, when Annie let go of Helen’s hand and moved to the opposite side of the room, Helen remained motionless for the rest of the test. Although she could neither see nor hear, Helen Keller extracted a great deal of sensory information from the world. She did not perceive color, light, and sound through ordinary channels. Instead, she “heard” symphonies by placing her hands on a radio to feel the vibrations, and she “saw” where a person had been by picking up the scent of his or her clothes. Her ability to compensate for her sensory disabilities hints at the intricate coordination within human sensory systems and the interaction of sensory and brain processes. It also makes us aware of the extent to which our senses work in unison to weave experience of the world around us into the fabric of our very being.
CHAPTER 5
Perception

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Understand the relationship between sensation and perception
2. Explain the perceptual concepts of reality, ambiguity, and illusion
3. Describe the roles(s) played by attention in the processes of perception
4. Define the concepts of preattentive processing and guided search
5. Explicate the Gestalt principles of figure, ground, and closure, and be able to give examples of each
6. Describe the principles of perceptual grouping
7. Define the concepts of motion and depth perception
8. Explain the importance of perceptual constancy in perceptual processes
9. Describe the significance of identification and recognition in the overall process of perception

CHAPTER OUTLINE
I. Sensing, Organizing, Identifying, and Recognizing
   A. The Proximal and Distal Stimulus
      1. Perception is the set of processes that organize information in the sensory image and interpret that information as having been produced by objects or events in the external world
      2. Perceptual organization refers to the internal representation of an object
      3. A distal stimulus is a physical object in the world
      4. A proximal stimulus is the optical image of a distal stimulus that appear on the retina
   B. Reality, Ambiguity, and Illusions
      1. Ambiguity means that a single image at the sensory level can result in multiple interpretations at the perceptual and identification levels
      2. When your perceptual systems deceive you into experiencing a stimulus pattern in a manner that is demonstrably incorrect, you are experiencing an illusion
   C. Approaches to the Study of Perception
      1. Helmholtz argued for the importance of experience, or nurture, in perception
2. Gestalt psychology put greater emphasis on the role of innate structures, or nature, in perceptual experience.

3. The Gibsons suggested that perception could be better understood through an analysis of the immediately surrounding environment.
   a) Gibson’s theory of ecological optics focused attention on properties of external stimuli rather than on the mechanisms by which you perceive the stimuli.

II. Attentional Processes

   A. Selective Attention

1. In 1958 Donald Broadbent proposed that the mind functions as a communications channel, like a telephone line or computer modem, that has a limited capacity to process information.

2. The brain’s limited processing capacity makes it impossible to attend to everything and makes the filtering of information to the brain necessary.

3. Broadbent’s Filter Theory of Attention asserted that this filtering occurs early in the process, before the input’s meaning is assessed.

4. Dichotic listening tasks were used to test filter theory, and it was found that not all information is filtered.

5. The cocktail party phenomenon occurs when an individual hears their own name mentioned across a noisy room although the individual is participating in an unrelated conversation. Thus, even information to which an individual is not attending is processed to some extent.

6. As a general rule, information that is not attended to will not make its presence known, unless it is very distinct or personally relevant.

   B. Attention and Objects in the Environment

1. One of the main functions of attention is to help you find particular objects in a noisy visual environment.

2. Complex processing occurs without attention or awareness.

3. Preattentive processing operates on sensory inputs before you attend to them, as they first enter the brain from sensory receptors.
   a) Is skilled at finding objects that can be defined by a single feature.
   b) Allows parallel search of the environment for a single prominent feature.
      i) Parallel search allows the consideration of many objects at once.
      ii) Serial search allows the consideration of only one object at a time.
   c) Allows guided search of the environment and provides relatively sophisticated assistance in finding objects in the environment.

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III. Organizational Processes in Perception

A. Perceptual Organization refers to the processes that put sensory information together to give you the perception of coherence. What a person experiences as a result of these processes is called a percept.

B. Figure, Ground, and Closure

1. A figure is an object in the foreground of the visual field
2. The ground is the background against which the object is seen
3. There is a strong tendency to perceive a figure as being in front of a ground
4. Illusory contours are divisions or regions that do not exist in the distal stimulus, but do exist in the proximal experience of the stimulus
5. Closure is a powerful organizing process that fills in missing areas and makes incomplete figures or patterns appear complete

C. Principles of Perceptual Grouping

1. The Law of Proximity states that all else being equal, the nearest elements are grouped together
2. The Law of Similarity states that all else being equal, the most similar elements are grouped together
3. The Law of Common Fate states that all else being equal, elements moving in the same direction and at the same rate of speed are grouped together
4. The Law of Pragnanz is a general law that states that individuals perceive the simplest organization that fits the stimulus pattern

D. Spatial and Temporal Integration

1. Individuals are often unable to detect when a whole object has changed from one fixation to another
2. A fixation is one glance or brief glimpse

E. Motion Perception

1. Motion perception requires comparison across different fixations of the world and is dependent on reference frame
2. Induced motion occurs when a stationary object appears to be moving because a reference frame to which it is being compared is moving. There is a tendency for the visual system to take a larger, surrounding figure as the reference frame for a smaller figure inside it.
3. The simplest form of apparent motion is the phi phenomenon, which occurs when two stationary spots of light are turned on and off alternately very quickly. It appears that a single light is moving back and forth between the two spots of light.

F. Depth Perception
1. Depth perception requires that the visual system extract three-dimensional representations from two-dimensional information

2. Vision relies on depth cues that allow the interpretation of sensory input

G. Binocular and Motion Cues

1. Binocular disparity is the displacement between the horizontal positions of corresponding images in the two eyes

2. Convergence is the turning in of the eyes when they fixate on a single object. The eyes must converge more for objects that are near than for objects that are distant.

3. Relative motion parallax provides information about depth as an individual moves because objects that are close appear to move more than objects that are farther away

H. Perceptual Constancies

1. Perceptual constancy refers to the tendency to see the world as invariant, constant, and stable, despite changes in the stimulation of sensory receptors

2. Size and shape constancy
   a) Size constancy refers to the ability to perceive the true size of an object despite variations in the size of its retinal image
   b) Shape constancy refers to the ability to perceive correctly an object’s actual shape, even when the object is slanted away from the viewer, making the shape of the retinal image substantially different from that of the object itself
   c) Orientation constancy refers to the ability to recognize the true orientation of the figure in the real world, even though its orientation in the retinal image is changed
   d) Lightness constancy is your tendency to perceive the whiteness, grayness, or blackness of objects as constant across changing levels of illumination

IV. Identification and Recognition Processes

A. Bottom-Up and Top-Down Processes

1. Bottom-up processing is taking sensory data into the system and sending it upward for extraction and analysis of relevant information. It is anchored in empirical reality and deals with bits of information and the transformation of concrete, physical features of stimuli into abstract representations. Also called data-driven processing.

2. Top-down processing is when past experiences, knowledge, motivations, cultural background, and expectations affect perception, as higher mental functioning influences how objects and events are understood. Also called hypothesis-driven processing.

3. Phonemic restoration occurs when there are gaps in physical signals and perception replaces part of a word that was obscured by noise in
a very loud environment

B. Object Recognition

1. Irving Biederman has proposed that all objects can be assembled from a set of geometrical ions, or geons. From a set of 36 geons, Biederman believes that perception can make a strong guess at the nature of an object.

C. The Influence of Contexts and Expectations

1. Expectations can influence hypotheses about what is out there in the world and can influence what is actually perceived
2. It takes longer to recognize an object when it is seen in the wrong context, not in a familiar place
3. Object identification is a constructive, interpretive process
4. Set is a temporary readiness to perceive or react to a stimulus in a particular way. There are three types of sets: motor, mental, and perceptual.
   a) A motor set is a readiness to make a quick, prepared response
   b) A mental set is a readiness to deal with a situation, such as a problem-solving task or game, in a way determined by learned rules, instructions, expectations, or habitual tendencies. Mental sets can actually prevent problem-solving when old rules do not fit new situations.
   c) A perceptual set is a readiness to detect a particular stimulus in a given context

D. Creatively Playful Perception

1. Perceptual creativity involves experiencing the world in ways that are imaginative, personally enriching, and fun

E. Final Lessons

1. A perceptual experience in response to a stimulus event is determined not only by the stimulus but also by the person experiencing it. In addition to sensation, final perception depends on past experience, expectations, wants, goals, values, and imagination.
2. A proper balance of top-down and bottom-up processing achieves the basic goal of perception: to experience what is out there in a way that maximally serves your needs as a biological and social being, moving about and adapting to your physical and social environment.
DISCUSSION QUESTIONS

1. Why are there separate chapters on sensation and perception? What are the differences between the two?

2. Which is more susceptible to cultural or contextual influence, sensation or perception? Why?

3. How are individuals able to tell when their perceptions have been influenced by cultural or contextual factors? Is there a way to eliminate these biases from perception? These factors probably always influence perception, but knowing that they do gives the perceiver knowledge that may help minimize its negative impact.

4. Are the differences in perception among humans likely to be larger or smaller than the differences in perception among ants? Assuming that human cultures are more diverse than ant cultures, the differences in perception should be greater for humans. Larger cultural differences would produce larger variations in perception.

5. You might ask students if they believe that advertisers put hidden messages in their advertisements. Follow up by asking if they believe those messages work. You can use this to lead into a discussion of subliminal perception and its supposed effects. Stories of subliminal visual messages go back to claims of their inclusion in movies in the 1950s. Subliminal verbal messages have been discussed at least since the controversy about the Beatles supposedly putting hidden messages in their albums in the late 1960s. However, the evidence that these messages have any real effect on behavior is currently lacking. Stories about subliminal messages continue to regularly appear in the media, and it is surprising how many people believe that the messages work.

6. As an example of motion parallax, you might ask students if they have ever traveled with young children on a clear night with the moon near the horizon to one side of the road on which you are traveling. Whereas the trees, houses, and hills seem to move steadily by, the moon appears to be traveling along with you. Many times young children will exclaim that the “moon is following us.” There have even been UFO reports generated by this phenomenon on cloudy nights when adults have mistaken the moonlight for a flying object darting in and out of the clouds and following them along the horizon.

7. To illustrate the fact that the brain interprets messages from the skin’s hot and cold receptors relative to previous and surrounding stimuli, set up three small basins in the front of the class. Fill one with hot water (but not so hot that it will burn someone’s skin), one with cold water, and one with luke-warm water. Have students put one hand in the basin of hot water and the other hand in the basin of cold water. Then have them place both hands in the basin of warm water. They should notice that in the warm water, one hand (the one that was in the cold water) will sense it as being hot, while the other hand (the one that was in the hot water) will sense it as being cold.
SUPPLEMENTAL LECTURE MATERIAL

Eyes and Camera Lens
For many years, it was believed that the eye worked like a camera, and there are some similarities. For instance, both the pupil of the eye and the aperture of a camera contract and expand in response to a respective increase or decrease in the amount of light entering the apparatus. Nevertheless, in comparing the human eye to a camera, some of the differences between these two are striking.

Perhaps the strangest difference between the human eye and a camera lens is the position of the retina and the analogous film. For a camera to be like the human eye, we would have to load our film into the camera backward. That is, the photoreceptors actually pick the light up off the back of the surface of the eyeball. A camera must be held relatively still to capture a clear image, but when the eyeball is held still, the picture disappears. Both the camera and the eye have a lens that focuses an image on a surface, but the two have different methods of focusing. The lens in a camera moves closer to or farther from the film in order to focus the image on the film; the lens in the eye changes shape to focus the image on the retina. This process is called accommodation.

An upside-down mirror image is focused on both the film and the retina; however, the film and the retina differ in that the film records the image exactly as it is projected. The photoreceptors in the retina receive information from visual stimuli; those stimuli are analyzed and reconstructed as they move through the visual system from the retina to the cortex. What we perceive is a picture that is not identical to the item we are looking at. Photographs in which people have their feet extended closer to the camera in front of them are comical because we take relative distances into account and perceive the feet as being a constant size.

Everyday Examples of Gestalt Principles
Bring in everyday examples of the Gestalt principles of perception from magazines or artworks. Transparencies of the examples can be made on a copy machine, and then used on overhead projectors. For example, in Escher’s Mosaic II, one sees a group of black creatures on either a white background or a group of white creatures on a black background. H. A. Broos explains how Escher’s prints have been used in geology, chemistry, and psychology in The World of M. C. Escher. This book also contains a chronological survey of Escher’s work and includes a number of useful examples, such as illustrations of figure and ground in the woodcuts “Sky and Water I” and “Sky and Water II.”

A Brief History of Gestalt Psychology
The Gestalt movement in psychology was established in Germany in the early 1900s, and was based on the Gestaltist’s opposition to the structuralist movement. In essence, the structuralist movement proposed that all phenomena could be broken down into their most primitive perceptual elements. The Gestaltists took exception to that philosophy, arguing that psychological phenomena could be understood only if they were studied as organized, structured “wholes,” thus maintaining the “unitary essence” of the phenomena.

The Gestaltists extended this philosophy to learning, in viewing it as a restructuring or reorganization of an entire situation, and a process that often included insight as a critical aspect of that process. Brain physiology was perceived in the same context, in that Gestaltists saw the brain as isomorphic, as having a relationship between the excitatory fields in the cortex and the conscious experience of the individual.

Gestalt psychology, as a distinct discipline, is rarely found today, although many of the insights it
fostered and discoveries have been incorporated into contemporary psychology.
BIOGRAPHICAL PROFILES

Eleanor Gibson (b. 1910)
Eleanor Gibson graduated from Smith College in 1931 and obtained her Ph.D. at Yale in 1938. Gibson was instrumental in studying perceptual development in children, inventing the visual cliff as a means of studying depth perception. Her interests in experimental psychology were influenced by her husband, J. J. Gibson, whose research and theory on perception have challenged the more popular Gestalt and information-processing accounts that hold that a stimulus undergoes considerable interpretation via cognitive processes. Gibson received the American Psychological Association Distinguished Scientific Contribution Award for her research on depth perception.

William Rutherford (1839–1899)
William Rutherford was born in Ancrum, Scotland, and received his M.D. at the University of Edinburgh. His first academic appointment was at King’s College, London, but he eventually returned to Edinburgh as a professor of physiology in 1878. He is well known for his research on the influence of the vagus nerve on circulation and on drug effects on the secretion of bile, as well as for his physiological textbook published in 1880. He is best known in psychology for his “Telephone Theory” of pitch perception, which argues that the Organ of Corti vibrates in a manner that duplicates the frequency of vibrations of the tympanic membrane and ossicles. This frequency theory of pitch perception, a major competitor to Helmholtz’s place theory, seems to account well for our perception of low- and middle-frequency sounds.

Max Wertheimer (1880–1943)
Wertheimer was born in Prague, Austria-Hungary. His father directed a private business college and his mother was an accomplished amateur violinist. Wertheimer studied law, philosophy, and psychology at Charles University in Prague. He later studied philosophy and psychology at the University of Berlin under Carl Stumpf, then moved to the University of Surzburg in 1904, obtaining his Ph.D. under Oswald Kulpe. Wertheimer first discovered the phenomenon of apparent motion during a train trip, and later conducted studies on the phi illusion at Frankfurt, where Wolfgang Köhler and Kurt Koffka, his cofounders of the Gestalt school of psychology, participated as his research participants. In 1933, Wertheimer fled Germany due to Hitler’s rise to power, coming to the United States. He taught at the New School for Social Research in New York City until his death in 1943.
### TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1815</td>
<td>Napoleon was defeated at the battle of Waterloo and banished to St. Helena.</td>
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<td>1838</td>
<td>Johannes Müller formulated his doctrine of specific nerve energies, which states that sensory experience depends not on the stimulus, but on the part of the nervous system that is activated.</td>
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<td>1846</td>
<td>Ernst Weber postulated that the difference threshold is a constant proportion of the initial stimulus intensity, a notion later formalized as Weber’s Law.</td>
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<td>1857</td>
<td>Based on the earlier work of Thomas Young, Hermann von Helmholtz proposed that color vision is due to three different types of color receptors (cones), each of which is sensitive to a specific range of wavelengths of light.</td>
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<tr>
<td>1860</td>
<td>Gustav Fechner published <em>Elemente der Psychophysik</em>, marking the founding of psychophysics, the study of the relationship between subjective experience and physical stimulation.</td>
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<tr>
<td>1861–1865</td>
<td>The American Civil War was fought.</td>
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<tr>
<td>1881</td>
<td>Pasteur and Koch discovered the germ theory of disease.</td>
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<td>1917</td>
<td>The Bolshevik Revolution was fought in Russia.</td>
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<td>1938</td>
<td>H. Keffer Hartline discovered that optic nerve fibers respond to stimulation from different receptive fields.</td>
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<tr>
<td>1948</td>
<td>Israel became an independent nation.</td>
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<td>1953</td>
<td>The genetic code was broken.</td>
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<td>1954</td>
<td>Tanner and Swets proposed the application of signal detection theory to the study of thresholds.</td>
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<tr>
<td>1957</td>
<td>S. S. Stevens demonstrated that changes in one’s subjective impression of stimulus magnitude are a power function of the actual stimulus magnitude.</td>
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<tr>
<td>1957</td>
<td>Leo Hurvich and Dorothea Jameson, building on the earlier work of Ewald Hering, postulated the theory that color vision is based on opposing neural processes, the opponent-process theory of color vision.</td>
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<tr>
<td>1959</td>
<td>David Hubel and Torsten Wiesel discovered that cells in the visual cortex of cats (and, in 1968, of monkeys) respond differentially to form and movement.</td>
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</tbody>
</table>
SUGGESTIONS FOR FURTHER READING


Kosslyn, S. M., & Koenig, O. (1992). Wet Mind: The New Cognitive Neuroscience. An excellent volume that introduces the field of cognitive neuroscience to the uninitiated. This volume covers a range of cognitive and neurological issues, to include sensation and perception. Well written and easy for even the lay person to understand.

Link, S. (1994). Rediscovering the Past: Gustav Fechner and Signal Detection Theory. Psychological Science, 5(6), 335–340. Suggests that the origins of experimental psychology are found in the theoretical works of Gustav Fechner and that Fechner is not given the credit that he is due for his contributions. Argues that his works spawned many new ideas and theories, including the response bias found in signal detection theory.


DISCOVERING PSYCHOLOGY

PROGRAM 3: THE BEHAVING BRAIN

Overview
The structure and composition of the brain: how neurons function, how information is collected and transmitted, and how chemical reactions determine every thought, feeling, and action.

Key Issues
The biology of the brain, how the brain processes information, the electroencephalogram (EEG), neurometric evaluation, the effects of drugs on the functions of the brain, the brain’s own manufactured chemicals, and neurotransplantation.

Demonstrations
Multiple brain wave recording to reveal various types of brain malfunction. Effects of chemicals on learning and memory in rats.

New Interviews
John Gabrieli illustrates how the brain stores and retrieves information.

PROGRAM 7: SENSATION AND PERCEPTION

Overview
Explores how we make contact with the world outside our brain and body. See how biological, cognitive, social, and environmental influences shape our personal sense of reality, and gain an understanding of how psychologists use perceptual errors to study how the constructive process of perception works.

Key Issues
Visual illusions, the biology of perception, the visual pathway, how the brain processes information during perception, sensory feedback in visual perception, and perceptual constancy.

Demonstrations
Sensory feedback in visual perception. A Stanford student demonstrates the problems football quarterbacks face in the adjustment to special kinesthetic cues with distortion goggles that displace feedback from the perceived visual field.
Perceptual constancy. Philip Zimbardo demonstrates visual misperception in the Ames distorted room in the Exploratorium in San Francisco.

Interviews
Nobel Prize winner David Hubel explains the mapping of the reaction of receptor cells along the visual pathway of primates. Hubel’s award-winning experiment of the response of neurons to electrical activity in the visual cortex of a cat illustrates his point.
Misha Pavel uses computer graphics to demonstrate how the visual system of the brain breaks down and recombines visual stimulation into recognizable, coherent images.

FILMS AND VIDEOS
A Touch of Sensibility (1981). BBC, 50 minutes
This NOVA presentation discusses the importance of touch and the effects of touch deprivation. This film examines the importance of touch for development at various age levels. Many interesting areas of research are cited.

**Brain Power (1983). IU (LCA), 11 minutes**
 Discusses three principles of perception that affect how a person receives information: recognition, interpretation, and expectation. Throughout the film, visual cues, puzzles, and optical illusions remind the viewer that one’s perceptions can be easily fooled. A brief, clever film that stimulates students’ interest in sensation and perception.


 Reviews the influence of the mind on people’s ability to control pain and on their ability to promote physical healing. An excellent film. Traces the progress of a woman through a three-week clinic program to reduce chronic, long-term pain. The changes in her movement and affect are dramatic. Demonstrates the placebo effect, and shows how cues, such as a doctor’s white coat, can trigger the release of endorphins to reduce pain. In the final segment, a cancer patient discusses how the interaction of cognitive therapy with physical therapy has increased her life expectancy and her life quality.

**The Senses: Eyes and Ears (1985). FFHS, 26 minutes**
 Visual and auditory distance receptors are discussed. Demonstrations of how each processes information are also shown.

**The Senses: Skin Deep (1985). FFHS, 26 minutes**
 The sense receptors that depend on immediate contact with the world – taste buds, olfactory cells, and touch sensors – are examined.

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**CASE STUDY LECTURE LAUNCHER**

One night in 1965, a United Airlines Boeing 727 started a steady descent to Chicago’s O’Hare Airport from an altitude of 22,000 feet. Nineteen miles off the shore of Lake Michigan, the plane plunged into the lake. One month later, also at night, an American Airlines Boeing 727, preparing to land at Kentucky’s Boone County Airport, followed the thread of the Ohio River toward the runway which began at the river’s steep south bank. The plane failed to make the runway, and crashed into the bank, 12 feet below the runway. One night in early 1966, an Al Nippon Airlines Boeing 727 headed toward Tokyo Bay. The pilot could see the lights of Tokyo and Yokohama clearly. He requested and received permission to approach using visual cues rather than relying exclusively on the instruments of the plane. The pilot had not even let down the wheels or extended the flaps when, six and a half miles from the runway, the plane dove into Tokyo Bay at 240 knots.

Preliminary analyses of these and other similar cases showed that all of the accidents occurred at night, under clear weather conditions, with the planes flying over a dark area of water or land. In every case, irregular patterns of light (as opposed to grids of neatly intersecting lines of streetlights) in the distance had been visible to the pilots.

In a way, the new Boeing 727 design was partly responsible for the accidents, because it was so well engineered. In earlier, less stable models, feedback from vibrations, sounds and kinesthetic sensations would have warned pilots that they were descending too rapidly. However, it was more than an improved design that had caused the accidents.

Using a flight simulator, engineering psychologist Conrad Kraft found that an error in the pilot’s visual perception was responsible for each of the accidents. Pilots making a visually guided approach over a dark terrain relied on the relatively constant visual angle between their planes and
the distant light patterns in determining their altitudes. If they were approaching flat terrain, their altitude estimates were generally correct, but if the terrain sloped upward, with the farthest lights higher than the closer ones, even the most experienced pilots descended to dangerously low altitudes. With no visual information from the “black hole” below them, the pilots overestimated their distance from the ground and inappropriately adjusted their descent angles.

Why didn’t the pilots also use their altimeters, which indicated altitude accurately? When landing an airplane, a pilot must monitor several functions at once—such as air speed, engine settings, altitude, glide slope, angle of attack, and heading—while also responding to air traffic controller directions and watching for other aircraft. With all of these responsibilities, especially when visibility is good, pilots may fail to check their altimeters and instead rely on visual cues from the cockpit. After Dr. Kraft solved the mystery of the accidents, commercial airlines around the world informed pilots of the conditions under which they might misjudge altitude on approach to landing. Psychologists such as Dr. Kraft study perception in order to learn how the major sensory systems of the body help (and sometimes trick) us in gathering information about the environments in which we live, work, and play.
LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Identify and provide examples of the three levels of consciousness
2. Describe the origins of the mind—body problem, and Descartes’ mechanistic approach to it via his theory of the animal machine
3. Explain the philosophical and theoretical differences between dualism and monism
4. Define the concepts of the personal construction of reality, the cultural construction of reality, and the significance of consensual validation of both
5. Define and give examples of circadian rhythms
6. Identify the five stages of sleep, as well as the functions of REM sleep
7. Explain the four major types of sleep disorders
8. Describe both the basic premises of Freudian dream analysis and the activation synthesis hypothesis of dreaming
9. Explain extended states of consciousness, such as hypnosis, meditation, and hallucination
10. Describe the effects of psychoactive substances

CHAPTER OUTLINE
I. The Contents of Consciousness
   A. This chapter discusses ordinary states of consciousness and the mind–body problem, as well as the more unusual experiences that are part of the human potential, such as hallucinations, hypnosis, and dreams
   B. Awareness and Consciousness
   C. Consciousness is an ambiguous term that can refer to a general state of mind or to its specific contents
      1. The contents of consciousness refers to the information at the intersection of these two types of consciousness
   D. Consciousness has long been a topic of psychological inquiry. In the late 1800s, Wundt and Titchener used introspection to explore the contents of the conscious mind and James made observations of his own “stream of consciousness.”
   E. Ordinary waking consciousness includes perceptions, thoughts, feelings, images, and desires at a given moment, but consciousness can be formally defined as consisting of three levels:
      1. Basic level consciousness is an awareness of the inner and outer world-
awareness that one is perceiving and reacting to perceptual information

2. Second level consciousness is the reflection on that of which one is aware and includes the manipulation of symbolic knowledge free from the constraints of real objects and present events

3. Top level consciousness is self-awareness—awareness that one is conscious and capable of reflection

F. Accessibility to Consciousness

1. Non-conscious processes are bodily activities that rarely impinge on consciousness, such as digestion, regulation of blood pressure, and breathing

2. Preconscious memories are memories that become accessible to consciousness only after something has called attention to them

3. Unattended information refers to environmental stimuli that are not the focus of attention, but that may be processed unconsciously. If these stimuli become relevant, such as when you hear your name at a cocktail party, it may become the subject of consciousness.

4. The Unconscious, most fully elaborated by Freud, refers to mental processes that are not and cannot be conscious. Freud believed that the unconscious was filled with forbidden, traumatic thoughts, while contemporary researchers examine the more benign aspects of the unconscious.

G. Studying the Contents of Consciousness

1. Two primary methods are used to study consciousness:
   a) Think-aloud protocols ask individuals to report their thoughts aloud as they perform an experimental task
   b) Experience-sampling methods ask individuals to report their thoughts and feelings when signaled to do so, often by electronic pagers

II. The Functions of Consciousness

A. The Uses of Consciousness

1. To understand the functions of consciousness, the forces that control behavior must be understood

2. Early human ancestors believed in animistic explanations of behavior, that spiritual forces guided all forms of life

3. Contemporary researchers have replaced the role of spirits with the concepts of consciousness and mind

B. Aiding Survival

1. Consciousness probably evolved because it helped individuals make sense of and navigate in the environment. Consciousness aids adaptation to the environment in three ways:
a) Consciousness performs a restrictive function and tunes out much information that is irrelevant to immediate goals
b) Consciousness performs a selective storage function for those special stimuli that are to be analyzed, interpreted, and acted on
c) Consciousness performs a planning or executive control function that enables the suppression of strong desires when they conflict with moral, ethical, or practical concerns

C. **Personal and Cultural Constructions of Reality**

1. *A personal construction of reality* is an individual’s unique interpretation of a current situation based on knowledge, memories, needs, values, beliefs, and goals
   a) When a personal construction of reality remains stable over time, a sense of self or consciousness of self has continuity over time

2. *Cultural constructions of reality* are ways of thinking about the world that are shared by most members of a particular group of people

3. *Consensual validation* is the mutual affirmation of conscious constructions of reality

D. **Studying the Functions of Consciousness**

1. Researchers use the SLIP (Spoonerisms of Laboratory Induced Predisposition) technique to study the way in which unconscious forces affect speech errors

### III. Sleep and Dreams

A. **Circadian rhythms**—the human time cycle—influence arousal levels, metabolism, heart rate, body temperature, hormonal activity, and other bodily processes. Circadian rhythms are close to 24 hours.

1. Mismatches between circadian rhythms and environmental clocks can affect how individuals feel, as it does in jet lag
2. About a third of each circadian rhythm is devoted to sleep

B. **The Sleep Cycle**

1. The *electroencephalogram (EEG)*, which records electrical brain wave activity, provided a methodological breakthrough in sleep research.
2. As an individual prepares for bed, brain wave activity averages about 14 cycles per second (cps)
3. *Stage 1 sleep* is characterized by brain waves of about 3 to 7 cps
4. *Stage 2 sleep* is characterized by *sleep spindles*, minute bursts of electrical activity of 12 to 16 cps
5. *Stage 3 sleep* is characterized by deep relaxation and brain wave activity of about 1 to 2 cps
6. *Stage 4 sleep* is characterized by even deeper relaxation and very slow brain wave activity.

7. *REM (Rapid Eye Movement) sleep* is characterized by a return to brain wave activity similar to that found in stages 1 and 2, by the rapid eye movements for which this stage is named, and by the presence of dreams.

8. The first four stages of sleep require about 90 minutes. REM sleep about 10 minutes. During the course of a night, this 100-minute cycle is repeated four to six times.

**C. Why Sleep?**

1. The two most general functions of NREM sleep are *conservation* and *restoration*.
   a) Sleep helps conserve energy because it often occurs when foraging for food, searching for mates, or moving about is unnecessary or dangerous.
   b) Sleep serves a restorative function because neurotransmitters and neuromodulators may be synthesized and their balance restored during sleep.

2. The function of REM sleep appears to be related to the maintenance of mood and emotion, storing memories, and fitting recent experiences into existing memories. REM sleep may also restore the balance of the brain after NREM sleep.

**D. Sleep Disorders**

1. *Insomnia* is the inability to get a satisfactory amount or quality of sleep and is characterized by an inability to fall asleep, frequent arousal, or early morning awakening.

2. *Narcolepsy* is a sleep disorder characterized by a periodic compulsion to sleep during the daytime.

3. *Sleep Apnea* is an upper respiratory sleep disorder in which the person stops breathing while asleep, which causes the sufferer to awake immediately and begin breathing again.

4. *Excessive Daytime Sleepiness* is the major complaint of individuals evaluated at sleep disorder centers. About one-third of adults report excessive sleepiness during the daytime.

**E. Dreams: Theater of the Mind**

1. Most dreams take place during REM sleep. Dreams that take place during NREM sleep tend to be full of specific thoughts but devoid of dramatic content or vivid sensory imagery.

2. NREM dreams are recalled less often than REM dreams, but NREM dreaming is enhanced during the very late morning hours.
3. Most cultures instill the belief that dreams have meaning, but they do so in diverse ways
   a) The most prominent Western theory of dreams was proposed by Sigmund Freud
   b) Freud believed dreams to be “the royal road to the unconscious”
   c) In *The Interpretation of Dreams*, Freud made dreams a cornerstone of psychoanalysis. Dreams, to Freud, were “wish fulfillment” of powerful, unconscious desires that were disguised in dream form.
   d) The latent content of a dream referred to the hidden wish or meaning of the dream
   e) This latent content is transformed into a disguised form, or manifest content, through the process of dream work
   f) Dream work takes forbidden wishes and transforms them into often bizarre but acceptable forms that are experienced as dreams
   g) The interpretation of dreams requires working backward from the manifest content to the latent content, to revealing the unconscious wishes expressed in the dream
   h) Freud’s theory of dream interpretation relates dream symbols, which may have both universal and personal meanings, to his explicit theory of psychology

4. Non-Western Approaches to Dream Interpretation
   a) In many non-Western cultures, dream interpretation is part of the fabric of the culture
   b) In the Mayan culture, shamans function as dream interpreters and play a central role in Mayan interpersonal relations and in tying the Mayan culture to their ancestral roots
   c) In other cultures, such as the people of the Ingessana Hills (bordering Ethiopia and Sudan) and the Kapolo Indians of Brazil, dreams represent visions of the future

F. Physiological Theories of Dream Content
   1. Represent the greatest challenge to the Freudian Theory of Dreams
   2. The Activation–Synthesis Model of Dreams suggests that dreams are the brain’s attempt to make sense of essentially random neural firings that occur during sleep. In an inexorable quest for meaning, the brain weaves random neural activity into a strange but comprehensible narrative based on memories, beliefs, values, goals, and expectations.

G. Nightmares
   1. *Nightmares* are dreams that make the dreamer feel helpless or out of control
2. Nightmares are often triggered by stress, especially fear of harm and desertion, and usually only occur a few times each year.

3. Traumatic events may make individuals more likely to have nightmares that force them to relive some aspect of the traumatic event.

IV. Alerted States of Consciousness

A. Lucid Dreaming

1. Lucid dreaming involves conscious awareness while an individual is dreaming, that they are dreaming.

2. Research suggests that the ability to lucid dream can be taught.

3. Some researchers, such as LaBerge, argue that lucid dreaming enhances self-esteem and generates positive experiences by giving individuals control over the often uncontrollable events of dreams and nightmares.

4. Others argue that lucid dreaming interferes with and distorts the natural process of dreaming.

B. Hypnosis

1. Hypnosis is an alternative state of awareness characterized by the special ability some people have of responding to suggestion with changes in perception, memory, motivation, and sense of self-control.

   a) Some researchers believe that hypnotized individuals enter a trance, although research suggests that this is not the case.

   b) Some believe that hypnosis is a kind of placebo response, although some research suggests an added benefit beyond that derived from a placebo.

2. Hypnotic Induction and Hypnotizability

   a) A hypnotic induction is a preliminary set of activities that minimizes external distractions and encourages the participant to enter a hypnotic state.

   b) Hypnotizability refers to the degree to which an individual is responsive to standardized suggestions to experience hypnotic reactions.

   c) Hypnotizability varies widely from person to person, is relatively stable over time, and may have some genetic determinants, although it is not correlated with any personality trait.

3. Effects of Hypnosis

   a) One undisputed value of hypnosis is pain reduction (hypnotic analgesia). Hypnotic analgesia has proved especially valuable to surgery patients that are allergic to anesthesia, to mothers in natural childbirth, and to cancer patients learning to endure chronic pain associated with their disease.

   b) Self-hypnosis is the best approach to controlling pain because
individuals can essentially self-medicate whenever pain arises

c) Research on hypnotic pain reduction suggests that hypnosis segregates consciousness into two levels. One level is a full, but hypnotic, consciousness. The second level is a Hidden Observer, a concealed nonconscious awareness that monitors the hypnotized consciousness.

d) People cannot be made to do anything that they do not wish to do under hypnosis

C. Meditation

1. Meditation is a form of consciousness change designed to enhance self-knowledge and well-being by reducing self-awareness

   a) Critics argue that there is little difference between a normal resting state with the eyes closed and the state entered through meditation

   b) Advocates argue that meditation reduces stress, can improve IQ, and can even lead to enlightenment

D. Hallucinations

1. Hallucinations are false perceptions that occur in the absence of objective stimulation and can be caused by the following:

   a) Heightened arousal

   b) States of intense need

   c) Inability to suppress threatening thoughts

   d) Abnormal brain functioning caused by fevers, seizures, and migraine headaches

   e) Psychoactive drugs, such as LSD and peyote, can also produce hallucinations by acting directly on the brain

2. In some cultural and religious settings, hallucinations play an important mystical or spiritual role

E. Religious Ecstasy

1. Religious ecstasy is a unique psychological state characterized by a sense of oneness and connectedness often brought on by meditation, prayer, fasting, and spiritual communication

2. During religious ecstasy, some individuals can do remarkable things that they ordinarily may not be able to do, such as handling deadly snakes, drinking poison, and handling fire

F. Mind-Altering Drugs

1. Although mind-altering drugs have been used for centuries during religious ceremonies, today they are associated more often with
recreational usage

2. Dependence and Addition

a) *Psychoactive drugs* are chemicals that affect mental processes, such as perception, memory, mood, and behavior by temporarily changing conscious awareness

b) *Tolerance* may be developed to psychoactive drugs in which more and more of the drug is needed to produce the same change in consciousness

c) *Physiological dependence* is a process in which the body becomes accustomed to the presence of a drug and begins to depend on its presence to function properly

3. Varieties of Psychoactive Drugs

a) *Hallucinogenic or psychedelic drugs*, including *LSD, mescaline, psilocybin*, and *PCP*, can produce profound alterations of both perception and inner awareness. They often lead to a loss of boundary between self and non-self and to confusion.

b) *Cannabis*, including both *marijuana* and *hashish*, can create mild, pleasurable highs, distortions of space and time, euphoria, and, occasionally, hallucination. Possible negative effects include fear, anxiety, paranoia, confusion, and retardation of motor function.

c) *Opiates*, such as *heroin* and *morphine*, suppress physical sensation and stimulation and produce a rush of euphoria. Because of this rush, any use is likely to lead to serious addiction.

d) *Depressants*, such as barbiturates and alcohol, tend to depress the mental and physical activity of the body by inhibiting the transmission of nerve impulses in the central nervous system

   (i) *Barbiturates*, such as *Valium and Xanax*, are particularly dangerous, accounting for half of drug overdoses

   (ii) Although often socially accepted, *alcohol* is a major health and social problem. Alcohol use can lead to alcoholism, which can disrupt social and professional relations, and to serious health problems.

e) *Stimulants*, such as *amphetamine*, *cocaine*, and *crack* (a purified form of cocaine), induce a sense of euphoria, self-confidence, and hyperalertness. Possible negative effects include paranoid delusions, cycles of euphoric highs and painful lows, and social isolation.
Caffeine and nicotine are often unrecognized stimulants that act on the brain much like other stimulants. Nicotine is a dangerous drug that has a greater impact on health than that of all other psychoactive drugs combined.

**DISCUSSION QUESTIONS**

1. The class should now be familiar with dualism and monism, through both the text and lectures. Ask them which of these they think best describes the relationship between the brain and the mind. Why? Can anyone think of personal experiences or observations to support their beliefs? What about empirical data that might support a given hypothesis?

2. Zimbardo and Gerrig propose that sleep may have evolved because it gave animals an opportunity to conserve energy at those times when they did not need to be searching for food or a mate. Given that we as humans no longer engage in these activities under the same constraints as animals, ask the class if they think it possible that we may eventually evolve out of the need for sleep.

3. According to Zimbardo and Gerrig, there appears to be a developmental timetable for dreams that parallels our cognitive developmental pathway, with children being the example given. If this premise is valid, what sort of dreams might we expect to see at the opposite end of the spectrum, during old age?

4. Ask your students if they have ever had a lucid dream. Have students share their lucid experiences. Students find this subject fascinating, and the topic often leads to lively discussion concerning the nature of consciousness and the nature of reality. How would students use the extra time of consciousness while they are lucid in their dreams? Would they use it differently than they would normal consciousness? Why or why not?

5. Most sleep researchers argue that people need an average of 8 hours of sleep per day to be fully rested and alert. First, you might ask students why they think this is, as most people today do not physically exert themselves enough to require 8 hours of sleep to physically recharge themselves. Second, you might ask students how much sleep they are getting each night. My guess is most of them are not getting the recommended 8 hours per night. But many of them are probably not feeling overtired or sleep deprived. While the average amount of required sleep is 8 hours, many people function quite well on 6 or 7 hours per night, while others need 9 or 10 hours per night. I had a professor in graduate school who functioned quite effectively for years on only 3 or 4 hours per night! The important thing for
students to know is that not everyone needs the average, but knowing how much sleep your body needs and adjusting your schedule so that you are getting what you need is crucial to feeling rested.

6. Many people sleep somewhat more when they are mildly depressed or experience mild to moderate stress. Some students who are juggling school, work, and family/social life find that they are nodding off every time they sit down or relax, but are still consistently exhausted. If they add up all the hours they are “napping,” it can add up to 11 or 12 hours a day. Of course, it is not good quality sleep, which means it doesn’t help them feel “recharged” or well rested. When I was a psychology intern at a university counseling center, it was such a common phenomenon we began calling it “student sleep syndrome.” Often, students feel even worse when this occurs because they begin to wonder what’s wrong with them, which compounds their stress. Most students are relieved to know that this condition is common and often disappears when stress levels are reduced. Usually, when a student takes a term off or cuts back on his or her schedule, the condition disappears. However, as with any dramatic or prolonged change in energy level or physical condition, students should get a complete physical examination from their physician before assuming it is just a symptom of stress.

7. Ask students to describe what they do to fall asleep and how long it usually takes them. You will usually find that those students who get a reasonable amount of physical exercise during the day, allow themselves at least an hour of “winding down time” before they go to bed, and go to bed at similar times each night will tend to go to sleep faster than those who do not exercise, have erratic schedules, and too many presleep activities. Often, insomnia can be managed just by changing their daily schedules and presleep routines.

8. Ask students what they do when they have bouts of insomnia. I’ve heard everything from counting sheep to having sex. Clearly there is no one technique that works for everyone. But there are many techniques that work well for at least some people. You can discuss how many techniques, such as progressive relaxation, deep breathing, and fantasy, can be used to induce a relaxed state compatible with sleep induction. Some insomnia is caused because people, go to bed hungry or “wired” from drinking beverages loaded with caffeine. Eating a snack so that you are not experiencing hunger pains, and making sure what you eat is not loaded with caffeine and sugar, can also induce drowsiness and relaxation. While sleeping pills are an option, as the text suggests, they are usually not an ideal option because of side effects and people’s tendency to become dependent on them.

**SUPPLEMENTAL LECTURE MATERIAL**

Unattended Information and the “Cocktail Party Phenomenon”

It has happened to all of us. You are at an office party, a Christmas party, or a gathering of friends at the home of a neighbor and you are engaged in conversation with a friend about the merits of Golden Retrievers compared to German Shepherds. More people are talking behind you, but you are not paying attention to their conversation. Suddenly, you hear your name mentioned by one of the individuals engaged in the conversation behind you. You become unable to concentrate on the puppy discussion, because you are too busy trying to hear what the other people are saying about
you. You know you were not deliberately eavesdropping on this conversation, but you know that
you heard your name. Is it possible that you were unconsciously eavesdropping?

You have just experienced what Broadbent and Cherry referred to as the “Cocktail Party
Phenomenon”. Part of consciousness is attention. We must attend to incoming stimuli in order to
process it and act on it in an appropriate manner. Does that imply that in the case presented above,
the listener was attending to the conversation behind her? Possibly, although the attention being
paid to that conversation was not intentional. The listener in this conversation was engaged in
what is known as dichotic listening, which refers to hearing two channels of sound, one in each
ear, at the same time. In dichotic listening, we listen, or shadow, the message to which we are
attending, and tune out the second, unattended message. Nonetheless, some characteristics of that
unshadowed message still get through. The individual above was shadowing the message in
which she was engaged and, until hearing her name, could not have told us the content or
characteristics of the unshadowed (unattended) message of conversation. How then, did she
manage to hear her name, if she was not attending to the message?

Triesman offers as an explanation the fact that in dichotic listening, attention acts as an attenuator,
in that it turns down the volume on unattended channels, but does not completely block them out.
Moray took this notion a bit further, observing that it is very difficult to ignore the sounds of our
own names, even if that sound comes in on an unattended channel. Deutsch and Deutsch, followed
by Norman, proposed that all channels that reach the system get some degree of attention and
analysis. Specifically, the channels get attended to enough to be represented in long-term memory.
While none of these models completely explains the attentional aspect of consciousness, they do at
least give us some insights as to why we suddenly find ourselves “eavesdropping” on the
conversations of others, once we have heard them mention our names.

Circadian Rhythms

There is a daily cycle in addition to sleep cycles that helps regulate our functioning. People and
other mammals have a biological clock that controls their daily rhythm, known as the circadian
rhythm. Bodily temperatures, endocrine secretions, metabolism, and other bodily functions follow
similar circadian rhythms. Both internal controls, from the hypothalamus in the brain, and external
controls such as clocks, meal times, light and dark, and the seasonal changes direct us to 24-hour
circadian rhythms. If individuals live in caves with artificial light, but no clock, eating and sleeping
whenever they want, circadian rhythms tend to occur in 25-hour cycles.

People usually fall into a rhythm between 24 and 28 hours long, although sleep—wake cycles of up
to 50 hours have been observed. Excessively long circadian rhythms can play havoc with one’s life,
coming one to be unable to sleep at an appropriate hour or to feel sleepy part of the normal working
day. The results can be job loss and interpersonal conflict. Such afflictions can be interpreted as
sleep-onset insomnia and/or excessive sleepiness. Treatment of such sleep disorders centers on
enforcing wakefulness at certain times.

Along with “autonomic” storms of REM sleep that are most intense in the morning hours, changes
in circadian rhythms result in a lowering of body temperature. One medical consequence of this
“vulnerable” state is the reported high incidence of cardiac failures and heart attacks in early
morning hours. “Jet lag” is also an effect of biological circadian rhythms falling out of synchrony
with local time as we travel east or west across time zones. The traveler develops a double circadian
rhythm, the new one added to the old. This leads to double peaks and valleys of energy. Over a few
days, the new circadian rhythm takes over as the body and brain reset their biological clock to local
time.
The Stuff of Which Dreams Are Made
Throughout history, and probably prehistory as well, humans have thought that dreams have special significance, that they have a divine source, predict future events, or prescribe a course of action. A primary duty of wise elders in many cultures was to interpret dreams. One wonders how preliterate tribes react to their dreams, to these images that invade their sleep. Perhaps they think that some alien being has taken over their body or that they are receiving a message from the spirits of the earth or the demons of the forest.

The idea that dreams have personal meaning was introduced in modern times by Freud when he published *The Interpretation of Dreams* in 1900. Although it took six years to sell the first printing of 600 copies, it has become a classic. Freud argued that “dreams are impartial, spontaneous products of the unconscious psyche, they show us the unvarnished truth.” Freud thought that the vigilance of the ego relaxed during sleep, allowing primitive and forbidden sexual and aggressive urges to escape from the unconscious. This material was so threatening to our waking state of consciousness that the disgusting desires of the unconscious were disguised in dreams. It is interesting to note that Freud, like Biblical characters and people of the past, thought that only a wise man or woman (or psychoanalyst) could interpret dreams correctly.

Freud thought that there was a universal set of symbols used by the unconscious to disguise the hidden content of dreams. For example, dreams of flying signify the desire for sexual adventure; elongated objects such as trees and pencils symbolize the penis; containers, such as closets, rooms, ovens, and automobiles represent the vagina; and sexual intercourse is disguised as riding a horse or shooting a gun.

Carl Jung was a member of Freud’s inner circle, and later broke away from Freud because of theoretical disagreements. He believed that the “general function of dreams is to restore psychological balance,” and that important messages in dreams could only be interpreted from a series of dreams that occurred over time. Jung estimated that he analyzed at least 80,000 dreams during his professional career.

Anecdotal evidence to support Freud and Jung’s ideas about dreams exists, but their theories cannot be experimentally supported or rejected because of problems in doing the necessary research. Research on dreaming was stimulated in the early 1950s when two investigators, Aserinsky and Kleitman at the University of Chicago, established the relationship between REM sleep and dreaming, but their research does not answer the questions posed by the theories of Freud and Jung. Some of the more frequently asked questions about dreams and dreaming follow.

DOES EVERYONE DREAM?
Some people claim that they never dream, but research tells us that everyone dreams. People who claim that they do not dream simply do not remember their dreams. Dreams are usually not stored in long-term memory, and they are lost unless they are reviewed or recorded immediately on waking, before other material replaces them in the short-term memory.

ARE WE MORE LIKELY TO HAVE GOOD DREAMS OR BAD DREAMS?
Investigators who have collected and studied dreams have found that bad dreams are more commonly recalled than good dreams. Dreams are more likely to involve failure, misfortune, and frustration than success and pleasant emotions.

WHAT DO PEOPLE DREAM ABOUT?
Falling or being chased are among the most common dream themes reported. The appearance of celebrities in dreams is also common. Many dreams involve frustration: trying repeatedly but
unsuccessfully to do something, finding yourself nude in public places, arriving late to catch a plane or to take an exam, and losing important papers or treasured objects. Sex is not among the more common dream themes. The occurrence of penile and clitoral erections during dreams is a concomitant of the REM state, and is apparently unrelated to the content of the dream.

CAN PEOPLE CONTROL THE CONTENTS OF THEIR DREAMS?
Research shows that people do have some control over their dreams, and that this ability to have “lucid dreams” can be taught. Stephen LaBerge, the leading researcher on lucid dreams, relates the experience of lucid dreaming to the “Holodeck” on Star Trek the New Generation. Once a person is lucid in a dream, they can take control of it and direct its content and conclusion. LaBerge also suggests that lucid dreaming may have more pragmatic uses than just entertainment. The additional time of consciousness while dreaming can be used to work through personal problems, planning, and reviewing past events. Such lucid reflection while in a relaxed sleep state may in the future be shown to enhance psychological health. It has been reported that the Senoi people of Malaysia teach children to control their dreams from an early age. Have you ever had a “lucid” dream?

One simple technique used to teach lucid dreaming is to become more “mindful” of your state of consciousness by repeatedly asking yourself, “Am I dreaming?” during the day. Once in the habit of asking yourself this simple question while awake, you may ask the same question while dreaming. Answering the question “yes” may lead to the onset of a lucid dream.

WHY DO PEOPLE DREAM?
Several explanations for dreaming have been offered. Freud thought dreams preserved our sanity by allowing us to gratify forbidden or unrealistic wishes. Information-processing theorists suggest that the function of dreams is to assimilate new data into memory and to jettison mental garbage. The activation-synthesis theory says that dreams result when the brain tries to make sense of random neural firing that occurs during sleep.

DO PEOPLE NEED TO DREAM?
A number of studies have been done on dream deprivation. Participants are awakened as soon as rapid eye movements begin to occur. The results show that as dream deprivation continues, REM periods occur more and more frequently, and participants become harder to arouse. In addition, participants who have been dream deprived dream more than usual when they are allowed to sleep normally. Although some participants have become irritable after a night or two of dream deprivation, most seem to adjust to it. We do not know what effect it would have on a person if dream deprivation were continued over an extended period.

WHAT SHOULD YOU DO IF YOU WANT TO REMEMBER YOUR DREAMS?
Dreams are fragile, so if you want to remember them you will need to be able to record them with a minimum of effort. If remembering your dreams is important to you, try the following tips:

1. Keep writing material or a tape recorder next to your bed, and be sure that you can turn on a light to write by without getting out of bed.
2. Before going to bed, tell yourself that you are going to wake up after a dream. If you are unable to obey your command, try setting a gentle alarm for two hours after retirement and every two hours thereafter.
3. When you wake up, keep your eyes closed, and review the dream before you record it.
4. Make a questionnaire or checklist to remind you of the information you want to record. This might include such things as the setting, actors, activities, outcomes, and, perhaps most important, the emotional tone of the dream.

THE PARADOXICAL NATURE OF REM
REM sleep has been referred to as *paradoxical sleep*, meaning that during REM sleep, the activity of the brain closely approximates that of waking state activity. We know that we dream during REM, and that we have rapid eye movements for which this state is named, but what other things are happening that make this state “approximately” that of the waking state? Several manifestations of this sleep state insofar as we are able to determine, are unique to REM. These things apparently happen during REM and at no other time during the sleep cycle. What are they?

**ATONIA**
During REM sleep, we experience *atonia*—we lose muscle tone, our muscles become flaccid, and we are virtually paralyzed. This manifestation disappears within a fraction of a second following waking, but can be a bit scary if we try to get out of bed immediately on waking, only to find that we cannot do so, at least instantaneously. The reason for atonia is that neural messages from the brain stem going to the major muscle groups are inhibited during REM. These messages originate in the pons, a structure that sits just at the top of the brain stem, and the inhibition of these neural impulses has probably kept many of us from injuring ourselves if we were to wander around in a not quite conscious state.

**SEXUAL AROUSAL**
Both males and females experience sexual arousal—evinced by tumescence in males and lubrication and engorgement of genital tissues in females—during REM sleep.

**OTHER PHYSIOLOGICAL CHANGES**
Increases in both blood pressure and heart rate occur during REM. These functions increase from the low levels seen during Stage 4 sleep to levels that closely approximate those of a waking state of consciousness.

**MEMORY PROCESSES**
Thought and memory organization also occur during REM, as housekeeping type of functions. Most of us have awakened to discover that a problem that was vexing us the night before suddenly seems to have “solved itself” over the course of the night, and we wonder why we did not see the solution yesterday. Perhaps this aspect of REM explains why our mothers told us not to worry because “everything will be better in the morning.”

**INTEGRATION OF ENVIRONMENTAL STIMULUS**
Environmental sounds are frequently incorporated into dreams. The sound of a car backfiring in the street outside may be incorporated into one’s dreams as a gunshot, or a slamming of a door, while the thunderclap in a thunderstorm may be incorporated into the dreams of combat veterans as incoming artillery fire. As you can see, far from being a truly “sleeping” state, REM sleep is very susceptible to impact by the outside environment.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1637</td>
<td>Rene Descartes published <em>Discourse on Method</em>.</td>
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<tr>
<td>1815</td>
<td>Napoleon was defeated at the battle of Waterloo and banished to St. Helena.</td>
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<tr>
<td>1861-1865</td>
<td>The American Civil War was fought.</td>
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<tr>
<td>1881</td>
<td>Pasteur and Koch discovered the germ theory of disease.</td>
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<tr>
<td>1902</td>
<td>William James published <em>The Varieties of Religious Experience</em>.</td>
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<tr>
<td>1917</td>
<td>The Bolshevik Revolution was fought in Russia.</td>
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<tr>
<td>1932</td>
<td>Carl Jung published <em>Modern Man in Search of a Soul</em>.</td>
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<tr>
<td>1938</td>
<td>d-Lysergic Acid Diethylamide-25 (LSD) was discovered by Dr. Albert Hoffman.</td>
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<tr>
<td>1948</td>
<td>Israel became an independent nation.</td>
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<tr>
<td>1953</td>
<td>The genetic code was broken.</td>
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<tr>
<td>1954</td>
<td>Aldous Huxley published <em>The Doors of Perception</em>.</td>
</tr>
<tr>
<td>1985</td>
<td>Stephen LaBerge published <em>Lucid Dreaming</em>.</td>
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SUGGESTIONS FOR FURTHER READINGS


maintains that some aspects of the human mind go beyond computation.


**DISCOVERING PSYCHOLOGY**

**PROGRAM 13: THE MIND AWAKE AND ASLEEP**

**Overview**

The nature of sleeping, dreaming, and altered states of consciousness, and how consciousness empowers us to interpret, analyze, and direct our behavior in adaptive, flexible ways.

**Key Issues**

- Biological rhythms, how attention works, daydreams, the restorative functions of sleep, procedures for the study of sleep and dreams, the physiological origins of dreams, and lucid dreaming.

**Demonstrations**

- The activation–synthesis explanation of dreams.
- Lucid dreaming.

**Interviews**

- Ernest Harman examines the restorative functions of sleep and the procedures for the study of sleep and dreams.
- Robert McCarley examines the physiological origins of dreaming.
- Steven LaBerge examines the ability of some dreamers to take conscious control of their dreams.

**PROGRAM 14: THE MIND HIDDEN AND DIVIDED**

**Overview**

How the events and experiences that take place below the level of consciousness alter our moods, bias our actions, and affect our health, as demonstrated in multiple personality (dissociative identity disorder), hypnosis, and split-brain patients.

**Key Issues**

- The effects of subconscious knowledge on emotional states, consciousness altering drugs, multiple personality disorder (dissociative identity disorder), Freud’s concept of repression, hypnotic control of pain and perception, split brain research, and testing.

**Archival Demonstrations**

- Demonstration of a client with dissociative identity disorder.

  *Candid Camera* clip demonstrating the difference between public and private behavior.

**Interviews**

- F. W. Putnam discusses the common experiences of people with dissociative identity disorder.
**FILMS AND VIDEOS**

*Addiction Caused by Mixing Medicines (1992).* FFHS, 19 minutes
Addresses the problem of addiction resulting from mixing nonaddictive prescription drugs.

*An Easy to Swallow Pill (1980).* CRK, 28 minutes
Explores prescription drug abuse through interviews with doctors and patients. Shows that we have turned our common social and emotional problems into diseases, and abandoned self-help in favor of drugs. An excellent film as background for a discussion of the medical model. Pills are immediately reinforcing because they reduce symptoms, but they do not necessarily fix an underlying problem.

*Cocaine Abuse: The End of the Line (1984).* AIMS, 25 minutes
Actor Richard Dryfuss discusses the dangers of cocaine abuse as dramatized by five former abusers. Shows some of the severe physical and psychological effects of extensive cocaine involvement. An excellent, compelling film.

*Dreams: Theater of the Night (1988).* FFHS, 28 minutes
Examines theories of dreams from Freud to today’s neuroscience and dream laboratory findings. A lively film. Selected for preview at the APA convention, 1989.

*Dream Voyage (1998).* IU (FFHS), 26 minutes
Explains what happens to the body during sleep. Looks at the mystery of REM sleep, shows a computer display of the waves that sweep across the brain during sleep, and presents footage of a cat acting out its dreams. Illustrates graphically, using an analogy of sleep to a ship on automatic pilot, how some functions continue while the conscious brain is asleep.

*Hypnosis: Four BBC Documentaries (1982).* FI, 49 to 55 minutes

  - **Hypnosis and Healing**
    In this film, physicians and patients describe their successes with hypnosis.

  - **Hypnosis: Can Your Mind Control Pain?**
    This film includes many examples and examines whether hypnosis can work for you.

  - **Hypnosis: Can Your Mind Control Your Body?**
    This film examines various physical functions that may be influenced by hypnotic suggestion.

  - **Hypnosis on Trial**
    In this film, witnesses are hypnotized to recall details of crimes.

Parallels research on the pleasure centers of the brain with addicts’ desire to be high. Presents recent findings on the action of various drugs on the “pleasure centers” of the human brain. Depicts the molecular similarities between the morphine-like neurotransmitters of the brain and the opiates. Describes the biological causes of withdrawal symptoms. Reviews an innovative program to reduce drug use by suppressing physiological responses to behavioral habits associated with the addiction.

*Trance Forming Yourself (1986).* TFU, 40 minutes
Visual and audio illustrations of self-hypnosis techniques, including deep relaxation, pendulum techniques, and daydreaming are illustrated in this informative film.

*Walking Through the Fear: Women and Substance Abuse (1992).* FFHS, 28 minutes
Drug and alcohol abuses continue to increase among women, and women often do not seek appropriate help. This program addresses the many reasons why.

Features circadian rhythms, the regular bodily cycles that occur on a roughly 24-hour cycle. Our body temperature rises as morning approaches, peaks during the day, and descends before sleep. The film suggests that our internal biological clock is as important as external stimuli to our experiences and behavior. The film includes footage on isolation experiments conducted to assess specific circadian rhythms. In a cave with no clock, one man unwittingly made his day longer than 24 hours and consistently stuck to it for a month. A young woman isolated in a room of perpetual daylight later discovered that she was living a day slightly shorter than 24 hours. Although this film is old, the topic discussed has not changed.
CHAPTER 7
Learning and Behavior Analysis

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe the process of classical conditioning
2. Explain the significance of temporal contiguity to the processes of conditioning and learning
3. Detail the phenomena associated with conditioning, including extinction, stimulus generalization, discrimination, and spontaneous recovery
4. Describe the process of operant conditioning
5. Identify the significance of reinforcement contingency to behavioral response and the resulting environmental changes
6. Understand the distinction between the concepts of reinforcement and punishment
7. Explain the differences in primary reinforcers and conditional reinforcers
8. Describe the importance of reinforcement schedules, including characteristics of available schedules
9. Communicate significance of shaping and chaining to the process of operant conditioning

CHAPTER OUTLINE
I. The Study of Learning
   A. What Is Learning?

1. Learning is a process based on experience that results in a relatively consistent change in behavior or behavior potential
   a) A Change in Behavior or Behavior Potential
      (i) Learning is often apparent from improvements in performance
      (ii) But what has been learned is not always evident in performance, which leads to the learning-performance distinction—the difference between what has been learned and what is expressed or performed in overt behavior
   b) A Relatively Consistent Change
      (i) To qualify as learned, behavior must be performed consistently over time. For instance, if you have learned to ride a bike, you are unlikely to forget how to ride a bike.
   c) A Process Based on Experience
      (i) Learning only happens through experience, through interacting with the environment
B. Behaviorism and Behavior Analysis

1. A recurring question of this chapter is how much of behavior is learned, and how much of it is innate?

2. One possible answer to this question is Radical Behaviorism, which suggests that all behavior can be understood in terms of an organism’s inherited characteristics and simple learned behavior

   a) John Watson and B. F. Skinner argued that feelings, imagining do not cause behavior, but rather are caused by environmental stimuli. They are the two most influential proponents of behaviorism, which maintains that psychology should focus on observable behavior.

   b) Behaviorism, which will be covered more fully later, led to the development of behavior analysis, the area of psychology that focuses on environmental determinants of behavior.

   c) Behaviorists and behavior analysts often assume that learning is conserved across species, that learning is similar in all animal species. Because of this assumption, animals are often used in behaviorist research.

II. Classical Conditioning: Learning Predictable Signals

A. Pavlov’s Surprising Observation

1. First described by Ivan Pavlov, classical conditioning is a basic form of learning in which one stimulus predicts the occurrence of another event. Organisms learn to associate one stimulus with the other.

   a) Reflexes, unlearned responses such as salivation, pupil contraction, knee jerks, or eye blinks, are at the core of classical conditioning

   b) An Unconditioned Stimulus (UCS) is any stimulus that naturally elicits a reflexive behavior, such as salivating

   c) An Unconditioned Response (UCR) is the behavior, such as salivating, that is elicited by the UCS

   d) A Neutral Stimulus is a stimulus that has no intrinsic meaning to the organism. When associated with the UCS, the Neutral Stimulus can become a Conditioned Stimulus (CS)–a previously neutral stimulus that comes to elicit a conditioned response.

   e) A Conditioned Stimulus, after being paired with the UCS, acquires the power to elicit the UCR. When the UCR is elicited by the CS, however, it is called the Conditioned Response (CR).

   f) A Conditioned Response is produced by the presentation of the CS
g) In summary, nature provides the association between the Unconditioned Stimulus and the Unconditioned Response. By repeatedly pairing the Conditioned Stimulus with the Unconditioned Stimulus, the Conditioned Stimulus begins to elicit a Conditioned Response.

B. Processes of Conditioning

1. Acquisition is the process by which the CR is first elicited by the CS and by which elicitation gradually increases in frequency over repeated trials

2. Timing is critical in classical conditioning. The UCS and the CS must be presented close enough together so that they are perceived to be associated. Four types of temporal patterns are used in research. They are:
   a) Delayed Conditioning, in which the CS comes prior to and stays on at least until the UCS is presented. Usually the most effective conditioning paradigm. The optimal time interval between the UCS and the CS varies depending on the nature of the CS and the CR.
   b) Trace Conditioning, in which the CS is turned off before the UCS is presented.
   c) Simultaneous Conditioning, in which the CS and the UCS are presented at the same time. Conditioning is generally poor with this paradigm.
   d) Backward Conditioning, in which the CS is presented after the UCS. Conditioning is generally very poor with this paradigm.

3. Extinction is said to have occurred when the CR no longer appears in the presence of the CS

4. Spontaneous Recovery, reappearance of a weak CR when the CS is presented again after extinction, without renewed pairing with the UCS

5. If the UCS and the CS are again paired after extinction, the UCS and the CS association will be learned more quickly. The difference in the time taken to learn the association initially and to relearn the association after extinction is called Savings.

6. Stimulus Generalization is the extension of elicitation of the CR to stimuli similar to the CS. If the CS is a tone, a similar tone may produce the CR.

7. Stimulus Discrimination is the process by which an organism learns to respond differently to stimuli that are distinct from but similar to the CS

C. Focus on Acquisition

1. Robert Rescorla’s work demonstrated that contingency, not just contiguity, is necessary for classical conditioning to occur

2. In addition to contingency, the CS must reliably predict the UCS
3. The informativeness of the CS is also crucial to classical conditioning.

4. Blocking is the ability of the first CS to reduce the informativeness of the second CS because of the organism’s previous experience.

5. A Neutral Stimulus will only become a Conditioned Stimulus if it is both appropriately contingent and informative.

D. Applications of Classical Conditioning

1. Classical conditioning does not involve conscious thought, but does involve emotions and preferences.

2. Fear conditioning involves the pairing of a neutral stimulus with a fear-provoking object. Fear conditioning is a powerful form of classical conditioning, is resistant to extinction, and can occur after only one pairing of the CS and the UCS.

3. Learning to Be a Drug Addict
   a) If a drug addict does drugs in the same ritualistic manner in the same environment consistently, the ritualistic manner and the environment themselves may become CS. They come to predict the occurrence of the UCS, the drug, and they warn the body that the drug is about to be done. The body can then prepare a compensatory response that allows the body, in an effort to maintain homeostasis, to counteract partially the impact of the drug.
   b) Because of this compensatory response, if the drug is taken in the same manner and in the same environment consistently, greater doses of the drug are needed to maintain the same high. If, after doing drugs in the same environment repeatedly, the drug user does drugs in a new environment, the CS (the environment) will not be present, and the body will not produce the compensatory response. Because the body is not prepared for ingestion of the drug, the drug user is much more likely to overdose.

4. Harnessing Classical Conditioning
   a) Psychoneuroimmunology has emerged to explore the interaction of psychology, the nervous system, and the immune system. One goal of psychoneuroimmunology is to allow conditioning to replace high doses of medications that have serious side effects. As with drug users for which the environment becomes a CS, the environment can be associated with beneficial drugs so that the environment elicits a positive conditioned response.

III. Operant Conditioning: Learning About Consequences

A. The Law of Effect

1. The Law of Effect, developed by Edward Thorndike, simply states that behaviors that are followed by pleasant, positive consequences are likely to increase in frequency.

2. For Thorndike, learning involved an association between a stimulus
and a response, a stimulus–response connection

3. These stimulus–response connections are learned gradually and mechanistically through blind trial and error

B. Experimental Analysis of Behavior

1. B. F. Skinner outlined a research program called the experimental analysis of behavior, whose purpose was to discover the ways that environmental conditions affect the likelihood that a given response will occur

2. Operant Conditioning procedures were developed by Skinner to allow the experimental analysis of behavior and modify the probability of different types of operant behavior as a function of the environmental consequences they produce

3. An Operant is any behavior that is emitted by an organism and can be characterized in terms of the observable effects it has on the environment

C. Reinforcement Contingencies

1. A reinforcement contingency is a consistent relationship between a response and the changes in the environment that it produces

2. A reinforcer is any stimulus that, when made contingent on a response, increases the probability of that response
   a) A Positive Reinforcer is any stimulus that—when made contingent on a behavior—increases the probability of that behavior over time
   b) A Negative Reinforcer is any stimulus that, when removed, reduced, or prevented, increases the probability of a given response over time

3. Operant Extinction occurs as reinforcement is withheld

4. A Punisher is any stimulus that—when it is made contingent on a response—decreases the probability of that response over time.
   a) A Positive Punisher is when a behavior is followed by the delivery of an aversive stimulus
   b) A Negative Punisher is when a behavior is followed by the removal of an appetitive, or positive, stimulus

5. Punishment always reduces the probability of a response occurring

6. Reinforcement always increases the probability of a response occurring

7. Discriminative Stimuli, through their associations with reinforcement or punishment, come to set the context for that behavior

8. The Three-Term Contingency is the sequence of discriminative stimulus–behavior–consequence that Skinner believed could explain most human behavior

9. Behavior analysts assume that behaviors, even apparently self-destructive and irrational behaviors, persist because they are being
10. Secondary gains are subtle reinforcers, such as attention, sympathy, or release from responsibility, that reinforce behaviors that may have obvious associated negative consequences

D. Properties of Reinforcers

1. Primary reinforcers, such as food and water, are reinforcers that are biologically determined

2. Conditioned reinforcers are otherwise neutral stimuli that have, over time, become associated with primary reinforcers. Money, grades, smiles of approval, and gold stars can all act as conditioned reinforcers.

   a) Teachers and researchers often find conditioned reinforcers more effective and easier to use than primary reinforcers because:

      (i) Few primary reinforcers are available in the classroom

      (ii) Conditioned reinforcers can be dispensed rapidly

      (iii) Conditioned reinforcers are portable

      (iv) The reinforcing effect of conditioned reinforcers may be more immediate

   b) Token economies are contexts, such as psychiatric hospitals and prisons, in which desired behaviors are explicitly defined and in which tokens are given by staff for performance of these behaviors. The tokens can later be redeemed for privileges or goods.

   c) The Premack Principle suggests that a more probable activity can be used to reinforce a less probable one. According to the Premack Principle, a reinforcer may be any event or activity that is valued by the organism.

E. Schedules of Reinforcement

1. Reinforcers can be delivered according to either ratio or interval schedules. Each of these schedules can be used with a fixed or variable pattern of reinforcement.

2. The Partial Reinforcement Effect states that responses acquired under schedules of partial reinforcement are more resistant to extinction than those acquired with continuous reinforcement

3. In a Fixed-Ratio Schedule (FR), reinforcement comes after the organism has emitted a fixed number of responses. FR schedules produce high response rates because there is a direct correlation between responding and reinforcement.

4. In a Variable-Ratio Schedule (VR), the average number of responses between reinforcements remains constant, but the actual number of responses between reinforcements varies around this average. VR schedules produce the highest response rates and the greatest resistance to extinction.
5. In a \textit{Fixed-Interval Schedule} (FI), reinforcement is delivered for the first response made after a fixed period of time has elapsed. Response rates under a FI schedule show a scalloped pattern. Immediately after reinforcement, response rates are low, but, as the time interval nears expiration, response rates increase.

6. In a \textit{Variable-Interval Schedule} (VI), the average time interval between reinforcements is predetermined. This schedule generates a moderate but stable response rate.

\textbf{F. Shaping}

1. \textit{Shaping} is a method of behavior modification in which successive approximations to the desired behavior are reinforced. For shaping to be effective, what constitutes progress toward the target behavior must be defined, and differential reinforcement schedules must be used to refine behavior.

2. \textit{Chaining} is a technique used to teach sequences of actions. In chaining, the last response of the sequence is reinforced first.

3. Each link in the behavior chain serves as a discriminative stimulus for the next response line and as a conditioned reinforcer for the response that immediately precedes it.

\textbf{IV. Biology and Learning}

\textbf{A. Biological constraints on learning are limitations on learning imposed by a species’ genetic endowment}

\textbf{B. Instinctual Drift} is the process by which learned behavior drifts toward instinctual behavior. Instinctual Drift is understandable considering the species-specific tendencies imposed by an inherited genotype.

\textbf{C. Taste-Aversion Learning} is a powerful type of learning that is learned through only one pairing of a CS (the flavor) and its consequences (the illness). Although the flavor did not cause the illness, the flavor is associated with the UCS, perhaps a virus, which did cause the illness.

1. Once taste-aversion learning has occurred, the organism will never consume the flavor again

2. The time between the presentation of the CS and when the organism becomes ill can be very long, 12 hours or more

3. Certain types of animals are biologically predisposed to learn certain associations

4. Taste-aversion learning has practical aspects. For example, coyotes can be taught through taste-aversion learning to despise sheep meat.

\textbf{V. Cognitive Influences on Learning}

\textbf{A. Cognition is any mental activity involved in the representation and processing of knowledge, such as thinking, remembering, perceiving, and talking}

\textbf{B. Animal Cognition}
1. Researchers have demonstrated that it is not only classical and operant conditioning that generalizes across species. Cognition, to some extent, does as well.

2. Cognitive maps are internal representations of the physical characteristics of the external environment. For rats, cognitive maps may indicate where food is located in a maze. Spatial cognitive maps can be used to:
   a) Recognize and identify features in the environment
   b) Find important goal objects in the environment
   c) Plan an efficient route through the environment

3. Conceptual Behavior, the cognitive ability to make conceptual distinctions and to generalize about new concepts and categories, is found in some animals as well as in humans

C. Observational Learning

1. Observational, or social, learning refers to learning done vicariously. In observational learning, an organism simply watches another perform a behavior, notes the consequences, and modifies its own behavior accordingly.
   a) Vicarious reinforcement and vicarious punishment play a large role in observational learning
   b) Observational learning is not unique to humans
   c) Research has well documented children’s tendency to imitate adult models
   d) A model’s observed behavior is most influential when:
      (i) The behavior is seen as having reinforcing consequences
      (ii) The model is liked, respected, and perceived positively
      (iii) There are perceived similarities between the model and the observer
      (iv) The observer is rewarded for paying attention to the model’s behavior
      (v) The model’s behavior is visible and salient
      (vi) It is within the observer’s range of competence to imitate the behavior
   e) Because of the violent nature of many television shows, individuals may learn antisocial behavior simply by observing it on television. Research suggests that there are two major effects of filmed violence.
      (i) Psychic numbing involves a reduction in both emotional arousal and in distress at viewing violence
      (ii) An increase in the likelihood of engaging in aggressive behavior
   f) Pro-social, as well as antisocial lessons, can be learned from
television viewing.
DISCUSSION QUESTIONS

1. Discuss how radical behaviorism, as proposed by Skinner, might be used to explain cognitive development, because cognition is not an observable process and behaviorists only studied observable processes.

2. What if a child’s behavior was followed by random events, instead of predictable consequences? What behavioral outcomes might we expect to see with children in such a situation?

3. Given that “little Albert” was removed from Watson’s experiment before his having been desensitized, how might his conditioned fear manifest itself in “big Albert”?

4. Discuss with the class instances in which secondary gains can provide reinforcement for behaviors that may be irrational and self-defeating.

5. Discuss examples of the principle of observational learning in the animal kingdom.

SUPPLEMENTAL LECTURE MATERIAL

A Summary of Some Interesting Aspects of Classical Conditioning

1. Any stimulus we can perceive has the potential to become a conditioned stimulus.

2. Perception of the CS can take place below the level of conscious awareness.

3. Any response we make naturally can come to be elicited by a learned signal.

4. These responses can be highly specific and simple (such as a muscle twitch or part of a brain wave pattern) or general and complex (such as sexual arousal or fear).

5. The conditioned response can be a response of our skeletal muscles or visceral organs or even a “private” response (such as thoughts and feelings).

6. With a powerful original UCS, conditioning may take place in only one trial in which the UCS is paired with a CS.

7. Stimuli quite different from the original CS can control the appearance of the conditioned response through higher-order conditioning.

8. Depending on the strength of the CR and the nature of the conditioning process, some learned responses resist extinction and may endure for a lifetime.

Taken together, these principles reveal the remarkable adaptability of organisms to learned conditioned associations, but they also are somewhat disturbing. It is obvious that inappropriate conditioning that is not in our best interest also takes place. Examples of such inappropriate conditioning include the learning of persistent irrational behaviors, superstitions, and conditioned addictions.

The Effects of Corporal Punishment

The use of punishment in the control of human behavior is not merely a matter of deciding whether it works; aside from the psychological questions involved in punishing people for “undesirable behavior,” there are moral and legal issues to be considered. Corporal punishment is defined in educational terms as the inflicting of pain by a teacher or school official on the body of a student as...
a penalty for doing something that is disapproved of by the punisher. This includes confinement in an uncomfortable space, forced eating of noxious substances, and standing for long periods. The four most common justifications for using corporal punishment are the following:

1. It is a proven and effective method for changing undesirable behavior
2. It develops a sense of personal responsibility
3. It teaches self-discipline
4. It instills moral character

Punishment, however, does not accomplish any of these goals. Target behaviors are suppressed only when the punishment is severe and repeated, and only then in the presence of the person that delivers the punishment. Further, the “side effects” of aversive control include such issues as the development of a generally negative attitude toward school or learning, avoidance of the teacher, truancy, blind obedience to authority, vandalism, and learning to use violence against younger or weaker students.

In addition, punishment may be counterproductive. In a study of the spontaneous use of punishment by teachers, two children from each of five classes were observed for a four-month period. These children had a high frequency of classroom behavior for which their teachers reprimanded them loudly in the presence of the class. The reprimands were not effective in reducing the frequency of the disruptive behavior. During phase 2 of the study, teachers were asked to switch to “soft” reprimands, audible only to the child being reprimanded. In almost all cases, disruptive behavior decreased when soft reprimands were used.

In phase 3 of the above study, when loud reprimands were reinstated, there was an increase in frequency of disruptive behavior. In phase 4, to demonstrate convincingly the counter productivity of loud, public reprimands and the effectiveness of soft ones, soft personal ones were again used by the teachers. Disruptive behavior declined in virtually all cases where the teacher used a soft, personal reprimand intended only for the ears of the relevant student, rather than a public pronouncement to the student’s peers (O’Leary, Kaufman, Kass, & Drabran, 1970).

There are many alternatives to the use of physical punishment in the classroom. “Time-out rooms” and denial of class privileges can be effective aversive control tactics. Private conferences with “disruptive” students can also be used effectively. Class discussion of acceptable and unacceptable behaviors and shared responsibility for discipline help create a democratic class atmosphere. In addition, more interesting curricula and better preparation for teachers in managing children with the use of positive incentives and reinforcements can be used to reduce the need for punishment.

**Operant Conditioning the Easy Way**

Many students have difficulty in understanding the difference between punishment and reinforcement, as defined by operant conditioning. Students often believe that the term “negative” must be unpleasant, whether concerning negative reinforcement or negative punishment.

To understand operant conditioning, students must first understand the “Law of Effect”, which states that those behaviors followed by a positive outcome are more likely to be repeated and that behaviors followed by a negative outcome are less likely to be repeated. Specifically, the Law states that the consequences of a behavior change the likelihood of engaging in that behavior in the future. This idea emphasizes the pragmatic adaptability of behavior.

1. **Positive Reinforcement**, cell (1), means giving or presenting of something favorable, something that the organism perceives as pleasant. This stimulus can be food, water, access to sexual partners, etc.
2. **Negative Punishment**, cell (2), refers to weakening of a response by the omission, or removal of a favorable stimulus, such as removal of something the organism perceives as favorable, in order to decrease probability of response. This can be removing food if the organism does not give the desired response when stimulated. This does not do anything to the organism directly, it just takes away something it happens to like. Students can think of this as passive punishment, if that makes the concept clearer.

3. **Positive Punishment**, cell (3), is the opposite of positive reinforcement, in that this is presentation of a stimulus event that the organism perceives as unpleasant, and this presentation decreases the probability that a behavior will be repeated. Examples of positive punishment include such stimulus events as giving the organism electric shock if it engages in a behavior that the experimenter considers undesirable.

4. **Negative Reinforcement**, cell (4), consists of removing a stimulus event that the organism perceives as unpleasant. This condition permits the organism to escape from an unfavorable event.

<table>
<thead>
<tr>
<th>Operant Conditioning Matrix</th>
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<tbody>
<tr>
<td><strong>Presented</strong></td>
</tr>
<tr>
<td>Pleasant Stimulus</td>
</tr>
<tr>
<td>(1) Positive Reinforcement–serves to increase response frequency</td>
</tr>
<tr>
<td>(3) Positive Punishment–serves to decrease response frequency</td>
</tr>
</tbody>
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Skinner used the Law of Effect to derive the cornerstone of Behaviorism, which states that any behavior can result in reinforcement or punishment. Behavior resulting in reinforcement is more likely to recur; behavior resulting in punishment is less likely to recur. Skinner’s methods are a specialized case of operant conditioning and his method is simpler than that used by Thorndike. Additionally, Skinner made a distinction between classical conditioning and operant conditioning that clarifies the difference between the two for many students. Skinner said that classical conditioning dealt with behavior which was elicited by an external stimulus, and that the elicited behavior was an involuntary response (e.g., salivation). He defined operant conditioning as behavior emitted from within the participant, in response to external stimulus, but with the criteria that the response was voluntary (cat pressing lever to get food). Skinner also developed a process known as shaping, which he defined as the establishment of a new response by rewarding successive approximations to the desired response. He went on to define chaining, which is part of the process of shaping, as being the reinforcement of each response by giving the animal an opportunity to make the next response. Skinner also defined what is known as the ABC’s of Behavior, as follows:

**ABC’s of Behavior**

* A = Antecedent (the stimulus event)  
* B = Behavior (the behavioral response to the stimulus)  
* C = Consequence (the reinforcement that follows the behavior)

The consequence of a given behavior served as the determinant of the likelihood of that behavior.
being repeated in the future. Given this model, operant conditioning is as easy as your A-B-C’s!

**Behavioral Control of a Behavior Problem**

Timmy B. was a five-year-old child of average intelligence who was a “behavior problem.” He screamed, fought, disobeyed, and bossed others both at home and school, despite his young age. His parents were concerned over his obviously undesirable behavior, which they expected to get even worse as he grew older. “He continually told other children what to do and how to play, and enforced his demands with punches, kicks, and slaps,” they reported.

A behavioral psychologist’s observations of Timmy’s mother’s interaction with her son revealed three things:

1. She reinforced his undesirable behavior with attention
2. She did not enforce consequences in a consistent fashion
3. She did not make the relationship between behavior and consequence clear, because she often used lengthy explanations before applying discipline

The behavioral psychologists who consulted with Timmy’s mother taught her to arrange three types of contingencies for Timmy’s behaviors: punishment, extinction, and positive reinforcement.

**Punishment:** As soon as Timmy acted aggressively or disobediently, Mrs. B. took him to a time-out room that contained no items of interest to the child. He was told only that he could not stay with the others if he fought or disobeyed. He was put in the time-out room, without conversation or further explanation, for a two-minute period (or two minutes from the end of his last cry or tantrum). This punishment involved the negative stimulus of loss of opportunity for stimulation. It could be removed by behaving in socially acceptable ways. When the time was up, Timmy was taken back to his regular activities without comment on the previous episode.

**Extinction:** Less serious forms of undesirable behavior were ignored so that they would have no reinforcing consequences.

**Positive Reinforcement:** Desirable behaviors such as cooperative play and following instructions were directly praised, and at the end of some periods of desirable play Timmy got a special treat.

To demonstrate the effectiveness of mother as behavior therapist, the psychologists first observed Timmy’s behavior for a baseline period, and then instructed Mrs. B. to carry out her behavioral contingency management program. This sequence was then repeated. Timmy’s aggressive and disobedient behaviors were dramatically changed by manipulating their consequences. His parents and neighbors commented that Timmy behaved like a “different child.” During the first baseline period Timmy followed only about 30 percent of instructions given to him, but a week later he was following three-fourths of them. On some days, Timmy never misbehaved, even not striking back when another child hit him. As Timmy’s problem behavior declined, his mother commented more favorably about him; she felt she was a more effective mother and showed more affection for her son.

**WALDEN TWO**

In *Walden Two*, B. F. Skinner presented a hypothetical community based on behavioral principles. Given what we know today about behaviorism, and cognitive theory, is such a community feasible? You might discuss with students some of the ideas presented in *Walden Two* and ask for their opinions about these ideas. Are they outdated? Are they workable? Have recent gains in knowledge in cognitive theory and information processing made some of Skinner’s ideas obsolete? Do students
even believe that such a community is possible? If so, how might they organize it differently than Skinner’s community? (From Koss)

**CRIME AND PUNISHMENT**

**Punishment and the Criminal Justice System.** Skinner and his followers identified several conditions that must be met for punishment to be effective. Your text discusses three of them: it must be immediate, it must be consistent, and it must be sufficiently aversive but not overly aversive. Some other conditions that make punishment more effective are that: it should be directly related to the problem behavior so that it is clearly seen as a consequence of the behavior; it should be part of a larger process in which the reason for the punishment is clearly explained and the desirable behavior is clearly explained; the person should be rewarded for engaging in more desirable behaviors. In examining today’s criminal justice system in the United States, how many of these conditions does it consistently meet? In most cases, students agree that it does not meet many of them, if any of them. Perhaps this is contributes to the high recidivism rate we have in our justice system. What ideas do students have to utilize skinner’s conditions and perhaps improve the effectiveness of the current system?

**MORE ON BEHAVIOR MODIFICATION**

Have students identify a behavior they would like to change. Discuss behavior modification principles with them and have them fill out Student Activity 5.4 (behavior modification) as part of developing a plan to modify the behavior they identified. It is important to review the qualities of a good goal (i.e. it is specific, it is behavioral, it is quantifiable, it is reasonably attainable). And since choosing an effective reward is crucial to making a plan such as this work, review the qualities of a good reward (i.e. it should be something they really want, but can live without, in case they fail to achieve their sub goals, it should be something they have complete control over). This can be a useful demonstration of behavior modification as well as an activity that can really improve the quality of some students’ lives.

**BIOGRAPHICAL PROFILES**

**Albert Bandura (b. 1925)**

When Daddy spanks Johnny for misbehaving, he may inadvertently be providing Johnny with a model of aggressive behavior that Johnny will incorporate into his own pattern of behavior. This discovery is only one of the important observations that Albert Bandura has brought to the attention of psychologists and sociologists in recent years.

Graduating from the University of British Columbia in 1949 at the age of 24, Bandura went on to earn his doctorate in clinical psychology at the State University of Iowa in 1952. There, under the guidance of Kenneth Spence, who also served as mentor to Neal Miller and John Dollard, Bandura realized the need for more careful examination of the behavior modification process as it unfolds during psychotherapy. He drew from Hullian learning theory, Skinnerian behaviorism, and the current theories of modeling and imitation to formulate his own groundbreaking social learning theory – behavior modification broadened to a socially oriented context.

Bandura began his studies of aggression with children as participants. In the course of his experiments, he discovered that the kinds of behavior exhibited by parents and the attitudes they expressed toward aggression were vital in determining their children’s behavior. The implications of his results were enormous, evoking concern among psychologists and the public over the impact that excessive violence on television and other media was having on impressionable young minds.
Bandura synthesized these and other research results in *Principles of Behavior Modification*, published in 1969. An important and precisely written book, it challenged Skinner’s contention that mental processes should not be considered in a science of behavior. Bandura’s work won him a Guggenheim Fellowship and election as president of the American Psychological Association in 1974. A significant product of his fellowship was his classic text, *Aggression: A Social Learning Analysis*.

One of those individuals who is truly happy only when engaged in a number of projects simultaneously, Bandura is currently conducting research at several different levels. On a broad theoretical level, he is studying the development of self-efficacy and the relationship between people’s moral codes and principles and conduct. On a more practical level, he is developing the use of modeling as an essential ingredient of psychotherapy. Bandura published a compendium of his research and thinking, *Social Foundations of Thought and Action: A Social Cognitive Theory*, in 1986.

**Konrad Lorenz (b. 1903)**

Lorenz obtained his M.D. in 1928 and Ph.D. in 1933 from the Anatomical Institute of the University of Vienna. Lorenz is widely regarded as the father of ethology, the study of animal behavior as observed in the natural habitat. His major contributions include research on imprinting and aggressive behavior, for which he received the Nobel Prize. Lorenz espoused a hydraulic model to account for aggression, arguing that all stored energy, including aggressive energy, must eventually be discharged. His most influential work is *On Aggression* (1966).

**Ivan Petrovich Pavlov (1849—1936)**

It is ironic that Ivan Pavlov, whose pioneering work laid the foundations for the behaviorist school of thought in psychology, believed that psychology was “completely hopeless” as an independent science. Pavlov rather saw his work on conditioning as a problem of physiology, a way in which to discover the physical properties of the brain.

Born in 1849, the son of a village priest, Pavlov received his early education in a seminary school, fully intending to follow his father into the priesthood. Nevertheless, after reading several books on physiology, he changed his mind and decided on a career in the natural sciences. Though he encountered resistance at home, he entered the University of St. Petersburg and obtained his basic degree in physiology in 1875.

Pavlov’s research for the next 20 years was concerned primarily with the study of digestive processes, and it was for his work in this area that he won the Nobel Prize in 1904. It was in the course of directing a number of experiments on the digestive glands that he first became aware of the significance of the conditioned response. He had been working with dogs as experimental animals in an effort to establish the precise function of saliva in the digestive process, when he noticed that many of the dogs secreted saliva even before meat was administered to them. He quickly determined that this “psychic response” occurred whenever the dogs either had a preliminary glimpse of the food or heard the approaching footsteps of the lab assistant who fed them.

This was so unexpected a phenomenon that he decided to pursue the process as a physiological problem, receiving generous funding for the enterprise when the Soviet government came to power. The new regime was anxious to push forward biological and behavioral research, and there was in Pavlov, Nobel laureate and brilliant experimentalist, a man who could bring the Soviet Union into the vanguard of scientific research. A large number of colleagues and assistants joined Pavlov in his work, thus establishing the longest-lived research project in the history of psychology. The Pavlovian paradigm is still used as the major approach to the study of psychology in the Soviet Union.
Burrhus Frederic Skinner (1904—1990)

B. F. Skinner was born in Susquehanna, Pennsylvania, the son of a lawyer. He attended Hamilton College where he majored in English, hoping to become a writer. During his last year at Hamilton, Skinner sent some short stories he had written to the poet Robert Frost, hoping for some helpful criticism. Much to Skinner’s surprise, Frost replied enthusiastically, encouraging the young author to pursue a writing career. Skinner took the advice seriously and set aside a block of time following graduation in which to apply himself to his chosen discipline. In looking back on that year, Skinner wryly commented that while he did indeed write well, he also discovered that he had nothing important to say.

To remedy that situation, he returned to academia as a graduate student in psychology. He had done much reading during his year away from school, and in the course of it, had discovered the works of John B. Watson. The story of Watson’s pioneering efforts excited Skinner’s interest and thus determined his decision to study psychology. Skinner was accepted at Harvard and earned his Ph.D. in experimental psychology in 1931. He continued with postdoctoral work until 1936, when he accepted a teaching position at the University of Minnesota. Throughout this period, Skinner had been formulating and testing his theories on conditioning. So impressive were the results he achieved in controlling the behavior of laboratory animals, the U.S. government employed him in a top-secret project during World War II. Skinner was given funding to condition pigeons to guide missiles directly down the smokestacks of warships.

After the war, Skinner did not hesitate to apply the techniques he had developed to human participants. On moving to Indiana University as chairman of its new psychology department, he constructed his famous “air crib”, a sound-proofed, germ-free “box” enclosed in clear plastic and intended as an environment in which infants could spend much of their time. In 1948, Skinner returned to Harvard University as a member of the faculty. There he developed the Skinner Box, a chamber in which animal behavior (particularly that of rats and pigeons) could be precisely recorded and prepared for statistical analysis. The apparatus had an immediate impact on experimental laboratories in universities across the country.

Skinner became convinced that the learning techniques he had hit on with his methodology could be translated to the environment of the classroom, and so spent most of the 1950s perfecting his programmed teaching modules for schoolchildren. With these, children could acquire information and skills while being led through a series of questions, each of their correct responses eliciting a reinforcing confirmation.

Throughout his career, Skinner published prolifically, and the American Psychological Association honored him for his immense contribution with their Distinguished Scientific Contribution Award in 1958. Though he retired as the Edgar Pierce Professor of Psychology at Harvard, Skinner did not become idle. In the decade before his death, he published his autobiography, Particulars of My Life, a book on aging, in 1983, and continued to be active, writing, and espousing the controversial brand of behaviorism for which he became famous.

Edward Lee Thorndike (1874—1949)

Edward Thorndike was born in Williamsburg, Massachusetts, the son of a lawyer. He graduated from Wesleyan University in Connecticut in 1875, but showed no interest in psychology until he read William James’ Principles of Psychology, after which he decided to study under James at Harvard. Thorndike’s initial experiments were conducted in the basement of James’ home. When James lost interest in experimental work, Thorndike left Harvard and obtained his Ph.D. at Columbia University. There he conducted his famous experiments on cats in puzzle boxes.
Thorndike was among psychology’s most prolific and versatile scientists, publishing more than 500 monographs, books, and articles during his career. He applied his considerable intellect to a wide range of topics, including individual differences, attitudes, vocabulary, intelligence, learning, and memory. His many writings include the influential book, *Animal Intelligence*.

**TIMELINE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1898</td>
<td>Edward L. Thorndike proposed that learning was controlled by its consequences, an idea that he termed the “Law of Effect.”</td>
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<tr>
<td>1904</td>
<td>Ivan P. Pavlov, a Russian physiologist, discovered classical conditioning.</td>
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<td>1905</td>
<td>Albert Einstein developed his theory of relativity.</td>
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<td>1909</td>
<td>Henry Ford began the mass production of the Model T, and auto travel became a democratic experience.</td>
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<tr>
<td>1913</td>
<td>John B. Watson published <em>Psychology as the Behaviorist Views It</em>, establishing his brand of behaviorism as an approach to studying learning and behavior.</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1927</td>
<td>Wolfgang Köhler coined the term “insight” to describe a kind of learning in which the organism suddenly arrived at a solution to a problem.</td>
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<tr>
<td>1932</td>
<td>Edward C. Tolman published <em>Purposive Behavior in Animals and Men</em>, a book outlining one of the earlier cognitive theories of learning.</td>
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<tr>
<td>1943</td>
<td>Penicillin was discovered.</td>
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<tr>
<td>1953</td>
<td>B. F. Skinner published <em>Science and Human Behavior</em>, a book that applied the basic principles of operant conditioning to understanding human learning and behavior.</td>
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<tr>
<td>1959</td>
<td>David Premack discovered that preferred activities can be used to reinforce less preferred activities, an idea soon to become known as the Premack Principle.</td>
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<tr>
<td>1961</td>
<td>Richard J. Herrnstein proposed the matching law, the notion that behavior in a choice situation matches the frequency of reinforcement associated with each of the choice alternatives.</td>
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<tr>
<td>1962</td>
<td>Albert Bandura proposed his model of social learning theory, a cognitive account of how imitation and modeling influence learning.</td>
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<tr>
<td>1966</td>
<td>John Garcia and Robert A. Koelling discovered that animals learn to associate some stimuli with the consequences of their behavior more quickly than other stimuli, reflecting natural biases in how animals adapt to their environment.</td>
</tr>
<tr>
<td>1969</td>
<td>The first man landed on the moon.</td>
</tr>
<tr>
<td>1972</td>
<td>Robert Rescorla and Allan Wagner proposed that in classical conditioning,</td>
</tr>
</tbody>
</table>
organisms learn the correlation between conditioned stimuli and reinforcement.
SUGGESTIONS FOR FURTHER READINGS


Tighe, T. J. (1982). *Modern Learning Theory: Foundations and Fundamental Issues.* Includes many examples of shaping, including a baby’s first words, a child’s first attempts to print letters, and the attempts of a person to remain upright while learning to skate.


DISCOVERING PSYCHOLOGY

PROGRAM 8: LEARNING AND CONDITIONING

Overview

Learning is the process that enables humans and other animals to profit from experience, anticipate events, and adapt to changing conditions. Explains the basic learning principles and the methods psychologists use to study and modify behavior. Also demonstrates how cognitive processes such as insight and observation influence learning.

Key Issues

Pavlov’s discovery of classical conditioning, how classical conditioning can suppress the immune system of rats, an instrumental and classical conditioning experiment by John Watson,
operant behavior and conditioning by B. F. Skinner, and conditioned therapy for agoraphobia.

Archival Demonstrations

Nobel Prize winner Ivan Pavlov discovers the concept of classical conditioning in an experiment originally intended to study digestion and the action of the salivary glands.

Dr. Robert Ader and colleague Nicholas Cohen condition rats to suppress their immune systems in an experiment involving an artificial sweetener.

In the controversial experiment on classical and instrumental conditioning, John Watson conditions a “little Albert” to fear a rat that he had once liked.

Psychologist B. F. Skinner examines the effects of positive and negative reinforcement on the behavior of people and animals.

New Interview

Howard Rachlin looks at what developments have occurred in the field of operant condition since the time of B. F. Skinner

FILMS AND VIDEOS

From the first hours of life, ducklings recognize their mother and follow her everywhere. Do they know her instinctively? Are they born to accept only adult ducks as parents? Scientists once thought so until certain contrary observations led them to the concept of imprinting, a link between instinct and learning. A good depiction of Lorenz’ theory.

This program reviews treatment procedures from both the patient’s and the therapist’s perspectives. It describes the rationale for the self-regulation process, presenting cases involving self-regulation training for hypertension, migraine, chronic back pain, anxiety, and post-traumatic rehabilitation.

Child Management (1986). Insight Media, 20 minutes
Offers ideas on managing children’s behavior using learning theory principles of reinforcement. Clarifies the difference between punishment and discipline and explains when each is appropriate. Presentation is done with humor and sensitivity. A good reinforcer for lectures on operant conditioning.

A Conversation with B. F. Skinner (1972). (CRM) MCGH, 23 minutes
An interview conducted by Elizabeth Hall of Psychology Today. Skinner traces the origin and basic principles of behaviorism, including his views on control, punishment, and freedom. He focuses on the value of a culture designed by behaviorists, but also answers the typical criticisms, “Who will keep the controllers honest?” and “What will happen to creativity in a culture controlled by operant conditioning?” Skinner also discusses some of the problems of implementing behavior modification systems. Skinner’s fascination (his for his science and ours for him) is timeless.

Learning (1990). Insight Media, 30 minutes
Explains the fundamental processes of classical and operant conditioning and includes information on taste aversion. Includes an interview with B. F. Skinner and a segment on the use of behavior modification with hyperactive children.

**Observational Learning (1987). HARR, 23 minutes**
Explores modeling and social learning theory and includes a demonstration of the Bandura and Walters “Bobo Doll” experiment. Effects of TV violence on aggression in children are discussed. An excellent film.

**Pavlov’s Experiment: The Conditioned Reflex (1976). CORT, 9 minutes**
This film explains the difference between conditioned and unconditioned reflexes, and outlines Pavlov’s contribution to the study of the physiology of higher nerve activity in the brain. Pavlov’s famous experiment is realistically re-created to illustrate classical conditioning. The preciseness and repetition of a scientific experiment with a living organism are graphically apparent. A quick and excellent introduction to classical conditioning.

**The Power of Positive Reinforcement (1978). ITJ (CRM), 28 minutes**
Illustrates how behavior-modification programs that emphasize positive reinforcement have increased organizations’ productivity, savings, and employee satisfaction. Shows implementation of such programs in a division of 3M Company, Valley Fair Amusement Park, and the Minnesota Vikings football team. This film is useful because it shows real-world applications of operant conditioning principles.

**A Question of Learning (1982). FI, 60 minutes**
Mingles dramatization of renowned experiments in behavioral studies with location footage to examine how naturalists and scientists have uncovered the secrets of animal behavior. Recreates Pavlov’s discovery of the conditioned reflex, Thorndike’s experiments with chicks, and Skinner’s famed work at Harvard during the 1930s.

**Skinner and Behavior Change: Research, Practice and Promise (1979). REPR, 45 minutes**
The development of modern behaviorism is examined. Skinner is interviewed on theory, uses, and ethical issues. Examples of the uses of behavior modification are shown.

**A World of Difference: B. F. Skinner and the Good Life, Parts 1 and 2 (1979). TLF, 53 minutes**
Traces the development of behaviorism and B. F. Skinner’s application of the theory in raising his infant daughter in an environmentally controlled box, as well as his early experiments with pigeons. Includes a visit by Skinner and his family to Twin Oaks, the rural Virginia commune that attempts to live according to the principles in *Walden Two*. Commune members describe their successes, failures, and modifications of Skinner’s model, emphasizing their difficulties with sex and economic roles. Produced for the NOVA series.

Skinner reviews the path psychology has taken from early introspective methods to modern day methods including natural selection and operant conditioning.
CHAPTER 8
Memory

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Identify and describe the different types of memory, such as implicit, explicit, declarative, and procedural
2. Understand the sensory memory systems
3. Describe the nature and functions of short-term and working memory
4. Describe the nature and functions of long-term memory
5. Demonstrate knowledge of interference theory
6. Explain the significance of encoding specificity to the retrieval process
7. Describe the nature and implications of the serial position curve
8. Demonstrate an understanding of levels of processing theory
9. Define the nature and function of metamemory
10. Identify the importance of reconstructive processes to memory

CHAPTER OUTLINE

I. What is Memory?
   A. The goal of the chapter is to explain how you usually remember so much, and why you forget some of what you have known
      1. Memory, a type of information processing, is the capacity to store, encode, and retrieve information
   B. Ebbinghaus Quantifies Memory
      1. Ebbinghaus made a cogent argument for empirical investigation of memory and developed a brilliant methodology to study it
         a) Ebbinghaus used nonsense syllables and rote learning to study what he thought was pure memory
         b) Non-sense syllables are meaningless three-letter combinations consisting of a consonant, followed by a vowel, followed by a consonant. Ebbinghaus felt that these meaningless combinations were not contaminated by previous learning.
         c) Rote learning is memorizing by mechanical repetition, as when memorizing a list of words
d) In his methodology, Ebbinghaus learned lists of nonsense syllable to a criterion performance level, in his case perfect memory. He would then distract himself for an interval by studying other lists, and then relearn the original list. Ebbinghaus called the difference between the time to learn the list originally and the time to relearn the list as savings.

e) Ebbinghaus, and many psychologists that followed him, assumed that there was only one type of memory. This assumption turned out to be incorrect.

C. Types of Memory

1. Implicit and Explicit Memory
   a) Implicit memory is that which becomes available without conscious effort
   b) Explicit memory is that in which the individual makes a conscious effort to recover information

2. Declarative and Procedural Memory
   a) Declarative memory involves the recollection of facts and events
   b) Procedural memory involves the recollection of how to do things
   c) Knowledge compilation is the ability to carry out sequences of activity without conscious intervention. Knowledge compilation makes it difficult to share procedural knowledge.

D. An Overview of Memory Processes

1. All memory requires the operation of three mental processes:
   a) Encoding, the initial processing of information that leads to representation in memory
   b) Storage, the retention over time of encoded information
   c) Retrieval, the recovery of the stored information at a later time

2. Mental traces are the mental representations of individual memories

II. Sensory Memory

A. Sensory Memory refers to the initial memory processes involved in the momentary preservation of fleeting impressions of sensory stimuli. Each of your sensory modalities has a sensory memory or sensory register that extends the availability of information acquired from the environment

B. Iconic Memory

1. Iconic memory is sensory memory in the visual domain
2. A visual memory, or icon, lasts about half a second
3. **Iconic memory** is not the same as **eidetic imagery**, or **photographic memory**, which holds images in memory much longer than iconic memory. Eidetic imagery is rarely found in adults.

**C. Echoic Memory**

1. **Echoic memory** is sensory memory for sounds.
2. **Echoic memories** are easily displaced by new information that is similar to the sensory experience that gave rise to the memory.
3. The **suffix effect**, where a similar sound impedes memory by replacing a sensory memory in the final digit in echoic memory, is an example of the displacement of echoic memories.
4. **Categorization** influences echoic memory because what organisms believe that they are hearing determines the relevance and importance of the memory.

**III. Short-Term Memory and Working Memory**

**A. Definitions**

1. **Short-term memory** is a built-in mechanism for focusing cognitive resources on a small set of mental representations.
2. **Working memory** is a broader concept of the types of memory processes that provide a foundation for the moment-by-moment fluidity of thought and action.

**B. The Capacity Limitations of Short-Term Memory**

1. The limited capacity of short-term memory enforces a sharp focus of attention.
2. George Miller proposed that seven, plus or minus two, was the “magic number” that characterized the limits of short-term memory.

**C. Accommodating to Short-Term Memory Capacity**

1. Despite the severe limitations of short-term memory, individuals are able to enhance the functioning of short-term memory in several ways:
   a) **Rehearsal** involves the rapid repetition of information that is designed to keep it in short-term memory.
   b) **Chunking** involves the grouping of information into meaningful units that can then occupy a single digit of short-term memory.
   c) The high speed of the retrieval process from short-term memory.
2. **Rehearsal and chunking** both relate to the way in which you encode information to enhance the probability that it will remain or fit in short-term memory.

**D. Working Memory**
1. Working memory, which subsumes classic short-term memory and also allows retrieval of existing memories, is comprised of three components:
   a) A phonological loop, which holds and manipulates speech-based information
   b) A visuospatial sketchpad, which performs the same types of functions as the phonological loop for visual and spatial information
   c) A central executive, which is responsible for controlling attention and coordinating information from other subsystems

2. Incorporating short-term memory under working memory helps reinforce the idea that short-term memory is a process, not a place

3. Working memory span is a measure of the capacity of working memory

4. Working memory helps maintain your psychological present

### IV. Long-term Memory: Encoding and Retrieval

#### A. Definitions

1. Long-term memory is the storehouse of all the experiences, events, information, emotions, skills, words, categories, rules, and judgments that have been acquired from sensory and short-term memories

2. Long-term memory is best when there is a good match between encoding and retrieval conditions

#### B. Context and Encoding

1. Encoding specificity suggests that memories emerge most efficiently when the context of retrieval matches the context of encoding

2. The Serial Position Effect suggests that the first and last items in a series will be remembered better than items in the middle and is comprised of two separate effects:
   a) The Primacy Effect suggests that the first items learned in a series will be remembered better than others
   b) The Recency Effect suggests that the last items learned in a series will be remembered better than others
   c) Contextual Distinctiveness suggests that the distinctiveness of an item in a series may explain both the primacy and the recency effects

#### C. Retrieval Cues

1. Recall involves the reproduction of information to which you were previously exposed

2. Recognition refers to the realization that a certain stimulus event is one you have seen or heard before
3. **Retrieval cues** are the stimuli available as you search for a particular memory
   a) Retrieval cues can be provided externally by the environment, or generated internally by associations and physical states
   b) Retrieval cues are more straightforward and more useful for recognition dm for recall

4. **Episodic** and **Semantic memory** are two types of declarative memory
   a) **Episodic memories** preserve, individually, the specific events that you have personally experienced
      i) All memories begin as episodic memories
   b) **Semantic memories** are generic, categorical memories, such as the meanings of words and concepts

5. **Interference** occurs when retrieval cues do not point effectively to one specific memory
   a) **Proactive interference** occurs when information acquired in the past makes it more difficult to acquire new information
   b) **Retroactive interference** occurs when the acquisition of new information makes it harder to remember older information

D. **The Processes of Encoding and Retrieval**

1. Memory functions best when encoding and retrieval processes match

2. **Levels-of-Processing** theory suggests that the deeper the level at which information is processed, the more likely it is to be committed to memory
   a) A difficulty with levels-of-processing theory is that it is not always possible to specify exactly what makes certain processes “shallow” or “deep”

3. Processes and Implicit Memory
   a) **Transfer-appropriate processing** suggests that memory is best when the type of processing carried out at encoding transfers to the processes required at retrieval
      i) Implicit memory is assessed using one of four tasks:
         (a) Word fragment completion
         (b) Word stem completion
         (c) Word identification
         (d) Anagrams
   b) **Priming** is a process in which the first experience of the word primes memory for later experiences, and is used to assess the degree of implicit memory
   c) These four implicit memory tests rely on a physical match
between the original stimulus and the information given at test

d) Category association relies on meaning or concept rather than physical match

4. Research suggests that if a specific type of processing is used to encode information, that information will be retrieved most efficiently when the retrieval method uses the same type of analysis

E. Improving Memory for Unstructured Information

1. Information that is not meaningful is difficult to remember
2. Strategies for improving encoding include elaborative rehearsal and mnemonics
   a) Elaborative rehearsal refers to elaboration on the material to enrich encoding, such as inventing a relationship that makes an association less arbitrary
   b) Mnemonics are devices that encode a long series of facts by associating them with familiar and previously encoded information
      (i) Method of loci associates objects with some sequence of places with which the individual is familiar
      (ii) Acrostic-like mnemonics use the first letter of each word to cue a response
      (iii) Acronym mnemonics are instances in which the letter of a word stands for a name or other piece of information
3. The key to learning arbitrary information is to encode information in a way that provides yourself with efficient retrieval cues

F. Metamemory

1. Metamemory refers to implicit or explicit knowledge about memory abilities and effective memory strategies
2. Feelings-of-knowing are subjective sensations that the information is stored somewhere in memory
   a) The cue familiarity hypothesis suggests that people base their feelings of knowing on their familiarity with the retrieval cue
   b) The Accessibility Hypothesis suggests that people base their judgments on accessibility of partial information from memory

V. Structures in Long-Term Memory

A. Memory Structures

1. An essential function of memory is to draw together similar experiences to enable you to discover patterns in your interaction with the environment. This ability to categorize experience is one of the most basic abilities of thinking organisms.
2. **Concepts** are mental representations of the categories formed by the individual. Concepts may represent objects, activities, properties, abstract ideas, and relations.

3. **Prototypes** are averages across the pool of exemplars, shifting slightly each time a new exemplar is encountered
   a) People respond more quickly to typical members of a category than to more unusual ones
   b) People find the average member of a category, even when it is an average face, most pleasant

4. Concepts do not exist in isolation
   a) **Basic level** refers to a hierarchical level at which people best categorize and think about objects
   b) **Schemas** are conceptual frameworks or clusters of knowledge regarding objects, people, and situations.
      i) These knowledge packages encode complex generalizations about the individual’s experience of the structure of the environment.
      ii) Schemas represent the individual’s average experience of situations in the environment, and shift with changing life events

**B. Remembering as a Reconstructive Process**

1. Information that cannot be remembered directly may be *reconstructed*, based on more general types of stored knowledge

2. **Reconstructive Memory** is not 100 percent accurate. The reconstructed memory is often different from the real occurrence.

3. Distortions in *reconstructive memory* involve three kinds of reconstructive processes:
   a) **Leveling**, or simplifying the story
   b) **Sharpening**, or highlighting and overemphasizing certain details
   c) **Assimilating**, or changing of details to better fit the individual’s own background or knowledge

4. **Eyewitness Memory** is quite vulnerable to distortion from *post event information*
   a) Individuals may be unable to discriminate between original sources of memory traces
   b) Research reinforces the belief that memories are often collages, reconstructed from different elements of the individual’s past experiences
   c) Post event information can impair eyewitness memories even when the witnesses are made explicitly aware that the experimenter has attempted to mislead them
d) When people are repeatedly exposed to the misleading postevent information, they become even more likely to report false memories as real

VI. Biological Aspects of Memory

A. Searching for the Engram

1. Lashley concluded that the elusive engram—a physical memory representation in the brain—did not exist in any localized regions but that it was widely distributed throughout the entire brain.

2. Four major brain structures are involved in memory:
   a) Cerebellum, essential for procedural memory, memories acquired through repetition, and classically conditioned responses
   b) Striatum, a complex of structures in the forebrain; the likely basis for habit formation and stimulus-response connections
   c) Cerebral cortex, responsible for sensory memories and associations between sensations
   d) Amygdala and hippocampus, largely responsible for declarative memory of facts, dates, names, and emotionally significant memories

B. Amnesia

1. Amnesia is the failure of memory over a prolonged period.

2. Selective impairment of memory suggests that different regions of the brain are specialized for two types of knowledge, with hippocampal damage most often impairing explicit memories.

C. Brain Imaging

1. Research shows disproportionately high brain activity in the left prefrontal cortex for encoding of episodic information and in the right prefrontal cortex for retrieval of episodic information.

2. Functional MRI scans reveal that the more strongly areas in the prefrontal cortex and parahippocampal cortex light up during scans, the better participants are later able to recognize scenes or words.
DISCUSSION QUESTIONS

1. Ask the class to assume that they have short-term memory that lasts only a minute. What would a day in their life be like? Why might they become paranoid in their suspicions about other people? Now have students think about what it would be like if they had only long-term memory? Have students consider this latter problem in terms of Alzheimer’s disease.

2. Have students consider that only half of what they learned could be stored in long-term memory. What general classes of information would various individuals select? Are there some basic categories of knowledge that are selected to ensure minimal disruption of ongoing daily behavior? How did students determine these particular classes of information?

3. In The Mind of a Mnemonist, Russian psychologist A. R. Luria described the feats of a newspaper reporter who could recall incredible amounts of information following a brief and seemingly effortless examination of the to-be-remembered material. The reporter relied heavily on images, primarily visual, but also cutaneous, olfactory, and gustatory sensations. He apparently had what we call a photographic or eidetic memory. Would it be helpful to remember everything?
   • Doing well on tests might seem like no problem, because the answers could be looked up mentally. However, because of the vastness of the information stored, this might take too much time.
   • Material stored eidetically is difficult to break down and reassemble in new patterns. Essay questions might be difficult because of the necessity to take information from a number of sources and integrate it.
   • Difficulty in combining ideas from various sources would put a severe limitation on creativity.
   • Abstract ideas would be difficult to understand because they often do not lend themselves to imagining.
   • We generally condense and take important information from what we read and hear, and we associate new information with what we already know. This would be difficult if we remembered all we see or hear.

4. Consider giving your class a demonstration of the reconstructive qualities of memory. Enlist the aid of a colleague and stage a memorable but unstressful event. Tell the class that what they witnessed was an experiment in memory, then have them write down what they “saw,” as they can best recall. You will probably have as many explanations of the scenario as you have students in the class. If class members do not object, read some of the more interesting responses aloud to demonstrate the fallibility of memory.

5. Have students think about their earliest memory. Then, either have them volunteer to discuss their memories in class, and the class can try to arrive at some interpretation of their meaning, or have students turn them into you, and you can pick out some of the more interesting ones to be presented to the class anonymously for class discussion.

An interesting point of discussion here can be trying to find out if these are real memories of an event, or “memories” that are based on hearing constant retellings of the event by parents or siblings. Additionally, today you have the first generation of college students who may also have “memories” of early childhood events that are really the product of watching themselves on home video recordings.
SUPPLEMENTAL LECTURE MATERIAL

The Lost Memories of Early Childhood

You may want to begin a lecture by asking students to write a brief answer to the question “What is your earliest memory from childhood?” People cannot recall autobiographical memories before their third or fourth year, yet children have remarkable memories in other ways. A two-year-old can remember where grandmother keeps the cookies even if she has not been to grandmother’s house for a month. The ability of children to acquire language before the age of three also indicates considerable memory capacity. Children also store and remember motor skills. If a child learns to ride a tricycle before he is three, he will probably still be able to do it at 70. So why do we not remember autobiographical information? Why does not enduring episodic memory begin until the age of three or four?

Theory 1: Repression

Freud thought that forgetting is essential to getting safely through the Oedipal years with their violent and incestuous impulses. In Freud’s theory, childhood amnesia results from repression of these impulses, and he thought memories from these years can be retrieved in psychoanalysis by the use of methods such as free association and dream analysis. There is some evidence that people tend to have a cluster of childhood memories from about the time Freud thought the Oedipus complex is resolved. However, like many aspects of Freud’s Theory, his ideas about childhood amnesia cannot be confirmed or rejected by research.

Theory 2: Brain Immaturity

Another theory points to the immaturity of brain structures. Animal studies have shown that animals that have mature brains at birth, such as guinea pigs, are able to store permanent memories early in life, and that animals, such as rats, that are born with immature brains cannot. The brains of children are immature at birth. They do not have the synaptic connections of a mature brain. A problem with this theory is, again, why does amnesia affect only autobiographical or episodic memory?

Theory 3: Limited “M-Space”

One theory that uses the idea of immaturity of brain structures was proposed by a French psychiatrist, Juan Pascual-Leone, who worked with Piaget and suggested that childhood amnesia occurs because of limited M-space capacity. M-space is described as “attentional capacity” and seems to be similar to the concept of short-term memory. Whereas adults can retain approximately seven chunks in the M-space, small children can retain only one. For this reason, they are unable to store retrieval cues. They cannot use what they already know to establish retrieval cues because there is no room in M-space to bring material from long-term memory. Research shows that the capacity of short-term memory is small in early childhood and increases to adult capacity by puberty. However, this theory does not account for children’s ability to comprehend and produce speech. For example, if a child’s attentional capacity is so small, how can the child comprehend a sentence of seven or eight words?

Theory 4: Schema Differences

Explanations also emphasize the difference between the schemas of small children and those of adults. Children’s schemas tend to be idiosyncratic. For example, a small child’s “daddy” schema may include all adult males, football games on TV, daddy’s favorite chair, and the lawn mower.
Processes like Piaget’s assimilation and accommodation proceed to alter these schemas as the child’s organization of reality comes to be more like that of the adults of his or her society. Memories of early childhood may be altered and revised until they are adult memories rather than actually early childhood memories. The early memories are altered to “fit” into schemas that the child develops with age. This theory is similar to interference in that as the child matures, new memories interfere with or replace older memories. This theory seems reasonably credible because it can be applied to both episodic and semantic memories. Children do not remember the overgeneralizations they made of words or the restricted context in which they used early vocabulary. They also do not remember the grammatical structures they used as they began to combine words into sentences.

**Theory 5: Schema Differences, Too**

Yet another explanation that emphasizes schemas also points to the difference between the schemas of early childhood and those of later years. Early memories would have to be represented by actions, images, and feelings, rather than by symbols, primarily words. Even after children begin to use words, some psychologists claim that language is used for expressive purpose and communication, but not as a tool for thought. A child might be four or five years old before memories begin to be symbolically stored with language. As language takes over as the primary vehicle for the organization of reality, the ability to retrieve autobiographical memories stored as emotions, actions, or images is lost because there are not retrieval cues. Aspects of this theory have appeal, particularly because it specifically considers the child’s lack of language.

The three primary theories of adult forgetting are motivated forgetting or repression, interference, and cue-dependent memory. Versions of these same theories can be used to explain childhood amnesia, along with theories that emphasize immaturity of brain structures. The bottom line is that childhood amnesia remains a mystery. At present, we can only speculate why it occurs.

**The Zeigarnik Effect**

At about the same time that Freud was talking about motives to repress negative information, Kurt Lewin and his students were looking at the effects of task motives on memory. Legend has it that they were puzzled by an occurrence in a Berlin beer garden. In Germany, it is the custom for waiters to write down what customers ordered after they have eaten and immediately before paying their bill. Once, however, after the meal had been served and the party had been given their bill, someone asked the waiter a simple question about their order. It turned out that the waiter could remember very little of it once he had completed his task.

The result of this observation was a classic experiment that demonstrated greater recall of tasks before completion than of comparable tasks after completion. This effect of enhanced recall for uncompleted tasks was named the Zeigarnik Effect after Bluma Zeigarnik, the researcher who carried out the study.

In the experiment, the participants performed simple tasks that they would be able to accomplish if given enough time, such as writing down a favorite quotation from memory, solving a riddle, and doing mental arithmetic problems. In some of the tasks, the participants were interrupted before they had a chance to carry out the instructions in full. In others, they were allowed to finish. Despite the fact that the participants spent more time on the completed tasks than on the interrupted ones, they tended to recall the unfinished tasks better than the finished ones when they were questioned a few hours later. This superiority of recall for the uncompleted tasks disappeared, however, within 24 hours. Apparently, it was attributable to short-term motivational factors that affected the rehearsal process.

It might appear that the Zeigarnik effect is inconsistent with the notion of repression, since one
might expect that people would repress their memory of things left unfinished, particularly if the lack of completion was viewed as a failure. Later research has suggested a resolution of this inconsistency by showing that the Zeigamik effect only holds for tasks performed under nonstressful conditions. When noncompletion is ego involving and threatens the individual’s self-esteem, there is a tendency for the Zeigamik effect to be reversed, for completed tasks to be remembered better than uncompleted ones.

Remembering and Forgetting
Why do we forget? Forgetting is a nuisance, but it happens to all of us—why? There is a phenomenon in human memory known as decay. Jenkins and Dallenbach believed the decay of memory strength was a function of time. Their research concerned what happened during the time span and how it could influence how much you forgot—or did not forget. They had their participants memorize nonsense syllables and then tested their recall at 1, 2, 4, or 8 hours later. According to Jenkins and Dallenbach, decay theory proposes that busy or not, if time between memorization and recall is equivalent across participant groups, then the amount of forgetting will be equivalent. WRONG! Participants who remained awake and working after memorizing the syllables recalled less than those who were able to sleep and then were retested on awakening did. This effect is a phenomenon called interference. The amount that you forget depends on how much other “stuff” you had to absorb and deal with in the interim and what you learned earlier is going to compete with material learned later. This is called Interference Theory.

There are two types of interference:

*Proactive interference* (a.k.a. inhibition) deals with forward (pro) acting interference, the detrimental impact that having learned List A has on your ability to remember a subsequently learned List B. An experimental group tested on List B, the second list, after a retention interval, did worse on recall of List B than did a control group who did not learn List A. (What else might explain this? Serial position curves and the primacy effect).

*Retroactive interference* refers to the detrimental impact that learning List B has on previously learned List A. This is backward-acting interference and occurs when something that you have learned recently interferes with something that you learned in the past. For example, when an experimental group learns List A, then List B, followed by a retention period and is asked to recall List A ten minutes later, performance is poor. Learning List B interferes with memory for List A.

**Example of Proactive Interference/Inhibition Experiment Protocol**

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Learn List A</th>
<th>Learn List B</th>
<th>Retention Period</th>
<th>Memory test for List B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>Learn List B</td>
<td>Retention Period</td>
<td>Memory test for List B</td>
<td></td>
</tr>
</tbody>
</table>

The Control Group in this experiment usually performs better on the test of List B because they did not have List A to interfere with what they learned later.

**Example of Retroactive Interference/Inhibition Experiment Protocol**

<table>
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<th>Experimental</th>
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The Control Group in this experiment usually performs better on the test of List A because they did not have List B to interfere with what they had learned previously.

**Reasons for Memory Loss with Age**

As people get older, their ability to remember tends to decrease. It takes longer for older people to retrieve information, and sometimes they are unable to retrieve information that they are confident is “in there somewhere.” Here are some of the factors that contribute to memory loss in older people.

- **Proactive interference** occurs when something we learned in the past interferes with something learned more recently. This type of interference may be more of a problem for older people because they have been exposed to more information than younger people have, and there is potentially more previously learned material to interfere with what was learned later.
- **State-dependent memory** tells us that being in the same physiological state at the time of storage and retrieval facilitates remembering. We change physiologically with age and physiological states experienced at 65 may be much different from those experienced at younger ages.
- **Environmental cues for memory** also decrease as people grow older. Houses and other structures they remember have been replaced, family and friends have died or moved away, streets and roads have been replaced by expressways, and fields and forests have been replaced by buildings.
- **Memory failures in older people** may have a physiological cause. Neurons involved in a memory or in the associations that would lead to a memory may have degenerated, or the supply of an important neurotransmitter like acetylcholine may have decreased.
- **Depression in the elderly** may be a cause of memory loss. As a function of such factors as living alone, being widowed, living far from one’s children, watching one’s friends and acquaintances become ill and die, and their own deteriorating physical health are all more than adequate reasons for depression. Depression brings limited attention. If the attention span of an elderly individual is impaired as a concomitant of depression, memory impairment may follow.

**Biographical Profiles**

**Hermann Ebbinghaus (1850—1909)**

Born in Barmen, Germany, Ebbinghaus was instrumental in the development of the new science of experimental psychology at the turn of the century. A professor at both Breslau and Halle, he was the first experimentalist to conduct vigorous laboratory investigations of human learning and memory. Using himself as a participant, Ebbinghaus memorized long lists of nonsense syllables that he believed had no prior meaning or associative value. His research resulted in several discoveries, including the finding that as the quantity of material to be learned increases, the amount of time needed to learn it increases disproportionately, known as Ebbinghaus’ Law, and the serial position curve.
Endel Tulving (b. 1927)

Born in Estonia, Endel Tulving was educated at the University of Heidelberg and the University of Toronto before obtaining his Ph.D. at Harvard in 1951. He taught at the University of Toronto for most of his professional career. His major contributions include both experimental and theoretical work on human memory. In particular, Tulving has introduced many of the concepts that are today considered indispensable to understanding human cognition and memory, including subjective organization, retrieval cues, and the distinction between episodic and semantic memory.

Elizabeth F. Loftus (b. 1944)

Born in Los Angeles, Loftus earned her B.A. in psychology at UCLA in 1966 and her Ph.D. at Stanford in 1970. She has been a professor of psychology at the University of Washington since 1975. Professor Loftus’ area of specialty is human memory. Her expertise is in the area of eyewitness testimony, and she is often referred to as “the expert who puts memory on trial.” Loftus has made a career of exploring the frailties and flaws of human memory, particularly with respect to the validity of memories encoded under duress, such as when witnessing a crime or being a victim of a crime. She is sought after as the expert witness who can explain to juries the fallibility of human memory, and help them to understand that what the eyewitness says he or she saw may, in reality, be due to post-event information that has been encoded and incorporated into the original memory.

**TIMELINE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1859</td>
<td>Charles Darwin published <em>On the Origin of the Species</em>.</td>
</tr>
<tr>
<td>1885</td>
<td>Ebbinghaus published the first psychological study of memory.</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
</tr>
<tr>
<td>1932</td>
<td>Frederic Bartlett published his findings on reconstructive memory, demonstrating that memory is influenced by multiple subjective factors such as emotions and the consistency of information.</td>
</tr>
<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
</tr>
<tr>
<td>1959</td>
<td>Donald Broadbent published <em>Perception and Communication</em>, outlining a new and</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>1963</td>
<td>John F. Kennedy was assassinated.</td>
</tr>
<tr>
<td>1966</td>
<td>S. Sternberg published <em>High Speed Scanning in Human Memory</em>, providing the first evidence that processing of searching information in short-term memory takes place serially.</td>
</tr>
<tr>
<td>1968</td>
<td>Richard Atkinson and Richard Shiffrin introduced the “three-system” model of memory.</td>
</tr>
<tr>
<td>1969</td>
<td>The first moon landing occurred.</td>
</tr>
<tr>
<td>1972</td>
<td>F. Craik and R. Lockhart published their levels of processing model of memory, the most successful competitor to the three-system model.</td>
</tr>
<tr>
<td>1972</td>
<td>J. Bransford and J. Franks published the results of an experiment showing that people use schemas in recalling information.</td>
</tr>
<tr>
<td>1974</td>
<td>The Vietnam War ended.</td>
</tr>
</tbody>
</table>

**SUGGESTIONS FOR FURTHER READINGS**

Poses the question as to whether results of research in eyewitness testimony generalize to the actual eyewitness.


DISCOVERING PSYCHOLOGY

PROGRAM 9: REMEMBERING AND FORGETTING

Overview
A look at the complex process called memory: how images, ideas, language, physical actions, sounds, and smells are translated into codes, represented in the memory, and retrieved when needed.

Key Issues
Long-term versus short-term memory, the chunking process, the peg-word mnemonic, painting from memory, memory engrams, and organic amnesia.

Demonstrations
Gordon Bower demonstrates the peg-word mnemonic, a memory enhancing technique.
San Francisco artist Franco Magnani’s painting from childhood memories of Italy illustrates the artist’s remarkable memory and his significant boyhood distortions.

Interviews
Gordon Bower explains mnemonic techniques.
Richard Thompson discovers one memory engram in his investigation of the neural circuits involved in the memory of rabbits.

New Interview
Diana Woodruff-Pak experiments with “eyeblink classical conditioning.”

FILMS AND VIDEOS
The Brain: Learning and Memory (1984). PBS, 60 minutes
This program uses theories about brain organization, synaptic activity, and the hippocampus to explain learning and forgetting.

Human Memory (1978). HARB, 25 minutes
Graphic demonstrations conducted by Gordon Bower of the processes of memory, memory aids, and the cognitive distortions created while reconstructing memories. Shows what it is like to have no memory at all, how real learning involves the transfer of information from short-term to long-term memory, and how the use of retrieval cues can improve one’s ability to remember.

Memory (1990). Insight Media, 30 minutes
Biological and cognitive research findings related to how we store, encode, and retrieve memories are discussed by leading memory researchers. The program shows what memory disturbances are and how certain problems can result from accidents or disease. Memory of dramatic events is analyzed and the practical application of memory research to witness recall in criminal trials is
discussed.

**Memory: Fabric of the Mind (1998). FFHS, 28 minutes**
Examines information storage and retrieval in human memory. A good review of memory research and theory. Selected for preview at the APA convention in 1989.

**The Life of the Mind: Cognitive Processes and Memory (1991). The Teaching Company, in collaboration with the Smithsonian.**
One of eight lectures with Richard Gerrig from an award-winning teacher series. This volume explores cognitive processes and memory.
CHAPTER 9
Cognitive Processes

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe the differences and similarities between automatic and controlled processes
2. Define Grice’s maxims for language production
3. Describe the various forms of ambiguity in language comprehension
4. Explain the significance of inference in the cognitive processing of language
5. Demonstrate understanding of the significance of Paivio’s dual-coding theory
6. Define “problem space,” and its relationship to problem solving
7. Suggest techniques to improve problem solving skills
8. Elaborate on the difference between deductive reasoning and inductive reasoning
9. Understand the heuristics and biases involved in judgments and decision making
10. Articulate the significance of framing and reference points relative to decision making

CHAPTER OUTLINE
I. Studying Cognition
   A. Definitions
      1. *Cognition* is a general term for all forms of knowing
      2. The contents of cognition are what you know — concepts, facts, propositions, rules, and memories
      3. Cognitive processes are how you manipulate these mental contents
      4. *Cognitive psychology* is the study of cognition
   B. Discovering the Processes of Mind
      1. Donders devised the *subtraction method*, one of the fundamental methodologies for studying mental processes
      2. He proposed that extra mental steps will often result in more time required to perform a given task
      3. Response selection requires more time than stimulus categorization, because response selection includes stimulus categorization
      4. *Reaction time* has replaced the subtraction method as a method of testing specific accounts of how a given cognitive process is carried out
   C. Mental Processes and Mental Resources
      1. Demands on mental resources may help determine if a process is
serial or parallel

a) *Serial processes* require separate examination of each individual element in an array, one after another

b) *Parallel processes* entail the simultaneous examination of all elements in an array

2. Reaction time is often used to try to determine if a specific mental process is carried out in parallel or serially

3. A key assumption is that limited processing resources must be spread over different mental tasks

4. *Attentional processes* are responsible for distributing these resources

5. Some processes place higher demands on mental resources than do others

6. *Controlled processes* require attention and thus greater allocation of mental resources

7. *Automatic processes* generally do not require attention and can often be performed along with other tasks without interference

D. The goal of much cognitive psychological research is to invent experiments that confirm each of the components of models that combine serial and parallel, and controlled and automatic processes

II. Language Use

A. Language Production

1. *Language production* concerns what people say, as well as the processes they go through to produce the message

   a) Includes both signing and writing, as well as speaking

   b) Refers to language producers as speakers and to language understanders as listeners

2. *Audience design* requires that, on producing an utterance, one must have in mind the audience to which that utterance is directed and what knowledge you share with members of that audience

   a) The *Cooperative Principle* is instructs to speakers to produce utterances appropriate to the setting and meaning of the ongoing conversation. There are four maxims that cooperative speakers should live by:

      (i) *Quantity*: Make your contribution as informative as is required, but do not make it more informative than required

      (ii) *Quality*: Try to make your contribution one that is true

      (iii) *Relation*: Be relevant

      (iv) *Manner*: Be perspicacious, avoid obscurity of expression, avoid ambiguity, be brief, be orderly

   b) A presumption of the listener knowing all that you know is referred to as *common ground*. Judgments of common ground are based on three sources of evidence:
(i) **Community membership:** Assumptions made by language producers about what is likely to be mutually known, based on shared membership in communities of various sizes

(ii) **Linguistic copresence:** Assumptions made by language producers that information contained in earlier parts of a conversation, or in past conversations, are common ground

(iii) **Physical copresence:** Exists when a speaker and a listener are directly in the physical presence of objects or situations

3. **Speech Execution and Speech Errors**

   a) Speech errors give researchers insight into the planning needed to produce utterances

      (i) Speakers must choose content words that best fit their ideas

      (ii) Speakers must place the chosen words in the right place in the utterance

      (iii) Speakers must fill in the sounds that make up the words they wish to utter

   b) **Spoonerrisms**—one type of speech error—consist of an exchange of the initial sounds of two or more words in a phrase or sentence. Spoonerrisms are more likely to occur when the error will still result in real words

   c) Spontaneous and laboratory induced errors provide evidence about **processes and representations** in speech execution

B. **Language Understanding**

1. **Resolving ambiguity** involves detangling two types of ambiguity

   a) **Structural ambiguity** involves determining which of two (or more) meanings the structure of a sentence implies, and is dependent largely on prior context for resolution

   b) **Lexical ambiguity** involves determining which of the various meanings of a word may be appropriate in this context. To eliminate this ambiguity is referred to as “disambiguating” the word. Two models are proposed for disambiguation.

      (i) The constant order model states that, regardless of the context preceding the use of a word, its meanings are always tested in constant order, from most to least likely

      (ii) The reordering by context model states that the context that precedes a word can change the order in which one tests its multiple definitions

      (iii) Context actively affects listener’s consideration of the meanings of ambiguous words

2. **Products of Understanding**
a) Research suggests that meaning representations that follow understanding of utterances or texts begin with basic units called propositions. Propositions are the main ideas of utterances.

b) Listeners often fill gaps in information with inferences. Inferences are logical assumptions made possible by information in memory.

C. Language, Thought, and Culture

1. The Sapir-Whorf hypothesis suggests that differences in language create differences in thought. The hypothesis contains two tenets:
   a) Linguistic Relativity suggests that structural differences between languages will generally be paralleled by nonlinguistic cognitive differences in the native speakers of the two languages
   b) Linguistic Determinism suggests that the structure of a language strongly influences or fully determines the way its native speakers perceive and reason about the world

2. Research does not support the strong claim of linguistic determinism that language is destiny, although it does support the weaker claim that language differences yield parallel cognitive differences

III. Visual Cognition

A. Using Visual Representations

1. Reaction time required for mental manipulation of rotated visual images was in direct proportion to the degree that the image had been rotated
2. Consistency of reaction time suggested that the process of mental rotation was very similar to the process of physical rotation of objects
3. People scan visual images as if they were scanning real objects

B. Combining Verbal and Visual Representations

1. Spatial mental models are often formed to capture properties of real and imagined spatial experiences
2. In reading descriptive passages, people often form a spatial mental model to keep track of the whereabouts of characters
3. When people think about the world around them, they almost always combine visual and verbal representations of information

IV. Problem Solving and Reasoning

A. Both require combination of current information with information stored in memory to work toward a particular goal, a conclusion or a solution

B. Problem solving
1. The formal definition of a problem space, of how a problem is defined in real life, captures three elements:
   a) An initial state – the incomplete information or unsatisfactory conditions with which you start
   b) A goal state – the set of information or state of the world you hope to achieve
   c) A set of operations – the steps you may take to move from the initial state to the goal state

2. Well-defined problems have the initial state, the goal state, and the operations all clearly specified

3. An ill-defined problem exists when the initial state, the goal state, and/or the operations may be unclear and vaguely specified

4. Algorithms are step-by-step procedures that always provide the right answer to a particular type of problem

5. Heuristics are strategies or “rules of thumb” that problem solvers often use when algorithms are not available

6. Think-aloud protocols ask participants to verbalize their ongoing thoughts

7. Problem solving can be improved by planning the series of operations that it will take to solve the problem. This assures that the small steps needed to solve the problem do not overwhelm processing resources.
   a) Finding a way to represent a problem so that each operation is possible, given processing resources
   b) Practicing each of the components of the solution so that, over time, those components require fewer resources

8. Functional Fixedness is a mental block that adversely affects problem solving by inhibiting the perception of a new function for an object

C. Deductive Reasoning

1. Deductive reasoning is a form of thinking in which one draws a logical conclusion from two or more statements or premises

2. Requires reformulation of an interchange to fit the structure of a syllogism, thus defining the logical relationships between statements that will lead to valid conclusions

3. Involves the correct application of logical rules, and is impacted by both the specific knowledge possessed about the world and the representational sources that can be brought to bear on a reasoning problem.
   a) What is invalid in logic, however, is not necessarily untrue in real life, and information that is accepted as true can result in biased beliefs:
   b) In the belief-bias effect, people tend to judge as valid those conclusions for which they can construct a reasonable real-world model and as invalid those for which they cannot
c) Experience improves the individual’s reasoning ability, such that when a posed problem is familiar in real life, you can use a pragmatic reasoning schema.

d) Mental models may be used when pragmatic reasoning schemas are not available. Mental models reproduce the details of a situation as accurately as possible, given the limitations of working memory. Mental models work best when a unique model of the world can be created.

D. Inductive Reasoning

1. Inductive reasoning is a form of reasoning that uses available evidence to generate likely, but not certain, conclusions.

2. Allows access to tried-and-true methods that speed current problem solving.
   a) Analogical problem solving permits establishment of an analogy between features of the current situation and those of previous situations.
   b) Past experience permits generalization of a solution from an earlier problem to a new problem.
   c) Caution must be employed with inductive reasoning, in that the belief that a solution has worked previously may impair problem solving in the current situation.
   d) Mental sets are preexisting states of mind, habit, or attitude that can enhance the quality and speed of perceiving and problem solving, under some but not all conditions.

V. Judging and Deciding

A. Definitions

1. Bounded rationality suggests that decisions and judgment might not be as good, as rational, as they always could be, but that they result from applying limited “rational” resources to situations that require immediate action.

2. Judgment is the process by which you form opinions, reach conclusions, and make critical evaluations of events and people. Judgments are often made spontaneously, without prompting.

3. Decision making is the process of choosing between alternatives, selecting and rejecting available options.

4. Judgment and decision making are interrelated processes.

B. Heuristics and Judgment

1. Heuristics are informal rules of thumb that provide shortcuts, reducing the complexity of making judgments; they generally increase the efficiency of thought processes.
   a) The availability heuristic suggests that people often make decisions based on information that is readily available in memory. The availability heuristic may lead to faulty
decisions when:

(i) Memory processes give rise to a biased sample or information
(ii) Information stored in memory is inaccurate

b) The **representativeness heuristic** is captures the idea that people use past information to make judgments about similar circumstances in the present. The representativeness heuristic may lead to faulty decisions when:

(i) It causes you to ignore other types of relevant information
(ii) You fail to be guided by representativeness

C. The *Psychology of Decision Making*

1. Framing of gains and losses

a) A **frame** is a particular description of a choice, most often perceived in terms of gains or losses

(i) Framing a decision in terms of gains or in terms of losses can influence the decision that is made
(ii) Knowledge of framing effects can help you understand how people come to radically different decisions, when faced with the same evidence

2. **Decision aversion** is a situation in which the individual will try hard to avoid making any decision at all

a) Decision aversion is most often seen in the tendency to avoid making difficult decisions

b) Psychological forces at work in this process include:

(i) People do not like making decisions that will result in some people having more of some desired good and others less
(ii) People are able to anticipate the regret they will feel if the option chosen turns out worse than the rejected option
(iii) People do not like being accountable for decisions that lead to bad outcomes
(iv) People do not like to make decisions for other people

3. In some situations, people are **decision seeking**. People are generally happier to make decisions for themselves than to let others make decisions for them
**DISCUSSION QUESTIONS**

1. The “Turing Test” is used to determine whether a computer possesses artificial intelligence. In the test, a participant sits at a computer in one room and has a conversation with a computer set up in another room. If the participant cannot tell whether he or she is having a conversation with a real person or with a computer, then the computer passes the test. The participant can ask anything that he or she wants; there are no restrictions on questions. Have the class discuss what questions they would ask if they were participating in a Turing test. What responses would lead them to believe that they were having a conversation with a computer or with a human?

2. Almost everyone has experienced a “flash of insight” when the solution to a problem seemed to appear suddenly in one’s mind. Using personal experience as “data,” have the class indicate how they would characterize the nature of insight? What sort of process seems to occur? What triggers it?

3. What is the motivation for engaging in reasoning for its own sake, as in solving crossword puzzles?

4. Have the class make simple judgments about the length of two lines drawn on the chalkboard or the weight of typical classroom objects. After the students make their decision, ask them how they arrived at it. Simple, straightforward decisions are often made without conscious reflection or deliberation. People simply “know” the correct answer. What does this say about cognitive processes?

5. Have the class consider the cognitive processes involved in reasoning. What sort of differences might you expect to see in these processes between a child of 4 and a child of 16? What about those between a child of 16 and an adult of 45? What about those between an adult of 60 and an adult of 85?

6. An interesting offshoot of this topic is the question of where is this taking us. While for now, AI is typically used in game and simulation programs and to help operate simple logic functions of some mechanical devices, as it gets more sophisticated its applications will continue to expand. This raises the question of whether we will ever develop an AI program as sophisticated as the human brain. Some researchers believe this is just a matter of time, others are not so sure. But should we ever succeed at this, it raises some interesting moral and spiritual questions. Would such a machine be “conscious” and self-aware? Would such a “self-aware” machine have “personality” or a “soul?” If we succeeded in creating a machine with full self-awareness, would it be entitled to legal rights? What ethical considerations would come into play in regard to reprogramming this machine or shutting it down? While right now this is a question that lies in the realm of science fiction, it may someday become science reality. How do students feel about this? Do they believe that we should even be trying to create such a machine? What pros and cons do they see to these efforts?
SUPPLEMENTAL LECTURE MATERIAL

Fallacies in the Use of Language

We often have lapses in critical thinking as we speak and write. A fallacy is a plausible argument that rests on invalid or false inferences. Fallacies are often used unintentionally, but they may be used intentionally when an effort is being made to influence the listener or reader.

- “If you know about BMW, you either own one or you want one.”

Is there anything wrong with this statement? If so, what is wrong with it? It is an example of the false alternative fallacy. It is also called dualistic or black-and-white thinking, or bifurcation. This fallacy occurs when it is presumed that a classification is exclusive or exhaustive. It often takes the form of overlooking alternatives that exist between two polar opposites. One example of false alternatives was written by an educator, suggesting that children should begin public school at the age of four and that high school should end after the eleventh year. “Twelfth grade has become a bore for able students and a holding tank for the rest.” Given your own abilities for critical thinking, what are your thoughts on that statement?

- “I asked my doctor why my mouth was so dry, and he told me that it was because my saliva glands are not producing enough saliva.”

What do you think of the doctor’s diagnosis? This is an example of the fallacy of begging the question, or circularity. This fallacy occurs when the solution to a problem is a restatement of the problem, or when the argument for a proposition is equivalent to the proposition. Diagnosis of mental disorders is sometimes considered to beg the question. Consider the following exchange.

**Question:** Why is he so nervous and agitated?

**Answer:** He has Generalized Anxiety Disorder.

**Question:** What does that mean?

**Answer:** It means that he is constantly nervous and agitated.

As the questioner, you have no more knowledge at the end of the exchange than you did at the beginning. You have just been given a label for what you already know. Some examples of this fallacy seem ridiculous, but they occur frequently and are often generally accepted. Consider gravity. We all know what it is, but does it really explain why objects are attracted to each other? No, it simply labels the fact that they are.

- “He is an innocent man. He was tried before a jury of his peers and the prosecution was unable to prove him guilty.”

Is the assumption of innocence justified? This is an example of the fallacy called appeal to ignorance. This fallacy occurs when it is argued that because we cannot prove a proposition true, it must be false; or if we cannot prove a proposition false, it must be true. As an example, think about this statement: “There has never been any scandal about this candidate for President. Therefore, he must be an honest, moral person.” Is that really true?

- “If you don’t pick up your clothes before you go to bed at night, pretty soon you’ll be knee deep in dirty clothes.”

Is that the way it is? This is an example of the slippery slope fallacy; certain applications of it have
been called the domino theory. The argument is that if the first in a possible series of steps or events occurs, the other steps or events are inevitable. Here is an example from a letter to the editor of a metropolitan newspaper, in which the writer was responding to an article discussing the morality of euthanasia in the case of a person with advanced multiple sclerosis. “If we allow this to happen, where do we stop? Who would decide at what point someone should die? Do we give them poison the moment they know they have multiple sclerosis or cancer, before they have any suffering?”

• “TV can’t be harmful for children because it occupies their attention for hours and keeps them off the streets.”
Is this argument against the idea that TV can be harmful for children convincing? It is an example of the fallacy called irrelevant reason. This fallacy occurs when the argument given to support a proposition has little or no relevance to the original proposition. Let us look at one more example. “Conservationists have suggested that we could conserve fuel by increasing the tax on gasoline. But more taxes, whether they’re paid by the oil companies or passed on to the consumer at the pump, will not produce one more barrel of oil.”

• “I don’t see how he can get elected. No one I know is going to vote for him.”
What’s wrong with this argument? This is the hasty generalization fallacy. It occurs when an isolated or exceptional case is used as the basis for making a general conclusion. In statistical terms, it is making a conclusion about a population based on information obtained from a sample that is biased or too small to be representative. It is an error of inductive reasoning, going from the particular to the general when it is not justified by the evidence.

• “If socialized medicine will result in better and lower-cost health care, shouldn’t the same logic be applied to automobiles? Wouldn’t nationalization of the auto industry produce better and lower-cost cars? And if we nationalize auto mechanics, wouldn’t we get better and less expensive repairs?”
These words were spoken in rebuttal after Senator Kennedy had called for national health insurance in a speech at a meeting of the United Auto Workers. Does the speaker’s argument make sense? It represents the questionable-analogy fallacy. In a questionable analogy, an attempt is made to make two situations seem more similar than they actually are. A state senator, using the Crucifixion as a rationale for capital punishment, gives another example, “Where would Christianity be if Jesus got 8 to 15 years, with time off for good behavior?”

The underlying issue in the fallacies detailed above is the need for critical thinking on the part of the listener. Think about what was said. This is one of the most important lessons of this course. Does it make sense, or does it just sound impressive? What motivation could the speaker or writer have? What would the writer or speaker like you to do based on their message? Fallacies are not necessarily bad, but they require far greater scrutiny than they generally receive. Again, think critically and use your abilities for processing information.

The Structure, Hierarchy, and Criterion of Language

Criterion 1: Phonemes
Phonemes are the perceptual units of which speech events are composed. These basic sounds are used to create words. There are few of them, about 100 altogether, and they form the basis of all human spoken language. No single language uses all 100 phonemes. For instance, English uses about 40. We combine these units of sounds to make units of meaning.
Criterion 2: Morphemes

Morphemes are the smallest units of language that have meaning. Morphemes consist of what we recognize as root words, stem words, prefixes, and suffixes. Words that we recognize as meaningful are made up of combinations of morphemes. We use rules to combine groupings of morphemes into coherent sentences.

Criterion 3: Syntax

Syntax is a system of rules that specify how we combine words into phrases and sentences.

Looking back at the basics of spoken language, what inferences might we be able to make about the controversy of whether the higher primates are capable of speech? They seem able to meet the first two criteria of language, the symbolic and generative requisites, but do they follow the structure of language, according to the rules of syntax? Not yet, at least so far as we have been able to determine.

Language and the Human Child

Developmental Milestones

People learn to speak and use language in highly predictable ways. Certain skills are required for learning to speak, such as babies crying before coherent vocalization can occur. Following crying, babies babble at age 4 to 6 months, begin using phonemes at 7 to 11 months, and usually speak their first real word at about 1 year of age. Nouns such as “banana” or “bar” or “mom” get used a lot at first to indicate the child’s wants.

Between 2 and 2½ years, sentences begin to appear and increase in complexity up to about age 5, at which time the child has good syntactical capability and can even tell short stories (like the cat drew the picture on my bedroom wall). One interesting aspect of language acquisition is that the phonemes used during the first year by babies are cross-cultural. The early sounds of all babies are the same, regardless of the language spoken around the child or the language(s) he or she will eventually learn to speak. Why? Because the first few sounds are easy to make, there are words and sounds that are common in a cross-cultural sense, such as “mama” and “pappa.” However, what is the process once babies do begin to speak?

Overextensions

When learning to speak formally, children are limited by vocabulary size, so they generalize one concept to include many others. For example, if a child had learned to say “banana”, she may refer to all fruit, generically, as “banana”, at least for a short time. “Ball” is another frequently generalized word, and is often applied to anything that is round. This process exemplifies the child’s use of one concept to include others beyond its original meaning.

Holophrases

Holophrases are single-word utterances that represent the meanings of several words. This is due to the child’s lack of ability to form more complex word patterns at an early age. “Car” is an example of a holophone. Many children simply say, “car” to indicate that they want to ride in a car or to tell a parent to look at a car. Before syntax, children express themselves by naming the most critical aspects of a thought process.
**Telegraphic Speech**

Telegraphic Speech uses content words and leaves out prepositions, articles, and anything else that is not critical to expression of the thought. At this time, you get comments such as, “car fast.” As the child’s vocabulary expands, sentences increase in length and their specific meaning becomes easier to discern.

**Metalinguistic Awareness**

Metalinguistic Awareness is the ability to think about using language. Sentences get longer, more complex, and you see the emergence of puns and jokes, such as play-on-word games, begin to appear in the vocabulary of the school-aged child.

**Language Acquisition Theories**

For most of its history, psychology has expressed little interest in language. Once it did express interest in language, however, a number of theories followed in quick succession.

**Learning Theories**

B. F. Skinner proposed that children learn language by imitation and reinforcement. This idea would hold that children learn to speak by imitating older children and adults. Specifically, Skinner proposed that children learn by association of words within sentences, with each word being a stimulus for the one following it.

**Nativist Theories**

This perspective was proposed by Noam Chomsky in the 1950s and 60s as a rebuttal to Skinner’s theory, a theory Chomsky regarded as flawed. Chomsky felt that the flaw was in the association of ideas, stating that if that was a valid premise, the same stimulus word would always lead to the same response. He proposed that humans are born with a “native” ability to learn language, that we have a built-in or hardwired capability for language acquisition. Part of Chomsky’s logic for his theory is that the language acquisition process is the same, cross-culturally. No matter where you are or what language you learn to speak, the process is the same. He felt that as children learn to speak, they mastered two basic sets of rules about language and its use. These are:

- **Phrase-structure rules** that tell us how to combine words and phrases into sentences
- **Transformational rules** that tell us how to make questions, negations, and other sentences from declarative statements.

Cognitive Theories posit that language and thought are intermixed, throughout the cognitive developmental process, and that language is reflective of the changing thought of the child, as he or she matures. This implies that in order to understand a child’s progress through the process of language development, you must first understand the course of a child’s cognitive developmental process. This construct was advocated by Piaget, in his position that language development is dependent on cognitive development. Central to the cognitive theories of language acquisition are the premises that:

- Humans are born with limited capacity for information processing
- Language acquisition places high demand on that capacity
- Children learn and acquire language by listening, associating, attending, and remembering word orders and meanings of words in conversations
FUNCTIONAL FIXEDNESS

An example you might use is the “two-strings” problem. In this problem, a person is placed in a room. There are two strings hanging from the ceiling. The strings are far enough apart that you cannot hold onto one string and reach the other one while it is hanging straight down. Even if you grab one string and pull it toward the other string as far as you can, the other string is just barely out of reach. In the corner of the room is a table with a screwdriver on it. Your task is to hold onto both strings at the same time. To solve the problem, you must recognize that the screwdriver can be tied to the bottom of the other string and used as a pendulum weight. Then you can swing that string back and forth. While it is swinging, you can now grab the other string, pull it toward the swinging string and grab it when it swings toward you. Functional fixedness often prevents people from seeing how to properly use the screwdriver. (Note: Some problems are much easier to solve if you can visually represent the problem. This is one of those problems. Students tend to have a much easier time of it if they can see the situations represented in a drawing or photograph.)

BIOGRAPHICAL PROFILES

Wolfgang Köhler (1887–1967)

Köhler was born in Estonia, grew up in northern Germany, and received his formal education at the University of Berlin, obtaining his doctorate in 1909. Köhler trained under both Carl Stumpf and the eminent physicist, Max Planck. While a postdoctoral research fellow at the University of Frankfurt, Köhler served as a research participant for Max Wertheimer in studies of the phi illusion. This experience stimulated Köhler’s interest in such perceptual phenomena. With Werthiemer and another Frankfurt colleague, Kurt Koffka, he sparked the Gestalt movement in psychology. While stationed on Tenerife Island in the Canaries during World War I, Köhler conducted a classic program of research on insight learning in apes. In 1925, The Mentality of Apes was published and became a monumental contribution to Gestalt literature. In response to growing Nazism in Europe, Köhler immigrated to the United States, assuming a position at Swarthmore College in 1935. During his American tenure, Köhler received many awards and citations from scientific associations, including presidency of the American Psychological Association in 1959.

Herbert Simon (b. 1916)

Herbert Simon is a modern Renaissance man. He is a creative and influential economist, psychologist, political scientist, sociologist, computer scientist, and philosopher. Simon is best known as the winner of the Nobel Prize in Economics in 1978. Simon departed from then classic economic theory by describing how modern businesses, in an increasingly complex world that contains more relevant information than they can use, reach decisions that do not maximize profits but merely seek to reach satisfactory goals.

Simon has been a member of Carnegie-Mellon University’s psychology department since 1949. He is the author or co-author of more than a dozen books on problem solving, models of thought, discovery, organizations, public administration, and automation. Simon’s father, an electrical engineer, and mother, an accomplished pianist, taught him that curiosity is the beginning of all science and is to be encouraged in all areas. If there was a question or phenomenon the Simons failed to understand, they immediately set out to find the answers and reasons.

Simon applied the same rigorous methodology to his college major, political science, and to other social science pursuits employed in the “hard” sciences. As a result, his insight was demonstrated to a variety of college participants, and led to his receiving his Ph.D. from the University of Chicago in 1943 despite his being involved in numerous academic and work projects.
His major professional life divides into two periods. In the first, from 1947 to 1958, he focused on decisions, particularly in organizations. This is Simon’s work that is best known in economics, political science, and sociology. Since 1958, Simon’s major interest shifted to human problem solving and artificial intelligence. Much of his work, done in collaboration with Allen Newell, is best known in psychology and computer science. Simon demonstrated how psychological phenomena such as intelligent decision making could be simulated by modern high-speed computers. These mechanical information processors could be programmed to play a winning game of chess or to produce their own programs to solve a problem.

One of the programs he developed, now known as the General Problem Solver (GPS), involves a strategy that many expert human problem solvers use. Called subgoal analysis, this strategy involves two processes that follow each other in repeated cycles. The first is to determine appropriate subgoals and select a promising one for further exploration. An example of a subgoal in this course is to earn a desirable midterm grade. The second GPS process is to identify any difference between a subgoal and the current situation and then eliminate or reduce this difference. If you are not currently headed toward the grade you want, your computer—mental or mechanical—runs through strategies for changing conditions to achieve that subgoal. If the initial subgoal cannot be achieved, the cycle continues with different, perhaps initially smaller, subgoals. Setting subgoals and reducing discrepancies is the heuristic by which GPS approximates the systematic progress of efficient human problem solving.
## Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1925</td>
<td>Wolfgang Köhler published <em>The Mentality of Apes</em>, documenting his studies of insight learning principles.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<tr>
<td>1945</td>
<td>Karl Duncker published <em>On Problem Solving</em>, a summary of his research and thinking on problem solving and impediments to effective problem solving.</td>
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<tr>
<td>1950-1953</td>
<td>The Korean War was fought.</td>
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<td>1959</td>
<td>Donald Broadbent published <em>Perception and Communication</em>, outlining a new and important theory of attention.</td>
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<tr>
<td>1963</td>
<td>John F. Kennedy was assassinated.</td>
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<td>1972</td>
<td>J. Bransford and J. Franks published the results of an experiment showing that people use schemas in recalling information.</td>
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<tr>
<td>1973</td>
<td>Amos Tversky and Daniel Kahneman published “On the Psychology of Prediction”, a paper outlining the means by which people make decisions and describing some of the notable errors in decision making.</td>
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<tr>
<td>1974</td>
<td>The Vietnam War ended.</td>
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<tr>
<td>1976</td>
<td>U. Neisser published <em>Cognition and Reality</em>, one of the earlier texts to set forth clearly the principles of cognitive psychology.</td>
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<tr>
<td>1978</td>
<td>E. Rosch published <em>Principles of Categorization</em>, a summary of her work on concept formation showing that people base some forms of psychological inferences on naturally occurring concepts.</td>
</tr>
<tr>
<td>1980</td>
<td>Ronald Reagan was elected President of the United States of America.</td>
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</tbody>
</table>
SUGGESTIONS FOR FURTHER READINGS

Clark, H. (1996). *Using Language*. Cambridge: Cambridge University Press. Suggests that language is a joint action carried out by two or more people acting in concert with each other. Clark sets language in a social context and argues that language is more than just the sum of a speaker and a separate listener.


PROGRAM 10: COGNITIVE PROCESSES

Overview
An exploration into the higher mental processes—reasoning, planning, and problem solving—and why the cognitive revolution is attracting such diverse investigators, from philosophers to computer scientists.

Key Issues
The impact of the computer on the study of cognitive psychology, computers that think like human beings, the parts of the brain used in reading, how human beings organize and categorize concepts, and how the human mind and computers think alike.

Demonstration
Analysis of cerebral blood flow during cognitive tasks.

Interviews
Leading cognitive psychologist Howard Gardner discusses the impact of the computer on the study of cognitive psychology.
Nobel Prize winner Herbert Simon discusses his work on producing a computer that thinks and solves problems like a human.
Michael Posner uses brain-imaging techniques to explore what parts of the brain are used during reading.
Robert Glaser examines why some individuals have not developed basic skills in various types of learning while others have developed high levels of comprehension.

PROGRAM 11: JUDGMENT AND DECISION MAKING

Overview
A look at the process of making judgments and decisions, how and why people make good and bad judgments, and the psychology of risk taking.

Key Issues
The relationship between judgment and decision making, groupthink exhibited in The Bay of Pigs cabinet meetings, Cognitive Dissonance theory and experiments, and good versus poor negotiating techniques

Archival Demonstrations
Amos Tversky and Daniel Kahneman use “person in the street” respondents to illustrate fallacies of human intuition.
Training program to improve decision making.
Classic early dissonance experiment by Festinger and Carlsmith.

**Interviews**

- Amos Tversky and Daniel Kahneman examine the relationship between decision making and the principles of availability, reasoning by similarity, anchoring effect, and risk aversion.
- Psychologist Irving Janis discusses his study on the impact of groupthink on the Kennedy administration’s decision to implement The Bay of Pigs operation.
- Max Bazerman examines good and bad negotiating techniques.
- Psychologist Leon Festinger examines how people come to love the things for which they suffer.

**FILMS ANDVIDEOS**

- **Age of Intelligent Machines (1987). IU (AIMS), 29 minutes**
  Examines the world of artificial intelligence (AI) and expert systems. Looks at how a new generation of machines can perform functions once thought impossible, such as diagnose illnesses, create original art, and navigate jets. Explains that one of the major goals of AI research is to learn how the human brain works and to duplicate the human ability to use judgment. Features contributions by many leading researchers.

- **Can We Talk to the Animals? (1987). IU (CORT), 30 minutes**
  Examines research on human–animal communication that indicates chimpanzees and dolphins are capable of understanding words rather than just exhibiting learned responses.

- **Communication: The Nonverbal Agenda (1988). CRM, 30 minutes**
  Provides an overview of the field of nonverbal communication. Examines how a variety of behaviors, such as tone of voice, posture, facial expressions, use of space, eye contact, and body movement may either reinforce or contradict verbal messages.

- **The Mind: Thinking (1988). CRM, 24 minutes**
  Thinking is defined as the ability to manipulate a model of the world and to plan a course of appropriate action. Discusses two “failures” in psychology created by our misunderstanding of thinking: the Prefrontal Lobotomies and the use of IQ Tests to measure thinking.

**CASE STUDY LECTURE LAUNCHER**

At the age of 16, Edith Eva Eger’s world turned upside down. She and her family were suddenly arrested and interned in Auschwitz, a Nazi concentration camp in Poland. Shortly after they arrived at Auschwitz, her mother was sent to the gas chamber. Before she was taken away, she urged Edith and her sister to live their lives fully. “Remember,” she said, “what you put inside your brain, no one can take away.” (Eger, 1990, p. 6).

In the horror-filled existence of concentration camp life, Edith found that the basic logic of the world was reversed. The notions of good behavior she had learned growing up “were replaced by a kind of animal quiver, which instantly smelled out danger and acted to deflect it.” Matters of life and death were decided as casually as flipping a coin. You could be sent to the “showers of death” for having a loosely tied shoelace.

After years of being brutalized, the camp inmates longed for freedom, yet, paradoxically, also dreaded it. When their liberators arrived, some prisoners “rushed forward but most retreated and even returned to their barracks.”
Edith was a fortunate survivor. She later married, immigrated to the United States, and became a clinical psychologist. Recently, at the age of 61, Dr. Eger’s need to understand the twisted reality of the camps motivated her to return to Auschwitz. “I came to mourn the dead and celebrate the living, I also needed to formally put an end to the denial that I had been a victim and to assign guilt to the oppressor.” For many years, she had denied the horrible truths of her camp experiences, but eventually denial was unacceptable to her. By reliving the events of her incarceration and forcing herself to think about the meaning of that horror, Dr. Eger believes she has become better able to help others understand events that seem inexplicable in the context of their everyday lives.

The fundamental human desire to comprehend the nature of one’s existence that motivated Dr. Eger was eloquently described by another survivor of Auschwitz, Italian writer Primo Levi. He reports, “It might be surprising that in the camps one of the most frequent states of mind was curiosity. And yet, besides being frightened, humiliated, and desperate, we were curious: hungry for bread and also to understand. The world around us was upside down and somebody must have turned it upside down . . . to twist that which was straight, to befoul that which was clean” (Levi, 1985, p. 99).

Edith took her mother’s last words to heart. No one can take away what she has put in her brain. No one can take away what you have put in your brain. By becoming a psychotherapist, Dr. Eger chose a career in which she helps others cope with personal realities that defy rational explanation. Noting that today’s college students have little knowledge of the Holocaust, she hopes “that some day, when they are ready, my grandchildren will have the curiosity to ask their grandmother questions about the time when the world was turned upside down. So that if it starts tilting again, they and million of others can redress it before it is too late” (p. 9).
CHAPTER 10
Intelligence and Intelligence Assessment

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe both the original purposes of psychological assessment and the purposes for which it is commonly used today
2. Identify the methods used to assess individual differences in practice
3. Define reliability and validity
4. Compare and contrast the major theories of individual differences
5. Define the construct of intelligence
6. Describe Binet’s approach to intelligence testing
7. Communicate what is meant by the “politics of intelligence”
8. Identify objective and projective intelligence tests
9. Explain the differences between intelligence tests that are theory based and those that are empirically based

CHAPTER OUTLINE
I. What Is Assessment?

A. Psychological Assessment is the use of specified testing procedures to evaluate the abilities, behaviors, and personal qualities of people

B. History of Assessment

1. Methods used in China in the 1800s were observed by missionaries and later brought to England
2. Sir Francis Galton was a central figure in the development Western intelligence testing
   a) Tried to apply Darwinian evolutionary theory to the study of human abilities
   b) Postulated four ideas regarding intelligence assessment
      (i) Differences in intelligence were quantifiable
      (ii) Differences between individuals formed a normal distribution
      (iii) Intelligence could be measured objectively
      (iv) The extent to which two sets of test scores were related could be statistically determined by a procedure he called co-relation, later to become
correlation

c) Galton began the *eugenics* movement, advocacy of improving humankind by selective inbreeding while discouraging reproduction among the biologically inferior

C. Basic Features of Formal Assessment

1. Formal assessment procedures should meet three requirements:
   a) *Reliability*: Instruments must be trusted to give consistent scores
   b) *Validity*: Instruments must measure what the assessor intends it to measure
   c) *Standardization*: Instruments must be administered to all persons in the same way under the same conditions

2. Methods of obtaining reliability, validity, and standardization:
   a) Reliability
      (i) Test-retest reliability
      (ii) Parallel forms
      (iii) Internal consistency
      Split-half reliability
   b) Validity
      (i) Face validity
      (ii) Criterion validity, or predictive validity
      (iii) Construct validity

3. Norms and Standardization
   a) *Norms* are typical scores or statistics
   b) *Standardization* is the administration of a testing device to all

II. Intelligence Assessment

A. Intelligence is a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience

B. Origins of Intelligence Testing

1. Alfred Binet developed an objective test that could classify and separate developmentally disabled children from normal schoolchildren
   a) Designed age-appropriate test items
   b) Computed average scores for normal children at different ages expressed in mental age and chronological age

2. Features of Binet’s approach
   a) Scores interpreted as an estimate of current performance, not as a measure of innate intelligence
b) Wanted scores to identify children needing special help, not to stigmatize them

c) Emphasized training and opportunity

d) Constructed his test on empirical, rather than theoretical, data

C. IQ Tests

1. The Stanford-Binet Intelligence Scale
   a) Adapted for American schoolchildren by Lewis Terman of Stanford University.
   b) Provided a base for the concept of intelligence quotient (IQ), with “IQ being the ratio of mental age (MA) to chronological age (CA), multiplied by 100” (in order to eliminate decimals)
   c) \[ IQ = \frac{MA}{CA} \times 100 \]
   d) Revised in 1937, 1960, 1972, and 1986

2. The Wechsler Intelligence Scales
   a) Wechsler—Bellevue Intelligence Scale developed by David Wechsler and first published in 1939
   b) Renamed the Wechsler Adult Intelligence Scale (WAIS) in 1955 and revised and re-released in 1981 (WAIS-R)
   c) WAIS-R is designed for individuals 18 years of age and older, and has six verbal and five performance subtests:
      (i) Verbal
         (a) Information
         (b) Vocabulary
         (c) Comprehension
         (d) Arithmetic
         (e) Similarities
         (f) Digit span
      (ii) Performance
         (a) Block design
         (b) Digit symbol
         (c) Picture arrangement
         (d) Picture completion
         (e) Object assembly
      designed for children ages 6 to 17 years
   e) Wechsler Preschool and Primary Scale of Intelligence, Revised (WPPSI-R) (1989) designed for children ages 4 to 6.5 years

III. Theories of Intelligence

A. Psychometric Theories of Intelligence

1. The most commonly used statistical technique is factor analysis

2. The goal of factor analysis is to identify the basic psychological
dimensions of the concept being investigated

3. Individual contributors
   a) Charles Spearman concluded presence of “g,” a general intelligence underlying all intelligent performance
   b) Raymond Cattell determined general intelligence could be broken into two relatively independent components
      i) Crystallized intelligence, the knowledge the individual has already acquired and the ability to access that knowledge
      ii) Fluid intelligence, the ability to see complex relationships and solve problems
   c) J. P. Guilford developed the structure of intellect model specifying three features of intellectual tasks:
      i) Content, or type of information
      ii) Product, or form in which information is presented
      iii) Operation, or type of mental activity performed

B. Sternberg’s Triarchic Theory of Intelligence
   1. Stresses importance of cognitive processes in problem solving
   2. Three types of intelligence represent different ways of characterizing effective performance
      a) Componential intelligence is defined by the component or mental processes that underlie thinking and problem solving
      b) Experiential intelligence captures people’s ability to deal with two extremes: novel vs. very routine problems
      c) Contextual intelligence is reflected in the practical management of day-to-day affairs

C. Gardner’s Multiple Intelligences and Emotional Intelligence
   1. Theory expands the definition of intelligence beyond skills covered on an IQ test
   2. Gardner identifies numerous intelligences, covering a range of human experience
      a) Linguistic intelligence
      b) Logical-mathematical ability
      c) Naturalist
      d) Spatial ability
      e) Musical ability
      f) Bodily Kinesthetic ability
      g) Interpersonal ability
      h) Intrapersonal ability
   3. Emotional Intelligence (EQ) is related to Gardner’s interpersonal and
intrapersonal intelligences. EQ has four parts:

a) The ability to perceive, appraise, and express emotions accurately and appropriately
b) The ability to use emotions to facilitate thinking
c) The ability to understand and analyze emotions and to use emotional knowledge effectively
d) The ability to regulate one’s emotions to promote both emotional and intellectual growth

IV. The Politics of Intelligence

A. History of Group Comparisons

1. Henry Goddard (early 1900s) advocated testing of immigrants and selectively excluding those found to be “mentally defective”
2. “Evidence” for exclusion derived from case studies of two families, the Juke and the Kallikak families, that allegedly had produced defective human offspring for generations

B. Heredity and IQ

1. Heritability is based on an estimate within a given group, but cannot be used to interpret between group differences
2. A heritability estimate of a particular trait, such as intelligence, is based on the proportion of the variability in test scores on that trait that can be traced to genetic factors
3. For human characteristics in general, differences between gene pools of different racial groups are minute, as compared to genetic differences among individual members of the same group

C. Environments and IQ

1. Research has most often focused on global measures of environment, such as the influence of socioeconomic status on IQ
2. “Head Start” taught us that:
   a) IQ can easily be affected by the environment
   b) An enriched environment must be sustained if the results are to last

D. Culture and the Validity of IQ Tests

1. Systematic bias makes some tests invalid and unfair for minorities
2. Ongoing concern exists as to whether it is possible to devise an IQ test that is “culture-fair”
3. Stereotype Threat—the threat of being at risk for confirming a negative stereotype of one’s group—can bring about the poor performance encoded in the stereotype

V. Creativity
A. Creativity is the individual’s ability to generate ideas of products that are both novel and appropriate to the circumstances in which they were generated

B. Assessing Creativity
   1. Many approaches to rating individuals as creative or uncreative focus on divergent thinking, the ability to generate a variety of unusual but appropriate solutions to a problem.
   2. Exceptional Creativity and Madness
      a) The exemplary creator who emerges from assessments of creativity as almost off the scale
      b) Gardner alludes to a common stereotype of the exemplary creator – their life experiences border on or include the experience of madness

VI. Assessment and Society
   A. The primary goal of psychological assessment is to make accurate assessments of people that are as free as possible of errors of assessors’ judgments
   B. Three ethical concerns are central to the controversy of psychological assessment
      1. The fairness of test-based decisions
      2. The utility of tests for evaluating education
      3. The implications of using test scores as labels to categorize individuals

**DISCUSSION QUESTIONS**

1. Western culture places high value on intelligence, so much so that we begin intelligence testing of our children as soon as they enter the public school system. Children are routinely tested, using a variety of assessment instruments. Testing is followed by school counselors meeting parents to provide feedback regarding the child’s performance. Inevitably, the child’s scores become “cocktail party conversation,” with parents comparing their children’s scores, even though their children may not have been assessed using the same instruments, or under the same circumstances. Discuss with the class the range of potential problems that can result from such activities.

2. Given the current three-part definition of intelligence as proposed by Sternberg, ask if members of the class feel that any one aspect of intelligence is more important than the others? If so, have them defend their perspectives.

3. Discuss Gardner’s multiple intelligences. How does the class perceive these multiple areas of intelligence interacting with each other? In which area do various class members feel they are most intelligent?

4. What is meant by “the politicization of intelligence”? What is the significance of this activity, and what is the impact of it on us as individuals?

5. Suppose intelligence and creativity were negatively correlated, and you could be trained to increase one of them. Which would you choose? Ask the class their opinions and discuss choices with them. Why did they select the one that they did?
6. Does the class perceive “street smarts” as a special kind of intelligence? Why or why not?
Aspects of Intelligence

Psychometric psychology represents the quantitative approach to the measurement of intelligence, specifically, to the measurement of mental functioning. Unlike Piaget, whose approach was qualitative in nature, psychometricians are more concerned with what people know and how they perform, compared to others, than how they came to know something.

What is intelligence? For starters, it is an elusive concept and, as the term is used today, usually refers to thinking and acting in ways that are goal-directed and adaptive (Siegler, 1991, p. 200). In practice, we usually think of intelligence as involving three main sets of ideas:

- **Practical problem-solving ability**: The ability to get to the heart of a problem, accurately interpreting relevant information, seeing all aspects of the problem, and reasoning through the problem in a logical manner.
- **Verbal ability**: Speaking and writing clearly and articulately, having detailed knowledge about a specific field, reading widely and with good comprehension, having a good vocabulary, and dealing effectively with other people.
- **Social competence**: Skills include displaying curiosity, being sensitive to the needs and desires of others, being on time, having a “social conscience,” and making carefully considered fair judgments.

How do we study intelligence? There are multiple ways:

- **The Psychometric approach**: Posits that intelligence can be described in terms of mental factors and that tests can be constructed to reveal individual differences in those factors that underlie mental performance. These factors include:
  - **Verbal factors**: Includes vocabulary, reading comprehension, story completion, and verbal analogies.
  - **Spatial factors**: Such as 3-dimensional rotation abilities, maze learning, and form-board performance.

We use standardized intelligence quotient (IQ) tests to measure intelligence, so IQ tests are the instruments that ultimately provide the data for theory construction. Developed around 1900 by Alfred Binet and Theodore Simon, the first IQ tests were used to assess school-related abilities and to differentiate among children who could benefit from standard school instruction and those requiring “special” education.

Information processing approaches to intelligence testing look at individual differences in how information is encoded, the speed of processing that information, ease of categorization, and metacognition (which coordinates the first three). Although the differences measured between and within individuals change across the life span, there is nothing “inherently developmental” about the information-processing approach. Information processing is part of cognitive psychology, some aspects of which are applicable to developmental psychology.

Piagetian approaches look at individual differences in the rate of development. This approach is developmental in nature. Children progress through the various developmental tasks at different rates and ages, from sensorimotor on through the various tasks of formal operations. Now, let us discuss some of the actual instruments utilized to measure intelligence, and what they tell us or fail to tell us.
Some of the instruments commonly used to assess intelligence quotient (IQ) in children are the following:

- Stanford-Binet
- The WAIS and WISC
- The Bayley Scales of Infant Development

The Stanford-Binet for children consists of “games” and identification problems. The WAIS is primarily pen and paper, and the WISC is both pen and paper and practical ability. The Bayley consists of trying to get the child to play the same game that you are playing.

“IQ Tests” are one of the more commonly used and abused psychological instruments ever devised. Always be aware that IQ tests measure one and only one type of intelligence: that which is required to succeed in formal educational institutions. Realistically speaking, the IQ score is the best single predictor we have of academic achievement ability, but IQ tests are objective rather than projective measures. Examples of IQ tests with which you, as students, are most familiar are the SAT or ACT. If you go past a baccalaureate degree in your educational process, you will have the traumatizing experience of becoming acquainted with the GRE, LSAT, MCAT, DCAT, or whatever applies to your area of graduate interest.

IQ scores can only be interpreted in a relative sense. Your score is based on standardized norms and indicates how well you, as an individual, performed on a given test instrument relative to other individuals of the same age and background, when tested under the same constraints. The normal curve, or normal distribution, is used to define the distribution of IQ scores.

Once more, relativity is the essential concept. Whether or not your child is “gifted” in a positive or negative manner is relative to where he/she scored in comparison to other children who took the same instrument, at the same time, under the same conditions. When looking at IQ scores and interpreting them, you will frequently hear the following terms. They are key to understanding relativity and IQ measurement.

- **Stability** refers to the individual’s relative standing over time.
- **Change** refers to the change in a given individual’s absolute scores over time.

In summing up, IQ scores are useful to us in determining the individual’s potential for success in an academic environment but beyond that function their applicability fades rapidly. As students and as future parents, you need to be aware of the applications in which the IQ test is relevant, and in which it is not.

**What Color Is an IQ?**

Critics of intelligence tests claim that one reason that African Americans and other minorities score lower is that the tests are written in a “foreign” language. The test instructions and questions, written in “standard” English and testing “standard” concepts, may not make sense to children who use a different (but not inferior) language to deal with “nonstandard” concepts.

To illustrate the gap between standard English and “black” English, sociologist Adrian Dove developed the Dove Counterbalance General Intelligence Test (1968), a set of 30 multiple-choice questions. This test, also known as the “chitling test,” uses “Black English” to test knowledge of black cultural concepts. For example, could you respond to the following?

Questions:
• What is a “blood”?
• “Bird or yardbird” was the jacket jazz lovers from coast to coast hung on _____?
• Do you know the difference between a “gray” and a “spook”?

Answers:
• A “blood” refers to someone of African American descent.
• Charlie Parker, who spent time in prison, was nicknamed “Bird.”
• “Grays” are pale-faced whites and “spooks” are African Americans.

Based on just this minimal information, it would seem that American “whites” and American “blacks” are people separated by a common language! Psychologist Robert L. Williams feels that the differences in language can be much subtler than the Black English used on test items on the chitling test. He and L. Wendell Rivers designed a study to measure the actual effect of this language gap on IQ scores (1972). They enlisted the aid of African American teachers and graduate students to translate the instructions of an IQ test into nonstandard English. The test they used was the Boehm Test of Basic Concepts (BTBC), an IQ test that asks children to mark the picture that matches a concept of time, space, or quantity. Their participants were 890 African American children attending either kindergarten or first or second grade. The children were divided into two groups, and the psychologists controlled for the variables of the scores received on other IQ tests, age, sex, and grade level. One half was given the standard version of the Boehm and one half was given the nonstandard version. Results were stated as follows.

“The children who took the nonstandard version scored significantly higher than those who took the test with the standard instructions. What is surprising is that the nonstandard instructions seem to differ little from the standard version. For example, the instructions on the standard version read “behind the sofa,” while the nonstandard version asked the child to mark a picture of something that was “in back of the couch.”

The Black Intelligence Test of Cultural Homogeneity (the BITCH test) was Williams’ next experiment in designing a culture-specific test for African Americans. Williams administered 100 vocabulary items, selected from a slang dictionary and his personal experiences, to a group of 200 sixteen- to eighteen-year-old participants, half of whom were African American and half of whom were white. On this IQ test, the whites got lower scores, an average score of 51, compared to an average of 87 for the African Americans.

As Williams demonstrated, psychologists can develop a test that favors a particular group rather easily. However, the problem that has confronted the designers of tests is how to design a test that will apply to all groups fairly. Moreover, after the test is designed, how do we best use the data it provides? Williams (1974) stresses that we must remember that:

• An IQ is only a score on a test that measures specific skills.
• An IQ should not be used to label children (as it often is).
• Illiteracy, or a different type of literacy, should not be confused with intellectual ability. An IQ score should be used to measure an individual’s ability to adapt to and function effectively in society.

Should IQ tests have color and culture? Is separate but equal the best alternative when it comes to IQ tests, or should we just be more careful in using IQ scores? What do you think? Think carefully, because you could be the next group to use a “nonstandard” form of language.
Mental Retardation: The Long Childhood

Concern and care for the developmentally delayed, or retarded, individual is a recent phenomenon. Throughout most of history, no special attention has been given to the mildly developmentally delayed or disabled person. These people lived a life of manual labor and poverty, sometimes rejected by family and community. In ancient and medieval times, the more severely developmentally disabled were frequently abandoned and left to die of exposure or starvation, or to be killed by animals. Into the 16th and 17th centuries, severely disabled children were often thought to be divine punishment of the parents, or possessed by Satan.

As society became somewhat more humane, institutions for the “feeble-minded” were established, though the lifestyle of these individuals did not necessarily improve as a result of such institutions. These individuals lived out their short lives in drab and often punitive surroundings. Many were victims of genocide. Hitler’s goal to purify the Aryan race serves as a chilling exemplar of this issue. It is estimated that 300,000 developmentally delayed or disabled individuals were killed under Hitler’s leadership.

Until recent years, developmentally delayed or disabled individuals were classified as morons, imbeciles, or idiots, depending on the extent of disability. The genetic disorder we now call Down syndrome was called Mongolian idiocy. The genetic disorder known currently as Tay-Sachs disease was called amaurotic family idiocy.

The situation for the developmentally delayed/disabled individual began improving in the 1960s. President Kennedy spoke out for these individuals, and was instrumental in making funds available for research in this area and education for the developmentally delayed or disabled. The zeitgeist of the 60s emphasized environmental factors in intelligence and challenged the view that low intelligence is genetically programmed.

Developmental delay or disability is difficult to define and, at one point in time, the diagnosis was made entirely based on IQ scores. Today, the child’s adaptive capacities are also considered in assessing the intellectual capabilities of the child. Consideration is given to the fact that the individual’s self-help skills, socialization, language, and motor skills are significantly less well-developed than those of normal children of the same age. There remains a fuzzy boundary, between the “almost developmentally delayed or disabled” and the “just barely delayed or disabled.” It is estimated that about 3 percent of children are diagnosed as being developmentally delayed or disabled. A diagnosis of developmental delay or disability is not made after age 18.

Mild Mental Retardation. Mildly developmentally delayed or disabled children have an IQ of between approximately 50 and 75, and these account for approximately 80 percent of all the developmentally delayed individuals. Mildly delayed/disabled children can learn to read and write and to do simple arithmetic. They learn slowly and have great difficulty with abstract concepts. Their disability is most noticeable in school. As adults, they hold jobs and live independently, often overcoming the stigma of retardation.

Moderate Mental Retardation. Moderately delayed/disabled children have an IQ between 35 and 55. About 12 percent of developmentally delayed/disabled children fall into this category; many of them are Down syndrome children. Whereas the mildly delayed/disabled individual is described, as “educable,” the moderately delayed/disabled child is described as “trainable.” These children use language and can learn self-help skills, and their training involves teaching of skills that will enable them to have a degree of independence in the community. Many of them learn to tell time, to count money, and to find their way around in the environment.

Severe Mental Retardation. Severely delayed/disabled children have an IQ of 20 to 35. They can learn some language and self-help skills. Most of these children are institutionalized. About 8 percent of people with an IQ below 70 are severely delayed/disabled.
Profound Mental Retardation. These children have an IQ of less than 20, and require supervision and nursing care all their lives. About 1 percent of delayed/disabled children are profoundly retarded.

It is probably more meaningful to classify the developmentally delayed or disabled individual according to the cause of their retardation.

Genetic causes. Down syndrome is the result of a genetic aberration (it is not a hereditary problem) that results in three chromosomes at the 21st position rather than two. It is the most common genetic cause of retardation, and occurs in approximately one of every 1,000 live births. The incidence of this disorder has decreased as a function of the ability to detect it through amniocentesis and chorionic villi sampling. The next most common genetic cause of retardation is phenylketonuria (PKU), a metabolic disease carried by a recessive gene. It can be detected shortly after birth and controlled. There are a number of other relatively rare genetic causes of mental retardation, including Tay-Sachs disease, Klinefelter’s syndrome, and Niemann-Pick disease.

Intrauterine infection or trauma. Infections contracted by the mother can cause mental retardation. These causes include encephalitis, rubella, and syphilis. Brain damage to the fetus can also result from malnutrition and dietary deficiencies, poisoning by lead or carbon monoxide, or drug use by the mother, especially alcohol, during the mother’s pregnancy. Recent evidence supports a correlation between use of crack cocaine and fetal injury.

The birth process. Premature children sometimes have an immature nervous system, and anoxia (oxygen deprivation) or head injury during birth can damage the brain and cause mental retardation. All of these causes together probably account for no more than 30 percent of all cases of developmental delay/disability, and all have identifiable physical causes. In many cases, these children have physical deficiencies and deformities in addition to their retardation. It is striking to note how many of such cases could be prevented or avoided, given appropriate prenatal care of the mother, and the mother’s knowledge and acceptance of her responsibility to protect her unborn child.

Cultural—familial causes. The majority of cases of retardation fall into this category. Children in this category are usually mildly delayed or disabled. Usually, they do not have other physical handicaps and generally do not look any different from normal children.

Cultural—familial retardation is most likely to occur among the children of the poor, often in families that have struggled against poverty for several generations. There are often several developmentally delayed or disabled individuals among the relatives, and sometimes one or both of the parents is or are delayed or disabled. In cultural—familial retardation, it is difficult to separate the effects of heredity and environment, because neither is favorable. Many psychologists currently think that heredity sets an upper limit, and that environment determines how closely an individual will approach his or her maximum intellectual capacity. For example, in the case of a child with cultural-familial retardation, the genes may set a limit of 80 or 90, or higher, but because of lack of language and cognitive stimulation, his or her test score could be 60 or 65.

The study of the Hollow Children is highly instructive. There was a group of people of English and Scots-Irish descent who settled and lived as a little subculture near the Atlantic coast in Virginia for many years. The land they lived on was subsequently granted to German immigrants and the Scots-Irish were forced to move into hollows in the Blue Ridge Mountains. They formed a number of small communities that varied in degree of isolation from civilization. In 1932, an investigator named Sherman studied these people, reasoning that the citizens of the various Hollows communities had a common gene pool, and he was interested in whether isolation from civilization had affected the intellectual ability of the children. Isolation meant things like no road in and out, no post office, no newspapers or magazines, and, of course, since the study was done in the early 1930s, there was no radio or TV. In Colvin Hollow, the most isolated of the communities, school had been in session for
a total of 16 months during the years between 1918 and 1930, and there were only three literate adults in the community. To test the children’s intelligence, Sherman used the Stanford-Binet and other tests that are not so language dependent.

The results showed that the more isolated the community, the lower the IQ scores of the children. The average of the test scores in the least isolated community was close to the population mean, while the average of the scores of the children in the most isolated communities was below 70. Sherman tested children from 6 to 16 years of age, and one of his notable findings was that IQ scores declined with age. In the more isolated communities, the IQs of the 6- to 8-year-olds averaged about 80. The scores of the 14- to 16-year-olds averaged about 50.

There are a number of other studies that confirm the negative effect an impoverished environment can have on intellectual development. It is a challenge to a society to dedicate resources for the prevention of cultural—familial retardation. Because of President Johnson’s “war on poverty,” funds for Operation Head Start were made available in the mid-1960s. A problem arose because although money was available, the educators lacked the background research to develop a clear idea concerning how one goes about giving a child a “head start.” Some years later, the program was pronounced a failure and used as a rationale for reducing funds for early childhood education. In reality, the program was not an unqualified failure. In some places, it was quite successful, and provided a wealth of data concerning methods and techniques. If we made another concentrated effort, maybe it would be very successful. We are often very shortsighted, unwilling to spend a dollar today to save hundreds of dollars in the future. Perhaps we would serve ourselves and our children better, if we realized that no amount of money saved in the future can obviate the fact that our children are our future.

**Single versus Multiple Intelligence**

Is intelligence a single, inborn ability that is relatively unaffected by the environment, as suggested by Spearman’s “g-factor?” Or is intelligence really a combination of several different abilities, as suggested by Gardner’s theory of multiple intelligences. Or does it involve a combination of some inborn factor that accounts for some intellectual abilities and a variety of specific intellectual skills that operate independently of each other? This is a great discussion topic that students usually have strong opinions about. You might add, that part of the problem, even among the “experts” in this field, is there is no single, universally accepted definition of intelligence from which to focus the argument. How you feel about intelligence can vary greatly depending upon how you define it. The average student or person on the street tends to view intelligence differently than the average teacher or professor. And both of them tend to view intelligence differently than the average scientific researcher studying intelligence. With this type of disagreement, is it possible to know how many different types of intelligence there are?

**IQ Tests and Labeling**

One of the dangers in assigning people IQ scores in grade school is the danger of labeling the student based on an IQ score, and then having that label become a self-fulfilling prophecy. While IQ can be useful for identifying children who are either gifted or retarded, how useful is it to assign numbers and labels to those falling within the middle ranges? If one assumes that IQ is measuring primarily a set of school skills, rather than one’s ability to learn across the board, is it fair to label someone as “smart” or “stupid” based on an IQ score? While, no one officially uses such terms as “stupid” to label someone based on IQ, it informally happens all the time, and children can be vicious in their use of such labels on each other. Since people tend to have stereotypes about what “smart” and “stupid” mean, how does such a label positively or negatively affect a child? Can it change the way parents and teachers interact with such children? Could such labels cause a child to lose self-confidence, leading to even worse future performance, thus fulfilling the label? Many
people believe that labeling can create a self-fulfilling prophecy. The Rosenthal and Jacobson (1968) study, discussed in the text, found evidence of a positive self-fulfilling prophecy when teachers were led to believe that certain students were “smart.” A reverse negative self-fulfilling prophecy seems just as possible when students are labeled “stupid” or “not smart.” The text also discusses this issue in regard to the larger effect of stereotypes and the poorer performance of African Americans on tests when they believe the tests measure intelligence than when they are just lab experiments. The results of the Steele and Aronson (1995) study indicate that just being a member of a group that has been stereotyped as not being smart can lower individual performance. How much more does believing that you, as an individual, are not smart, affect performance? Given how many areas of practical intelligence that IQ does not seem to measure or predict, we need to be very careful about negatively labeling children on the basis of IQ alone. This means doing a better job of educating people on the limitations of what intelligence tests tell us about children’s abilities.

**BIOGRAPHICAL PROFILES**

**Alfred Binet (1857 – 1911)**

Born in Nice, France, Binet received his law degree from Lycee St. Louis in 1878, and his Ph.D. in science from the University of Paris in 1894. Binet was perhaps the most respected French psychologist near the turn of the century and was responsible, with colleague Henri Beaunis, for founding the first French psychological laboratory. Binet was fascinated by the concepts of hypnotism and suggestibility, and became known for his studies of these phenomena before 1900. Binet’s reputation in psychology, however, stems most from his and colleague Theodore Simon’s first test of intelligence, for which Binet was commissioned by the French minister of public instruction. The test would later be brought to America, becoming the Stanford-Binet Intelligence Scale, the most popular and most researched of the intelligence scales.

**Lewis Madison Terman (1877 – 1956)**

Terman received his Ph.D. from Clark University in 1905, having studied under G. Stanley Hall. Terman’s first teaching position was at the Los Angeles Normal School, but the rest of his academic career would be spent at Stanford University, where he was department head from 1922 to 1942. Terman was responsible for revising the Binet-Simon intelligence scale in 1916, leading to subsequent development of the U.S. Army tests used during World War I. Additionally, Terman carried out an extensive longitudinal study of intellectually gifted children, published in five volumes from 1925 to 1959, the final volume appearing posthumously, He was president of the American Psychological Association in 1923.

**Sir Francis Galton (1822 – 1911)**

Francis Galton, the intellectually curious cousin of Charles Darwin, reportedly read Shakespeare for pleasure at age seven and, by modern estimates, would have received an IQ score of approximately 200 on a standard intelligence test. Galton’s genius knew few boundaries. He wrote an unequalled guide for explorers of wild lands, studied boredom at scientific meetings, and mapped out the locales in Great Britain boasting the most beautiful women.
## TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1859</td>
<td>Charles Darwin published <em>On the Origin of the Species by a Means of Natural Selection.</em></td>
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<tr>
<td>1869</td>
<td>Sir Francis Galton published <em>Hereditary Genius: An Inquiry into its Laws and Consequences</em>, in which he attempted to show that intelligence is an inherited characteristic.</td>
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<td>1904</td>
<td>Charles Spearman published <em>General Intelligence Objectively Determined and Measured</em>, offering his view on general intelligence, or “g”.</td>
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<td>1905</td>
<td>Alfred Binet and Theodore Simon developed the first useful intelligence test.</td>
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<td>1917</td>
<td>The Bolshevik revolution occurred in Russia.</td>
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<td>1914-1918</td>
<td>World War I was fought.</td>
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<td>1916</td>
<td>Lewis Terman, though not the first to do so, published an English translation of Binet’s test; Terman’s translation had the advantage of using the concept of the intelligence quotient (IQ).</td>
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<td>1929</td>
<td>The Great Depression began in America.</td>
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<td>1938</td>
<td>Louis Thurstone published his monograph on the seven primary mental abilities.</td>
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<td>1939-1945</td>
<td>World War II was fought.</td>
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<td>1969</td>
<td>Arthur Jensen published <em>How Much Can We Boost IQ and Scholastic Achievement?</em>, which argued that racial differences were inherited. The article soon met with a barrage of criticisms charging that Jensen was a racist.</td>
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<tr>
<td>1983</td>
<td>Howard Gardner published <em>Frames of Mind: The Theory of Multiple Intelligences</em>, outlining a new theory of intelligence that emphasized athletic, musical, and interpersonal skills, as well as mental skills, in defining intelligence.</td>
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<tr>
<td>1984</td>
<td>Robert Sternberg published <em>Toward a Triarchic Theory of Intelligence</em>, outlining a new theory of intelligence that stressed the multi-faceted nature of intelligence.</td>
</tr>
</tbody>
</table>
SUGGESTIONS FOR FURTHER READINGS


Herrnstein, R., & Murray, C. (1994). The Bell Curve: Intelligence and Class Structure in American Life. New York: Free Press. A controversial text that suggests that differences in cognitive ability are polarizing America into a cognitive elite and a cognitive underclass. Suggests that differences in IQ score among ethnic groups are partially genetic.


Rushton, J. P. (1997). Race, IQ, and the APA Report on the Bell Curve. American Psychologist, 52(l), 69–70. Comments on the APA Task Force findings about what is known and unknown about intelligence. The author argues that the findings on the issue of race were in error. The origins of racial differences in IQ need to be considered as fairly from the hereditarian perspective as from the environmentalist perspective. Areas of omitted evidence are discussed, which, had they been added, would have bolstered the consistency of the East Asian-European-African IQ gradient.


Sternberg, R., & Wagner, R. (1989). Individual Differences in Practical Knowledge and Its Acquisitions. In Learning and Individual Differences: Advances in Theory and Research. New York: W. H. Freeman & Co, Publishers, 255–278. Examines the distinctions between academic knowledge and practical knowledge, and discusses the nature and acquisition of practical knowledge, which is defined as knowledge, and demonstrates the importance of such knowledge for both academic and everyday life situations.
DISCOVERING PSYCHOLOGY

PROGRAM 16: TESTING AND INTELLIGENCE

Overview
The field of psychological assessment and the efforts of psychologists and other professionals to assign values to different abilities, behaviors, and personalities.

Key Issues
Psychometrics, racial and cultural bias, intelligence and aptitude tests, the problems with IQ testing, seven kinds of intelligence, and limitations in testing practical intelligence.

Demonstrations
Racial bias in intelligence and aptitude tests.
Philip Zimbardo examines new tests that propose multiple factors and aspects of intelligence.

Archival Interview
Psychologist William Curtis Banks examines the misuse of intelligence and aptitude testing.

FILMS AND VIDEOS
Eye of the Storm (1971). Xerox Film, 29 minutes
A now classic demonstration of minimal cue differences in creating discrimination by Jane Elliott, a grade-school teacher in Riceville, Iowa. Arbitrarily designating “blue” and later “brown” eyes as superior generated remarkable effects on her students. A classic study, well presented.

Generation Upon Generation (1974). TLF, 52 minutes
Examines the complex code of human inheritance—from the experiments of pioneer geneticist Gregor Mendel to the discoveries of today’s sophisticated laboratories. From The Ascent of Man series. Good science, but somewhat tedious.

Intelligence (1990). Insight Media, 30 minutes
Graphically demonstrates the differences between the intellectually gifted and the developmentally delayed individual. Discusses the difficulty in defining intelligence and explains what intelligence tests are designed to measure. Describes the origins of IQ tests and presents the argument as to whether the tests measure aptitude or achievement. Addresses the question of whether intelligence is changeable or fixed.

IQ Testing and the School (1991). Insight Media, 60 minutes
Examines the different tests devised to measure intelligence and achievement, focusing on the WISC-R, and the issues of reliability and validity. Also explores other factors affecting school achievement, such as teacher expectations, teaching styles, and class structure. Shows how students at all levels of ability benefit from a cooperative learning environment. Discusses the needs of gifted and developmentally delayed children.

Nature/Nurture (1986). NCAU (FFHS), 52 minutes
Looks at different influences on human behavior and how some characteristics are inherited and others are acquired. Examines a study of identical twins separated at birth to answer questions
about nature versus nurture. Illustrates that knowing what is genetic, chemical, or voluntary in
behavior helps people adapt the environment to themselves and themselves to the environment.
From the *Human Animal* series, hosted by Phil Donahue.

**Race, Intelligence, and Education (1974). TLF, 53 minutes**
Introduces Dr. H. J. Eysenck, advocate of the theory that heredity influences intelligence more than
environment does. Presents six other scientists who discuss their controversial ideas as well as the
theories of other American psychologists and sociologists. Great for stimulating classroom
discussion

**They Call Me Names (1972). EMC UC, 20 minutes**
This film examines how the “inferior” stereotype of the mentally or developmentally delayed
individual affects their lives. The film also provides a glimpse of the techniques used in providing
suitable living environments for the mentally impaired, going beyond custodial care.

**CASE STUDY LECTURE LAUNCHER**
At the age of 37, *Esquire* columnist Bob Greene started to suspect that he was dumber than he had
been in high school. At 17, he had been able to add, subtract, and multiply without using a
calculator. Twenty years later, those skills seemed to have disappeared. To see if he could still make
the grade, Greene decided to retake the Scholastic Aptitude Test (SAT), the three-hour examination
of verbal and mathematical abilities that many colleges use to select students for admission. Greene
sent in his $11, and on the designated Saturday morning, he showed up at his local high school
with six sharpened no. 2 pencils in his pocket. After one hour, “all of us looked dazed, unhappy,
and disoriented, although I believe that I was the only student to go to the water fountain and take
an Inderal for his blood pressure” (Greene, 1985).

The SAT was designed as a standardized measure of high school students’ academic performance.
Admissions officers had difficulty interpreting grade-point averages from thousands of high
schools with different standards and grading policies. Although the tests were designed as
objective evaluations, they have been accused of bias, and, despite many revisions over the years, it
has been difficult to quell those accusations. Across all ethnic groups, average SAT scores increase
as family income goes up. Whites and Asian Americans consistently outperform Mexican
Americans, Puerto Ricans, and African Americans (Hacker, 1986). Men, on the average, score
higher than women do (Gordon, 1990).

However, the SAT is changing. Consider the question of calculators. When the SAT was introduced
in 1941, pocket calculators did not exist. When Greene took the test for the second time, the proctor
instructed that “Calculators or calculator watches may not be used.”

When Greene’s test results finally arrived in the mail, his hands were shaking. He felt ridiculous.
After all, he already had a college degree and a successful career. Nevertheless, he nervously ripped
open the envelope. Not surprisingly for a writer, Greene’s verbal score had gone up 56 points. In
math, over the two decades, his score had nose-dived by 200 points. Just as it is difficult to know
why some groups perform better than others on the SAT, it is impossible to know for sure why Bob
Greene’s math score plummeted. Wasn’t the test supposed to measure his basic aptitude for math—
what he understood and not just what he had learned? Had his math aptitude decreased because
in his work he does not often use the math skills that he once practiced regularly in high school?
Would he have improved his score if he had signed up for a course that prepared him in advance
for the test? Had he just been watching too much TV?
CHAPTER 11
Human Development across the Life Span

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe the significance and characteristics of the pubescent growth spurt
2. Explain the physical and psychological changes that occur during the adult years
3. Describe Piaget’s stages of cognitive development and discuss their significance
4. Define the concept of critical periods and explain its significance to development
5. Describe Erikson’s stages of psychosocial development
6. Comment on the importance and influence of culture to development
7. Identify Kohlberg’s stages of moral reasoning
8. Describe the importance of attachment styles and the problems experienced by those without secure attachments
9. Describe the influence of gender roles and gender identity on development
10. Describe the developmental tasks and challenges of adulthood

CHAPTER OUTLINE
I. Studying and Explaining Development
   A. Developmental psychology is the area of psychology that is concerned with changes in physical and psychological functioning that occur from conception across the entire life span
   B. Documenting Development
      1. Documenting development requires learning to differentiate between research that documents age changes and research that documents age differences
         a) Age change documents the ways in which individuals change as they grow older
         b) Age differences document the ways in which individuals of different ages differ from one another
      2. Normative investigations seek to describe characteristics of a specific age or stage of development, providing norms based on observations of many individuals, such research efforts permit distinctions to be made between:
         a) Chronological age: The number of months or years since birth
         b) Developmental age: The chronological age at which most
individuals display the particular level of physical and mental development demonstrated by that individual

3. Norms permit a standardized basis (such as the Bayley Scales in the text) for comparisons between individuals and between groups

4. Research designs
   a) Longitudinal designs make repeated observations of the same individuals, over an extended period of time
   b) Cross-sectional designs (includes most developmental research) observe and compare groups of individuals of different chronological ages, at the same time
   c) Sequential designs combine the best features of both longitudinal and cross-sectional designs, by studying, over time, individuals from different birth cohorts

C. Explaining Development

1. Explaining shared aspects of development requires consideration of both universal aspects of change and the unique aspects of change that characterize each individual

2. The nature—nurture contrast is most often applied to the childhood aspects of change by asking such questions as:
   a) To what extent is development determined by heredity (nature)?
   b) To what extent is development a product of learned experiences (nurture)?

3. John Locke proposed empiricism, a nurture perspective that credits human development to experience

4. Jean-Jacques Rousseau proposed a nativist view, that the evolutionary legacy each individual brings into the world is the mold that shapes development

5. Locke’s and Rousseau’s respective positions fail to do justice to human behavior, because complex actions are shaped by both heredity and experience
   a) Heredity provides potential
   b) Experience determines the manner in which potential is (or is not) fulfilled

II. Physical Development across the Life Span

A. Physical Development refers to an organism’s changes, maturation, and growth from conception and continuing across the life span

B. Prenatal and Childhood Development

1. Physical Development in the Womb
a) A zygote is formed when a male’s sperm cell fertilizes a female’s egg.

b) Earliest behavior, the heartbeat, appears during prenatal period, about 3 weeks after conception.

c) Spontaneous movements observed by week 8.

d) After week 8, the developing embryo is referred to as a fetus.

e) Mother feels fetal movements at about week 16.

f) Prenatal brain growth generates 250,000 neurons per minute.

(i) Proliferation and migration of neurons in humans and many other mammals occur prenatally.

(ii) Development of branching processes of axons and dendrites occurs largely after birth.

2. Babies Prewired for Survival

a) Hearing functions before birth, as evidenced by neonates preference for its mother’s voice.

b) Vision is less well developed at birth than are other senses, and though “legally blind,” neonates’ eyes turn in the direction of a voice.

(i) Infants perceive best large objects displaying high contrast.

(ii) By 4 months of age, infants prefer looking at contoured objects rather than plain ones, complex objects to simple ones, and whole faces to those with disarrayed features.

3. Growth and Maturation in Childhood

a) Disproportionate early growth takes place within the head.

(i) Total mass of axons and neurons rapidly increases the total mass of brain cells.

(ii) Infant boys’ weight doubles in the first 6 months of life, and triples by age 1.

(iii) At age 2, the child’s trunk is about half its adult length.

(iv) Genital tissue growth is unremarkable until adolescence.

b) Much of early growth occurs in concentrated bursts.

c) In most children, physical growth is accompanied by maturation of motor ability.

d) Maturation refers to the process of growth typical of all members of a species who are reared in the species usual habitat, and describes systematic changes occurring, over time, in bodily functioning and behavior.

e) Maturation is influenced by genetic factors, pre- and postnatal chemical environments, and sensory factors that are constant for all members of the species.
f) By ages 6 to 7, most basic motor skills are in place

4. Physical Development in Adolescence
   a) First concrete indication of childhood’s end is the pubescent growth spurt, about age 10 for girls and about 12 for boys, with flow of hormones into bloodstream
   b) Puberty, sexual maturity, is reached 2 to 3 years following the onset of the growth spurt
      (i) For females, puberty begins with menarche
      (ii) For males, puberty begins with production of live sperm
      (iii) Physical changes often bring an awareness of sexual feelings
   c) Physical changes of adolescence may exaggerate the adolescent’s concern with their body image, their subjective view of their appearance
      (i) Females seem to have less average confidence in their physical attractiveness dm do males
      (ii) When exaggerated, females preoccupation with body image and aspects of the social self can lead to self-destructive behavior, such as eating disorders
         (a) Anorexia, involves self-imposed starvation
         (b) Bulimia, involves binging and purging

C. Physical Changes In Adulthood
   1. Some senses may become less acute
   2. Changes occur gradually
   3. Many physical changes occur as a result of disuse, rather than aging
   4. Some changes are largely unavoidable
      a) Visual function diminishes for most people over age 65
         (i) Lenses of eyes become yellowed and less flexible
         (ii) Lens rigidity impacts adaptation to dark
      b) Hearing loss is common past age 60
         (i) Older adults may have difficulty hearing high-frequency sounds, with males experiencing more difficulty than females
         (ii) Changes in hearing are gradual and may not be realized until they are extreme
      c) Reproductive and sexual functioning changes
         (i) Females experience menopause around age 50
         (ii) Quantity of sperm in males decreases after age 40, and seminal fluid volume declines past age 60
         (iii) Increasing age and physical change do not necessarily impair other aspects of sexual experience

III. Cognitive Development across the Life Span
A. Cognitive development is the study of the processes and products of the mind, as they emerge and change over time

B. Piaget’s Insights into Mental Development

1. Piaget saw the mind as an active biological system, seeking, selecting, interpreting, and reorganizing environmental information to fit with or adjust to its own existing mental structures

2. Piaget’s interest was not in the amount of information children possessed, but in the ways children’s thinking and inner representations of outer physical reality changed at different stages in their development

3. Schemes are the mental structures enabling the individual to interpret the world
   a) Schemes are the building blocks of development change
   b) Piaget characterized infants’ initial schemes as sensorimotor intelligence
      (i) First dependent on physical presence of objects that could be sucked, watched, or grasped
      (ii) Later, mental structures increasingly incorporate symbolic representations of outer reality

4. Piaget saw cognitive development as the result of the interweaving of assimilation and accommodation. These two processes work in tandem to achieve cognitive growth
   a) Assimilation modifies new environmental information to fit into what is already known
   b) Accommodation restructures or modifies the child’s existing schemes so that new information is accounted for more completely
   c) Discrepancies between already held ideas and new experiences force development of more adaptive inner structures and processes that permit creative and appropriate actions to meet future challenges

5. Stages in Cognitive Development
   a) Sensorimotor stage: infancy, roughly from birth to age 2
      (i) Child is tied to the immediate environment and motor-action themes
      (ii) Most important cognitive acquisition of infancy is attainment of object permanence, the ability to form mental representations of absent objects
   b) Preoperational stage: roughly 2 to 7 years of age
      (i) Main cognitive advance is improved ability to mentally represent objects not physically present
(ii) Piaget characterized this stage in terms of what the child cannot do, other than the development of representational thought.

(iii) Child’s thoughts at this stage are characterized by egocentrism, an inability to take the perspective of another, or to imagine a scene from any perspective other than one’s own, as demonstrated by Piaget’s three-mountain task.

(iv) Children at this stage have difficulty distinguishing the mental from the physical world, as demonstrated by animistic thought.

(v) Centration is the tendency to be captivated (centrated) by the more perceptually striking features of objects.

c) Concrete operational stage: roughly 7 to 11 years of age

(i) Child is capable of mental operations.

(ii) Mastery of conservation is a hallmark of this stage.

(iii) Children at this stage generally do not ask abstract questions, but remain with specifics.

d) Formal operational stage: roughly from age 11 on

(i) Represent the final stage of cognitive growth, in which thinking becomes abstract.

(ii) Adolescents realize their reality is only one of several that are imaginable, and begin pondering deeper questions of truth, justice, and existence.

(iii) Individual begins to impose his/her own structures on tasks, beginning with broad categories, then formulating and testing hypotheses in light of the individual’s knowledge of categories and relationships.

C. Contemporary Perspectives on Early Cognitive Development

1. Contemporary research posits a greater degree of order, organization, and coherence in the perceptual and cognitive experience of the infant and young child than that proposed by Piaget.

2. Recent research shows that differences in conceptual understanding between preoperational and concrete operational children may be a difference in immediate memory.

   a) The sensorimotor child revisited: 3-month-old neonates may have already developed the concept of object permanence, as well as being able to integrate information across sensory domains.

   b) The preoperational child revisited

      (i) Egocentrism may not be ongoing, as recent research indicates the child to have the ability to take the perspective of the other if the task is simple.

      (ii) Children at this stage also have the ability to differentiate mental and physical worlds, if they are asked the correct questions.

      (iii) Recent research indicates the preoperational child is
not exclusively centratred

3. Children’s Foundational Theories
   a) Recent research explores the notion that changes occur separately, in several domains, as the child develops foundational theories, or frameworks for initial understanding, to explain experiences of the world
   b) Children accumulate experiences into a *theory of mind*, through performing the functions of psychologists
   c) Children must be young practitioners of disciplines such as physics and biology in order to perfect their understanding of various aspects of the world

4. Social and Cultural Influences on Cognitive Development
   a) Late in his life, Piaget began to question the cross-cultural validity of his findings. Research has since shown that there are cross-cultural differences in cognitive development.
   b) Vygotsky argued that children developed through a process of *internalization*, that they absorb knowledge from their social context.
   c) The concept of internalization helps to explain the effect culture has on cognitive development.

D. Cognitive Development in Adulthood

1. Intelligence
   a) Only about 5 percent of the healthy elderly experience a major loss in cognitive functioning
   b) Age-related decline in functioning is usually limited to only some abilities, such as
      (i) Difficulty in forming new associations
      (ii) Slower acquisition of new information
   c) As compared to crystallized intelligence, only fluid intelligence shows a slight decline with increasing age
   d) *Wisdom*, experience in the fundamental pragmatics of life, may experience age-related gains

2. Elderly individuals who pursue high levels of environmental stimulation tend to maintain high levels of cognitive functioning
   a) Disuse, rather than decay, may be responsible for isolated deficits in cognitive functioning
   b) Successful aging may be linked to a strategy of selective optimization with compensation
      (i) *Selective* means scaling down the number and extent of goals
      (ii) *Optimization* refers to exercising or training oneself in areas of individual highest priority
Compensation means using alternative methods of dealing with losses, such as choosing age-friendly environments.

3. Memory
   a) Not all memory systems show age-related deficits; general knowledge store and personal information does not appear to diminish.
   b) Older adults do experience difficulty in acquisition of new information.
   c) Elderly individuals’ memory performance may be impaired by their belief that their memory will be poor.
   d) Certain age-related neurobiological changes may result in impaired memory:
      (i) Loss or decay of cells in the brain
      (ii) Deficiencies in neurotransmitters
      (iii) Patients with Alzheimer’s disease experience gradual loss of memory, as well as deterioration of personality, which
            (a) Affects ±5% of individuals past age 65 and ±20% of individuals past age 80
            (b) Deceptively mild onset
            (c) Steady deterioration, including
            (d) Gradual personality changes
            (e) Inattentiveness and mutism
            (f) Lack of ability to care for oneself
            (g) Loss of memory for who they are
            (h) Eventual death

IV. Acquiring Language

A. Most researchers agree that the ability to learn language is biologically based—that it is an innate capacity.

   1. **Perceiving Speech and Perceiving Words:** A child’s first step in acquiring language is noting sound contrasts that are used meaningfully in that language.
      a) When using signed languages, the child must attend to contrasts in such things as positions of the hands.
      b) Minimal meaningful units in speech are phonemes.
      c) Children habituate to phonemes, learning to distinguish between different sounds.

B. **Learning Word Meanings**

   1. Naming explosion occurs at about 18 months.
   2. Average 6-year-old understands about 14,000 words.
   3. Children develop hypotheses about meanings of words, which may
result in

a) **Overextensions**: incorrect use of words to cover a wide range of subjects, such as using “doggie” for any four-legged animal

b) **Underextensions**: such as thinking “doggie” refers only to the family pet

c) Hypotheses may be constrained by mutual exclusivity, in which the child may act as if each object must have only one label

4. *Bootstrapping* occurs when children make use of what they already know to acquire new meanings

C. **Acquiring Grammar**

1. Grammar is the rules by which units of meaning are combined into larger units

2. Chomsky argued that children are born with mental structures that facilitate the comprehension and production of language, thus removing some parental pressures to teach grammar explicitly

   a) Referential children’s vocabularies consist largely of nouns

   b) Expressive children’s vocabularies consist largely of formulaic expressions

   c) Referential and expressive children appear to believe, at an early age, in different functions for language, and follow different paths to acquisition of grammar

D. **Language-Making Capacity**

1. Aspects of acquisition are believed to be biologically predetermined

2. Children bring innate guidelines to the task of learning a particular language

3. Slobin defined a set of operating principles that constitute the child’s language-making capacity

   a) Operating principles take the form of directives to the child

   b) Principles are encoded as part of the human genome. Examples include:

      (i) *Telegraphic speech*: use of two-word phrases which lack functions

      (ii) *Extensions*: the child’s attempts to try (in all cases) and use the same unit of meaning (morpheme) to mark the same concept, often resulting in *over regularization*

V. **Social Development Across the Life Span**

**A.** Social development concerns how individuals’ social interactions and expectations change across the life span
B. Erikson's Psychosocial Stages

1. Erikson proposed that there are eight stages of psychosocial development across the life span.

2. Each stage presents a conflict for resolution. Conflicts at each stage must be successfully resolved in order to cope successfully with subsequent stages.

3. Stages, crises, and approximate age range for each:
   a) Trust vs. mistrust: child’s sense of safety vs. insecurity; birth to 1.5 years
   b) Autonomy vs. self-doubt: sense of self-efficacy vs. feelings of inadequacy, 1.5 to 3 years
   c) Initiative vs. guilt: confidence in self as an initiator vs. feelings of lack of self-worth, 3 to 6 years
   d) Competence vs. inferiority: adequacy in basic social and intellectual skills vs. feelings of failure and lack of self-confidence; 6 years to puberty
   e) Identity vs. role confusion: comfortable sense of self vs. fragmented, unclear sense of self; adolescent years
   f) Intimacy vs. isolation: capacity for commitment to another vs. feelings of separation, aloneness; early adulthood
   g) Generativity vs. stagnation: concerns go beyond the self, to society vs. self-indulgence and lack of future orientation; middle adulthood
   h) Ego-integrity vs. despair: sense of satisfaction with life vs. feelings of futility and disappointment with life; later adulthood

C. Social Development in Childhood

1. Socialization is the lifelong process through which an individual’s behavior patterns, values, standards, skills, attitudes, and motives are shaped to conform to those regarded as desirable in a particular society.
   a) Most important socializing agent is the family
   b) Parental socialization goals for children range from behavioral compliance with specific social rules to internalizing of general social values

2. Attachment
   a) Attachment—the beginning of the process of social development—is the establishment of a close emotional relationship between a child and a mother, father, or other regular caregiver
b) Earliest function of attachment is ensuring of the infant’s survival

c) In some nonhuman species, biology elicits attachment, such as imprinting, in which the infant automatically fixes on the first moving object it sees or hears

d) Human infants rely on complex proximity-promoting signals to solidify adult—child bonding

e) Bowlby posits that infants will form attachments to individuals who consistently and appropriately respond to their signals

3. Assessing the Quality and Consequences of Attachment

   a) Secure attachment has powerful, lasting, beneficial effects, which include enabling the child to:

      (i) Learn various prosocial behaviors
      (ii) Take risks
      (iii) Enter into novel situations
      (iv) Seek and accept intimacy in personal relationships

   b) Ainsworth’s Strange Situation Test is widely used for assessing attachment with infant response patterns falling into three categories

      (i) *Securely attached* children show some distress when parent leaves, seek proximity, comfort, and contact at reunion, then gradually return to play

      (ii) *Insecurely attached-avoidant* children seem aloof and may actively avoid and ignore the parent on return

      (iii) *In insecurely attached-ambivalent/resistant* children become quite upset and anxious at parent’s departure, cannot be comforted at reunion, showing both anger and resistance to the parent but simultaneously expressing desire for contact

   c) Categorizations based on the Strange Situation have proved to be highly predictive of a child’s subsequent behavior in a variety of settings

4. Parenting Styles and Parenting Practices

   a) Researchers feel the most beneficial parenting style is at the intersection of the dimensions of *demandingness* and *responsiveness*

      (i) *Demandingness* refers to parent’s willingness to act as a socializing agent

      (ii) *Responsiveness* refers to the parent’s recognition of the child’s individuality

   b) Parenting styles

      (i) *Authoritative* parents make appropriate demands on the child, but are responsive, keeping channels of
communication open. This style of parenting is most likely to produce an effective parent-child bond
(ii) *Authoritarian* parents apply discipline with little attention to the child’s autonomy
(iii) *Indulgent* parents fail to help children learn about the structure of social rules in which they must live

c) Parents with the same overall style of parenting may place different priorities on the various socialization goals they consider important for their children

d) *Parenting practices* are a response to particular goals, with both parents’ general attitudes and specific behaviors being important for charting the life course of the child

e) A 35-year longitudinal study of parenting style revealed that mothers’ treatment of their 5-year-old children was significantly associated with social adjustment in the child more than 30 years later

5. Contact Comfort and Social Experience

a) (i) *Cupboard theory* proposed that infants become attached to parents because parents provide them with food, their most basic physical need

b) (ii) Harlow proposed that infants attach to those who provide them with contact comfort and tested his theory with infant macaque monkeys

(i) Separated infants from mothers at birth and placed them in cages with access to one of two artificial “mothers,” one made of wire and one of terry cloth

(ii) Wire mother provided food source, but babies spent more time with terry cloth mother

(iii) Babies used terry cloth mother as comfort source when frightened and “base of operations” when exploring new stimuli

(iv) Harlow also found that the bond of the infant monkeys to the mother substitute was insufficient for healthy social development. Females deprived of interaction opportunities with other monkeys had difficulty forming social and sexual relationships in adulthood

c) Suomi found that placing emotionally vulnerable infant monkeys in the “foster care” of supportive mothers provided the infants with coping skills and information essential for recruiting support from other monkeys, as well as for maintaining high social status within the group

D. Social Development in Adolescence

1. The Experience of Adolescence: The Myth of Adolescent “Storm and Stress”
a) “Storm and stress” disputed by cultural anthropologists Margaret Mead and Ruth Benedict as being nonapplicable to many non-Western cultures

b) Data indicate that the few adolescents who do experience serious maladjustment are likely to continue to do so as adults, with a strong link between adolescent conduct problems and adult criminality

c) Erikson considered the discovery of one’s true identity to be the essential task of adolescence

2. Social relationships

a) Peers
   (i) Peers now compete with parents in shaping of attitudes and behaviors
   (ii) Social skills and roles are refined with peers
   (iii) Peers become an increasingly important source of social support, with an increase in anxiety being associated with peer rejection
   (iv) Peer pressure to conform to peer values and behaviors peaks around ages 12 to 13

b) Autonomy is the transition from parental authority to reasonable independence on the part of the adolescent
   (i) Transition may be difficult for parents
   (ii) Parent-child relationships may have more built-in potential for conflict than do peer relationships

3. Future Goals

a) Setting goals for the future involves current appraisal of one’s abilities and interests

b) Selection of future occupation involves tasks central to identity formation, including awareness of alternatives, and making and following through on choices

E. Social Development in Adulthood

1. Intimacy

a) Intimacy refers to the capacity to make a full commitment to another person, sexually, emotionally, and morally

b) Intimacy occurs in friendships as well as romantic relationships, and requires openness, courage, ethical strength, and usually some compromise of one’s personal preferences

c) Research confirms Erikson’s supposition that social intimacy is a prerequisite for psychological well-being across the adult life stages

d) Young adulthood is the time in which many people enter into marriages or other stable relationships, often deciding to include children in their lives
   (i) Males and females make the transition to parenthood
in different ways
(ii) Arrival of children may push parents into more traditional sex-role behaviors
(iii) For some couples, marital satisfaction erodes due to conflicts as children pass through their own adolescent years
(iv) Parents may enjoy their children most when the children no longer live at home
e) Research indicates that approximately two out of three couples now married will divorce, but consequences of remaining in an unsatisfying marriage are more unfortunate for females than males
   (i) Marital dissatisfaction for women often results in impairment of both physical and mental health
   (ii) Men almost always benefit from marriage, even a bad marriage, while women suffer in bad marriages
   (iii) Women are more likely to care for an unhealthy, elderly husband – and go on to a period of mourning his death and of financial insecurity
f) In later life, the balance of social interactions shifts somewhat, from family to friends
   (i) The elderly interact with fewer people, but the nature of the interactions change in order for intimacy needs to be met
   (ii) Selective social interaction theory proposes that as we age, we become more selective in choosing social partners who satisfy our emotional needs

2. Generativity
   a) Generativity refers to commitment beyond oneself to family, work, society, or future generations

   b) Erikson’s last crisis of adulthood is the conflict between ego-integrity and despair

   c) Most adults review their lives with a sense of wholeness and satisfaction

3. The Cultural Construction of Late Adulthood: addresses cultural beliefs and expectations about later life, the stereotypical depictions of the elderly
   a) Overall stereotype is negative
   b) Stereotype may serve to change the lifestyle experience of older adults for the worse
   c) Negative expectations of their performance by the elderly may lead to impaired performance
   d) Caretakers may artificially bring about patterns of increased dependence via the dependency-support script
   e) Ageism is prejudice against older people that leads to
VI. Gender Development

A. Early human differences perceived by children are entirely social – they sense sex differences before acquiring anatomical knowledge

B. Sex and Gender

1. Sex differences are biologically based characteristics that distinguish males from females
   a) Include different reproductive functions and differences in anatomy and hormones
   b) Differences are universal, biologically determined, and unchanged by social influence
   c) Over time, sex differences have led to development of traditional social roles for males and females

2. Gender is a psychological phenomenon, referring to learned, sex-related behaviors and attitudes

3. Gender identity is the individual’s sense of maleness or femaleness, and includes awareness and acceptance of one’s own sex
   a) Develops at an early age
   b) Is important to child’s psychological well-being

C. The Acquisition of Gender Roles

1. Gender roles are patterns of behavior regarded as appropriate for males and females within a given society
   a) Provide basic definitions of masculinity and femininity
   b) Much of what is considered masculine or feminine is culturally determined
   c) Gender-role socialization begins at birth, with parental responses to the infant being based on gender-role stereotypes

VII. Moral Development

A. Morality is a system of beliefs, values, and underlying judgments about the rightness or wrongness of human acts

B. Kohlberg’s Stages of Moral Reasoning

1. Kohlberg founded his study of moral development on the study of moral reasoning, the judgments people make about what courses of action are correct or incorrect in particular situations

2. Kohlberg’s theory predicated on Piagetian cognitive-development theory (i.e., as the child progresses through the stages of cognitive growth, he/she assigns differing relative weights to the consequences
3. Each of Kohlberg’s levels and stages is characterized by a different basis for making moral judgments; he was interested in the course of action involved in making a moral decision, not the decision itself.
   a) Level I: Preconventional Morality
      (i) Stage 1: Pleasure–pain orientation, reasons for behaviors is to avoid pain or not get caught
      (ii) Stage 2: Cost–benefit orientation; reciprocity, reasons for behaviors are to obtain rewards
   b) Level II: Conventional Morality
      (i) Stage 3: Good child orientation, behavior is enacted to gain acceptance and avoid disapproval
      (ii) Stage 4: Law and order orientation, behavior is enacted to follow the rules, and avoid censure by authorities
   c) Level III: Principled Morality
      (i) Stage 5: Social contract orientation, to promote social welfare
      (ii) Stage 6: Ethical principle orientation, to achieve justice and avoid self-condemnation
      (iii) Stage 7: Cosmic orientation; to be true to universal principles, feeling oneself part of a cosmic direction that transcends social norms

4. Four Principles Govern Kohlberg’s Stage Model:
   a) An individual can be at only one of the indicated stages at a given time
   b) Everyone goes through the stages in a fixed order
   c) Each stage is more comprehensive and complex than the preceding one
   d) The same stages occur in every culture

5. Stages 1 through 3 appear to parallel the course of cognitive development, with most children reaching stage 3 by age 13, with much of the controversy with Kohlberg’s theory aimed at stages 4 through 7

6. Moral Reasoning in Adolescents and Adults
   a) Kohlberg’s view was that moral development would continue in steady progression, beyond level 3; however, not all individuals attain stages 4 through 7
   b) Many adults never reach stage 5, and few go beyond it
   c) Stages 4 through 7 are not found in all cultures and seem more associated with advanced education and increased verbal ability in Western cultures, features that should not be prerequisites for moral achievement

C. Gender and Cultural Perspectives on Moral Reasoning
1. Content of latter stages appears subjective

2. Understanding each successive latter stage as “more comprehensive and sophisticated than the preceding” is difficult

3. Latter stages have been criticized because they do not recognize that adult moral judgments may reflect different but equally moral principles
   a) Gilligan argued Kohlberg’s work was biased in that his original sample was all male
   b) Kohlberg’s research overlooked potential differences between habitual moral judgments of males and females
   c) Gilligan proposed female’s moral development was based on a standard of caring for others, and progressing to a stage of self-realization, whereas males base their reasoning on a standard of justice

4. Though Gilligan’s contribution is valued, later research suggests she is incorrect to identify unique styles of moral reasoning for males and females
   a) Researchers dispute whether gender differences in moral reasoning exist
   b) Alleged gender differences may be consequences of the difference in social situations that arise in the lives of males and females
   c) Studies of gender differences in moral behaviors have found no consistent differences

5. Adult moral reasoning may best be characterized as a mix between considerations of justice and considerations of caring, with the mix remaining in place over most of the life span
   a) Moral judgments are affected by general changes in adult cognition.
   b) A relevant change in late adulthood is the individual’s shifting the basis for judgments away from the details of specific situations, and toward the use of general principles
DISCUSSION QUESTIONS

1. In several well-publicized cases, judges have returned custody of children to the biological parents, removing the child from his or her adoptive parents or foster parents. This would seem to indicate that there is still a sense of ownership of children in the eyes of the law. What do such decisions indicate about the status of the rights of the individual child in such cases? Whose “best interests” and rights are the courts protecting?

2. Does the class consider adolescence a concept created by developmental psychologists and socioeconomic conditions, rather than an actual stage of development? What overall societal impact might we see if children today went to work at age 10 or 12, rather than remaining in school until they reach 17 or 18 years of age? What was the societal impact of work rather than education in years past? What other developmental categories could be reframed today, or may need to be reframed in the future?

3. Many elderly individuals develop paranoid beliefs. Some lay persons as well as professionals assume this to be a function of the physical deterioration of the brain due to encroaching senility. What alternative psychological explanation could explain why some elderly individuals develop beliefs that others are keeping them ignorant of the actual condition of their health, plotting against them, etc.? What myths or fallacies appear prevalent in your classes?

4. Psychologists and sociologists have observed that certain homeless children have the ability to “survive” their homeless experience in better psychological health than do some others. Have the class speculate what conditions might predispose a given child to survive, to suffer minimal negative impact from the experience of homelessness. What makes some children resilient, and not others?

5. What perceptions does the class have regarding day care? Is day care seen as an option for child care, or a necessity? What about employer-sponsored day care centers. What considerations are important to your students regarding this issue?

6. Discuss with the class the impact an individual’s gender identity might have on his or her sexual orientation. Have them consider how gender role behaviors and gender role stereotypes fit into this discussion.

7. Discuss rites of passage, nebulous though they may be, in our Western culture. What occasions mark our transition from one developmental stage of life to the next? How does our culture accommodate and acknowledge these transitions? What impact do various rites have on us as individuals? Do students feel our culture should have more concrete rites of passage, remain as is, or have less?

8. What does the class think about “peer pressure”? Is it a viable phenomenon, or a catchall invented by parents and behavioral scientists in their attempts to “explain” the sometimes-annoying behaviors displayed by adolescents? When during development do individuals feel it, and when during development does it cease to influence thoughts, feelings, and behavior?
SUPPLEMENTAL LECTURE MATERIAL

The Effect of Divorce on Children

Divorce is troubling, difficult, and painful for children. Discuss with your class about the negative effects a divorce might have on a child between the ages of 2 and 12 who lives with the mother and visits with the father on alternate weekends. After mentioning the issues raised below, ask the class how the concerns may be eliminated.

- The child may feel that he or she caused the divorce.
- The child may feel that the father wouldn’t have left if the father really loved him or her.
- The child may feel insecure. If one parent leaves, the other may leave, too. If the father is unable to keep a weekend visit with the child, the child may feel that he doesn’t want to see her or him.
- The child misses the things he or she did with the father, and becomes lonely when thinking about games they played together.
- The child may have a conflict about loyalty to the parents.
- The parents may involve the child in their disputes, or use the child as a pawn to manipulate one another.
- Financial considerations may make it necessary for the mother to move, and for the child to change schools and make new friends.
- The mother may have less time for the child after the separation or divorce because of a job outside of the home, in addition to her usual responsibilities.
- The mother’s own emotional turmoil over the divorce may make it difficult for her to minister adequately to the child’s needs.
- Although the child visits with the father on a bi-weekly basis, the child may not have constant access to a male role model.
- The child may perceive female friends of the father and male friends of the mother as threats to his or her relationship with the parent.

Alzheimer’s Disease

A man in his late 60’s enters a hardware store, and, for a moment, becomes disoriented. He then remembers that yesterday he was looking for the car keys that he already had in his hand. A dreadful thought comes to mind: “Could I have Alzheimer’s disease?”

Alzheimer’s disease is named after the German psychiatrist, Alois Alzheimer, who first described it in 1907. The characteristic signs of Alzheimer’s are abnormalities in and loss of neurons in the areas of the brain known as the hippocampus and the cortex. As the disease advances, abnormalities of the brain can be identified with imaging techniques, such as magnetic resonance imaging (MRI), but a definite diagnosis cannot be made until the brain tissue is examined after death.

A book on dementias (dementia is Latin for madness) published in 1945, claimed that to date only 150 cases of Alzheimer’s disease had been reported and that the disease was considered to be very rare. At the time, Alzheimer’s was classified as pre-senile dementia because the onset was thought to occur before the age of 65. For people over 65, virtually the same pattern of signs and symptoms was diagnosed as senile dementia. The cause of Alzheimer’s was unknown, but senile dementia was attributed to age. As a result of the similarity of most cases of senile dementia to Alzheimer’s, it came to be known as senile dementia of the Alzheimer’s type. In recent years, the distinction based on age of onset has gradually been dropped. Presently, dementia is medically defined as a loss of mental competence with significant decline from the person’s former mental capability.
Approximately 5% of people over 65 develop Alzheimer’s, with the incidence rising to about 20% in those past the age of 80. It is a degenerative disorder, progressive in its destruction of functional abilities, is irreversible, and terminal. At the present, there is no known cure, although some medication has been approved for its treatment. Diminution and loss of short-term memory is generally the first indication of Alzheimer’s. A set of questions designed to test the reality orientation of the individual includes such questions as “Where do you live?” and “What day of the week is it?” The individual’s responses are one aspect of making tentative diagnosis in the early stages of the disorder. Arriving at a tentative diagnosis of Alzheimer’s also involves a process of elimination. Organic brain disorders such as schizophrenia, tumors, and strokes must be ruled out as potential causes of the symptoms being displayed by the patient before hazarding a tentative diagnosis of Alzheimer’s.

Following the initial loss of memory, deterioration of cognitive functioning is noted and, as the disease progresses, the individual gradually loses the ability to walk, to feed him- or herself, and to control the bladder and bowels. In the terminal stage of the disease, the individual is reduced to a vegetative state, unaware of the presence of friends and family, the surrounding environment, and even his or her own identity. Death usually occurs four to five years after onset, but the range is two to ten years.

The cause of Alzheimer’s disease is not known. The disease, or some form of it, may be genetically transmitted. There are similarities between Alzheimer’s disease and Down syndrome. Down syndrome is sometimes called Trisomy 21 to indicate the presence of three, rather than two, chromosomes at the 21st position. A gene on the same chromosome has been tentatively linked to Alzheimer’s. Other hypotheses about the causal agent for Alzheimer’s include a slow-acting virus and toxic substances such as aluminum. Whatever the primary causal agent, its presence is believed to result in biochemical changes in the brain. These changes have been posited to include reduction in the availability of one or more of the following substances: acetylcholine, a neurotransmitter; corticotropin-releasing factor, a hormone; and ribonucleic acid (RNA). Another change noted in brain tissue is the appearance of fibers in the cytoplasm of neurons. Dr. Alois Alzheimer called these fibers neurofibrillary tangles. He also observed that some neurons appeared to have shrunken, with their dendrites deteriorating to the degree that the cell could no longer function, causing the neurons to collapse. Alzheimer referred to sections of the brain where clusters of the collapsed neurons were found as neuritic plaques.

In spite of scientific advances in knowledge about Alzheimer’s disease, for the patient and the patient’s family, the disease remains irreversible, incurable, and virtually untreatable. Custodial care by a family member at home or in an institution is generally required as the disorder progresses, in order to prevent the patient from hurting him- or herself or wandering off and getting lost. The nature of the disease is best described as regressive in that a once-competent adult loses the ability to think rationally, language deteriorates, temper tantrums like those of early childhood may occur, motor skills are lost, and finally, with loss of the ability to feed oneself and to control the bladder and bowels, the regression to an infant-like state is complete.

**Critical Periods: The Story of Genie**

In 1970, a 13-year-old girl was discovered in Los Angeles. Her name was Genie, and the conditions in which she was found were appalling. Genie had been treated like an animal since the age of 20 months. She was confined to a small, curtained room and spent most of her days strapped to a potty-chair, unable to move except for her hands and feet. At night, Genie was confined in a cage-like crib, and restrained in a straightjacket-type garment. She had no bowel or bladder control, could not stand in an erect posture, was severely malnourished, and was unable to chew solid food. Genie was also mute; she could not speak and could not understand language. The only sounds she had ever heard were those made by her father on the occasions he beat her for crying or making noises. Genie had been held prisoner by her father, a man who never spoke to her, and
would not allow anyone else to do so.

Genie was removed from her father’s custody, and taken to Los Angeles Children’s Hospital, where she was nursed back to physical health. She underwent psychological evaluation to determine her mental status and level of cognitive functioning, including her ability to produce and comprehend language. Following all necessary assessments, psychologists embarked on the task of teaching Genie language. Because Genie was attempting to acquire language at age 13, her psychologists were presented with a unique opportunity to study the critical period theory relative to learning language, the notion that there is a time early in a child’s life when language learning must begin, if language is to be learned at all. Genie was far past that proposed critical period. Further, she knew no grammar and had virtually no language ability.

The researchers working with Genie approached the task of teaching her language in much the same manner they would teach a younger child, by direct exposure to spoken language as a function of engagement in daily activities. Initially, Genie would speak only one or two words at a time, but she did progress, up to a point. Though she eventually progressed to the degree of combining two and three words into phrases, she never progressed beyond the level of a 3- or 4-year-old child in her language abilities, and never made the progression from simple words into grammatically correct sentences.

The fact that Genie actually did acquire some facility for language denied support for the hypothesis that there is a critical period for language acquisition, and that this period falls somewhere between age 2 and puberty. However, Genie’s failure to attain fluency and grammar did point to the potential for an optimal period for language acquisition, a period that, if missed, would result in failure ever to attain complete facility for language. Unfortunately, no more specific information could be gained from Genie’s experiences, because her lack of facility for language could be attributable to her severely malnourished state, the emotional and physical abuse suffered at the hands of her father, and her social isolation, as much as to a potential optimal period for language acquisition.

By age 24, Genie had received 11 years of special education and rehabilitation to include foster care, yet her language capability remained short of that expected in a 5-year-old child. Did Genie miss her critical period for language acquisition? We do not know. Her plight has offered many insights to developmental psychologists, but many final answers remain elusive.


Stage Theory: What Is a “Stage Theory?”

As instructors, we are familiar with “stage” theories, as we spend a great deal of time studying them. Freud’s stages of psychosexual development, Erikson’s eight stages of man, Kohlberg’s stages of moral development, and Piaget’s stages of cognitive development are part of our world, but what is implied to our students when we refer to a given theory as a “stage theory”?

Reber (1985) defines stage theory as “a label applicable to any theory of development that characterizes growth, be it physical, sensory-motor, cognitive, moral, etc., as a progression through a sequence of stages” (p. 724). He further states that stage theories tend to be either maturational or interactional in nature, that they are biologically determined or result from interactions between biological and experiential factors.

Actually, even if we didn’t use the word “stage” in referring to many of our psychological theories, we would still be able to easily discern which theories are stage theories and which are not, because there are four properties that define stage theories. Without any one of these properties, you do not have a stage theory. These properties are:

- A stage theory must predict qualitative differences in behavior, over both time and
experience

- A stage theory must assume invariance of the sequence of stages
- A stage theory assumes structural cohesiveness of a stage; the behaviors within a stage must share a common conceptual base
- There must be a hierarchical integration of structures from stage to stage, so that later stages incorporate and expand on the structures from earlier stages

Now, back to our question, what does the term *stage theory* imply and subsequently mean to our students? First, it means that a stage theory is presumed to be universal—which is what “over both time and experience means. Piaget’s theory of cognitive development offers an easy example. Piaget proposed that children, regardless of nationality, ethnicity, or sociocultural background, all experience their intellectual development in the same way. The same sequence of events unfolds, regardless of where the child lives and under what conditions. Further, Piaget proposed that the changes were not only predictable and universal, but that the changes were qualitatively different as the child moved from one stage to the next. For example, a 7-year-old child can conserve liquid, but a 4-year-old cannot. That is a qualitative difference in the thought process, and it is a function of the developmental process.

Second, stage theories and stage theorists believe that there can be no latitude in the progression of the stages of development. In Eriksonian terms, a child must resolve the trust/mistrust conflict and learn to trust before he or she can move onto the stage of autonomy versus self-doubt, because unless the trust/mistrust conflict has been resolved, the child has no possibility of resolving the autonomy issue. Stage 1 must precede stages 2, 3, 4, and so on.

Third, cohesiveness of a stage and a common conceptual base indicate that the stage itself must fit within the overall theoretical construct, as implied by the underlying conceptual basis of the theoretical position. Finally, stage theories represent a series of building blocks, in that one builds on the other in a hierarchical fashion. Each stage must progress logically from the one preceding it, and lead logically to the one following. If a given theory satisfies these four requirements, we can properly refer to it as a stage theory.

### Identity and the Tasks of Adolescence

Sometimes a concept from academic research or theory catches the attention of the public and becomes integrated into the framework of society’s “general knowledge.” Perhaps this occurs because the concept is relevant at the time, or because it provides a framework for a generally recognized problem or issue. The “identity crisis” proposed by Erik Erikson is such a concept, and was eagerly adopted by American society in the 1960s. At that time, the baby-boom cohort was reaching adolescence. The Vietnam War loomed as a threat to youth. Civil rights activists challenged the thoughtless discrimination of older generations, and the women’s liberation movement contested traditional ideas of female identity. Also, by the 1960s, adolescence had become established as a life stage created by technological society, giving status to a span of years between childhood and full adult status during which the young person prepared to live and work in an increasingly complex society.

Erikson saw adolescence as a pivotal stage of development in which earlier psychosocial conflicts return in a new form, and in which the foundations are laid for the intimacy, generativity, and wisdom that are the favorable outcomes of later stages. Developmental psychologists sometimes organize discussion of life stage around the developmental tasks of the stage, those things we must do to be ready to move on to the next stage. The elements of the identity crisis can be considered “tasks of adolescence.”

*Acquiring Temporal Perspective*
One aspect of temporal perspective is to have a clear conception of past and future, and to have the confidence to plan. Another aspect of temporal perspective is the ability to regulate one’s own time. Freshman entering the university environment and who are living away from home for the first time often have difficulty regulating their own time. With no parent present to say “go to bed,” they will solve the world’s problems all night and be unable to get up for class the next morning. There are people in middle age who lose jobs, miss airplanes, and alienate friends because of their lack of ability to regulate their time.

**Acquiring Self-Certainty**

Self-certainty is equivalent to what is also referred to as self-confidence or self-esteem. Erikson thought that efforts to begin to “sever the apron strings” and to become an autonomous or independent person begin early in life, about the time we begin to walk. If the child sees herself being able to do for herself and accomplish little things independently, then she has the basis to develop confidence in herself. In adolescence, there are new threats to self-confidence, such as the prospect of having to be financially independent and to find a desirable partner. Another aspect of self-certainty is that it must be accompanied by a self-image that is compatible with reality. Self-esteem that is unrealistic is a defense, a fantasy that prevents self-fulfillment.

**Role Experimentation**

During childhood, we usually look to parents or teacher for role models. In adolescence, young people are likely to reject earlier models and to go through a series of “trying on” different roles. The movies and television provide a smorgasbord of roles and role models. Role models can be real people, characters from fiction, historical personages, or creations of our own imagination. Erikson thought that role experimentation is a healthy manifestation of the search for identity, but at some time we have to take the pieces we like from our role experimentation and put them together into a consistent identity. The opposite of role experimentation is role fixation. Sometimes one encounters a young person who has had an identity laid on him so heavily by parents that attempts at role experimentation produce too much guilt to be pursued.

**Apprenticeship**

Theorists are often reluctant to talk about anything as mundane as a getting a job and earning a living, but Erikson recognized that the prospect of having to be self-supporting is a real concern of adolescents. This does not mean that an adolescent has to choose his or her life’s work in junior high school, but it does mean making general preparation for independence. The university student may not have chosen a career or even have decided on a major, but the fact that he or she is in a college class suggests that the individual does not suffer from what Erikson called “work paralysis.”

**Sexual Polarization**

The obvious meaning of this aspect of identity is that adolescents must come to grips with whether they are heterosexual, bisexual, or homosexual. It must be difficult for the young person who has a homosexual orientation to establish a positive identity during adolescence. There are great pressures for denial and for conformity to sexual roles that parents and most peers consider “normal.” Erikson wrote about the aspect of sexual polarization that can be described as “comfort and confidence in the role of male or female.” In early adolescence, young people often feel sexually inadequate because their bodies are less than perfect, or because they feel inferior to peers who tell tall tales of sexual adventures and prowess. Sexual roles are not as clearly delineated as they formerly were, particularly in the case of the female role, and young females may feel less than feminine if they have ambitious career aspirations and inadequate as humans if they don’t.
Questions of Authority: Being a Leader and a Follower

Resentment of authority is so common among American adolescents that it is tempting to think of it as normal. Differentiating between legitimate authority and arbitrary authority is a task of identity establishment. Identity formation includes being able to take the role of leader or follower in the appropriate circumstances.

Ideological Commitment

As the identity is formed, young people must select a basic philosophy, a set of values, and an orientation toward religion and politics. Excessive zeal for a cause, dramatic religious conversion, and allegiance to a cult are some of the extreme symptoms of young people searching for something to believe in. The task the adolescent faces is to adopt an ideology that is internally consistent and compatible with the self and the self-image.

It may seem as though identity formation requires that one lay down plans for the remainder of one’s life and adopt beliefs that will guide one’s behavior for all time. Of course, this is not the situation. Identity formation is bringing together various aspects of the self into a coherent whole and establishing a psychic “core” that defines the self. It is probably not a coincidence that Erikson’s identity crisis begins concurrently with Piaget’s stage of formal operations. Some of the cognitive skills of the mature intellect represented by this stage of cognitive development are instrumental in bringing together the threads of the self.

Myths about Aging

Aging is one of the mysteries of human life that has been a focus of science for a number of years. Researchers divide aging into two categories: primary aging and secondary aging. Secondary aging is change that occurs as a result of disease, stress, poor diet, lack of exercise, or exposure to toxic substances—any factor that contributes to aging that is actually or potentially preventable. What is left is primary aging. If genes were programmed to effect changes with age, that would be primary aging.

As research progresses, many of the myths, misconceptions, and stereotypes associated with aging are being shattered; more of what was thought to be primary aging is, in fact, secondary aging. For example, research done in the 1950s and 1960s by highly regarded psychologists showed that IQ scores reach a peak in the twenties, remain stable until 40, decrease slowly from 40 to 60, and decline very rapidly after the age of 60. The idea of deterioration of cognitive functions with age seemed to be established, but more recent research using longitudinal data has challenged the earlier studies. Recent research has shown that significant changes in cognitive functions do not begin until the mid-70s, and even then intellectual capacities remain intact for people who continue to exercise them and remain in good health. In studies with rats, Marian Diamond has shown that rats who live in an enriched environment continue to show thickening of the cortex when they are beyond the normal life span of rats.

One of the myths of aging is that people undergo personality changes as they grow older. Longitudinal data have been collected on a large group of volunteers for 30 years by the Gerontological Research Center for the National Institute on Aging. The data show stability of personality from young adulthood through old age. The director of the research noted that a person who is warm, sociable, and outgoing at 20 is likely to be warm, sociable, and outgoing at 80. He
also observed that if you are likely to complain about physical symptoms when you are 80, you were probably a complainer when you were 20.

Based on research in the 1950s, it was concluded that there is an age-related decrease in cardiac output, the amount of blood the heart pumps per unit of time. Thirty years later, using the same treadmill test, the results were different. Many of the older participants showed no decrease in cardiac output, and among those who showed a decrease, the problem was associated with lack of exercise. During the 30 years, a great deal was learned about heart disease. Many of the participants in the earlier study were not the healthy-hearted specimens they were believed to be. The conclusions from the recent research are that decrease in cardiac output is probably secondary aging, and not an inevitable consequence of growing older.

Growing old is something we do not like to think about. When you consider the alternative, growing old is not bad. Many young people do not like to face the fact that habits and lifestyles they adopt today are likely to have a profound effect at the other end of life. Some young people say they don’t want to live that long, but there is never a good day to die, and most young people of today are likely to grow old, to live to be at least 75 or 80. When you get there, you may not consider yourself old, like the 83-years-old woman that refused to shop in a certain store because she considered the clothes they carried only appropriate for old ladies.

An Aging Society
With the emphasis on “saving social security” that everyone saw in the 2000 presidential election, we have just begun to see the coming impact of the aging of American society. As the population continues to age, and there are relatively fewer young people to physically and economically care for older people, there will clearly have to be some major changes in many social programs and how some elements in our society function. For example, social security will have to be changed to keep it from becoming insolvent when the “baby boom” generation reaches its peak retirement years. Programs like Medicare will also have to be revamped. Retirement ages may be moved farther back, so that the standard retirement age in the not-too-distant future may be 70 instead of 65. While today’s elderly are generally healthier than the elderly of previous generations, as they reach their 80s and 90s (and even 100s) many will need extensive health care and nursing home care. This will require record numbers of health-care workers to help care for the elderly. In what other ways might an aging population impact society? This can be a thought-provoking discussion for students.

Euthanasia
One of the more controversial issues related to aging and the health problems that often accompany it is the issue of euthanasia. Dr. Jack Kervorkian’s active euthanasia efforts eventually resulted in his being jailed, but brought a lot of controversy, and publicity to this issue. You might ask students how they feel about this issue. Is active euthanasia ever justified? If so, under what circumstances? What moral issues does active euthanasia raise? What potential abuses could result from legalized active euthanasia? What about the “slippery slope” argument that once we begin allowing active euthanasia in some cases, it becomes easier to begin allowing it for less severe cases, and eventually becomes just an easy way of getting rid of “inconvenient” elderly people who are a “nuisance” because of their ill health and discomfort?

While most Americans oppose active euthanasia, because of these potential abuses, the picture is not as clear when it comes to the issue of passive euthanasia, in which no active steps are taken to shorten the person’s life, but no efforts are made to keep them alive when the person could be kept alive with outside help. Some researchers claim that well over 50% of physicians have occasionally engaged in passive euthanasia. How do students feel about this? How do their feelings about passive euthanasia differ from their feelings about active euthanasia?
Alfred Binet (1857–1911)
Born in Nice, France, Alfred Binet was the only child of a physician father and artist mother. Following the separation of his parents when he was young, Binet lived with his mother, moving to Paris when he was 15, and entering law school in 1872. Following receipt of his license to practice law in 1878, he did not enter into practice and was seemingly not enamored with the profession, commenting, “As for the law, that is the career of men who have not yet chosen a vocation.” Binet subsequently began reading psychology at the Bibliotheque Nationale, though he never acquired a graduate degree in the discipline.

Following several years of “studying” psychology in the library, in 1883 Binet began working at Charcot’s laboratory at the Salpetriere, one of Paris’s well-known hospitals, only to sever his relationship with Charcot and his colleagues, following a disagreement in 1890. He joined the staff at the Laboratory of Physiological Psychology at the Sorbonne, became its Director three years later, and remained in that position until his death.

During the 1890s, Binet turned his interests to the goal of understanding and measuring the individual differences noted in intelligence, studying the relevant works of Galton, Spearman, and Cattell. In 1907, following the development of a test that would measure individual differences in cognitive functioning, Binet wrote, “It was under these circumstances that our devoted collaborator, Dr. Simon, and I formulated a plan for measuring intelligence which we called “a metric scale of intelligence” (Binet & Simon, 1909/1975).

The scale that Binet and Simon developed had a great deal in common with one of its latter-day versions, the Stanford-Binet Scale, in that the prototype included tests of “digit span, vocabulary, reproduction of block designs, paper folding, comprehension, and similarities.” Binet and Simon revised their scale in 1908 and 1911, expanding the size of the scale and including items making it more socioeconomically and intellectually diverse. Binet went on to establish an experimental laboratory school, apparently the first of its kind in Europe, in which he discovered that 5 percent of children experienced problems in school simply because they could not see the blackboard.

As a man, Binet was described as energetic and inclined to spend most of his time working. His collaborator, Simon, wrote of him that, “to examine patients with him was always an extreme pleasure, for he brought to the situation so much imagination.” That seems a fitting tribute for a man who contributed so much to the assessment and measurement of intelligence.

Jean Piaget (1896–1980)
Until his death in 1980 at the age of 84, Jean Piaget retreated to his cabin in the Alps each summer, where he spent most of his days analyzing the mass of research data generated over the past year at his Center of Genetic Epistemology. During long walks along the mountain trails, he mulled over the latest experimental results and, in the crisp evenings, he formulated his conclusions. With the approach of fall, he descended from the mountain with the manuscript for a book and several journal articles in his hand. This time-honored procedure of careful observation followed by seclusion for thought and synthesis enabled him to become one of the more prolific if not the most famous psychologist of the century.

Piaget has been widely known in this country only since the translation of his works in the 1960s, but in Europe he was recognized as an expert in the field of cognitive development in the 1930s. As a 10-year-old child in 1906, he published his notes on the habits of the albino sparrow he observed near his home in Switzerland. At the age of 16, he was recommended for a curator’s position at the
natural history museum in Geneva, but declined in favor of continuing his education. He studied natural science at the University of Neuchatel, obtaining his doctorate at the age of 21. His readings in philosophy stimulated an intense interest in epistemology, the study of how humans acquire knowledge. Convinced that cognitive development had a genetic basis, Piaget decided that the best approach to studying it would be through its behavioral and biological components. Psychology appeared, to Piaget, to be the discipline that best incorporated this approach.

Piaget sought training in several distinguished European psychology laboratories and universities, gaining his first major breakthrough into the understanding of chronological stages of growth while working at Alfred Binet’s laboratory school in Paris. While designing and administering intelligence tests to French children, he became intrigued with the characteristic wrong answers that many of the children gave to his questions. In pursuing these wrong answers, he came to the realization that the children were employing a process of thought and interpretation that was decidedly different in nature from that employed by adults. Mindful of the concept of evolution from his training as a biologist, Piaget proposed that mental development also evolves and that the intellect passes through several stages of growth.

The theory of cognitive development Piaget was formulating centered on the stages of growth in early childhood, thus it seemed natural to him to observe his own three children, as they grew from infancy to preadolescence. His careful experiments and conclusions based on these observations, published in journal articles and then in book form, brought him immediate recognition in Europe. While Piaget then expanded his experiments to encompass a much larger group of subjects, his approach to research was not altered. He observed, asked questions, uncovered new and sometimes puzzling facts, and attempted to integrate his findings with what was presently known. Eventually, he formed a theory from the whole enterprise of explaining his observations. Piaget has been criticized for disregarding the traditional methods of scientific inquiry. He almost never designed experiments to support preliminary hypotheses, and did not rely heavily on hard statistical data for the conclusions he reached. To his credit, Piaget responded with good humor to scholarly attacks on his work, claiming that if he were to begin with a rigid plan and hypothesis, he would be forced to ignore the fascinating phenomena falling outside of such narrow constraints. He insisted on his freedom to look for the new and the unexpected. Even in his eighties, he continued to ask questions, to probe, and to integrate. The disciplines of both cognitive and developmental psychology benefited enormously from Piaget’s curiosity about how the child comes to understand the world and his or her place in it.

**Harry Harlow (1905–1981)**

Harry Harlow received his Ph.D. from Stanford University in 1930. He subsequently joined the faculty at the University of Wisconsin, where he remained until 1974, when he left to become a research professor at the University of Arizona. While at Wisconsin, Harlow established the highly regarded Primate Laboratory, where he conducted much of his celebrated research on learning, affective, and social development in monkeys. He is best known for his research on social isolation and the importance of the mother–infant relationship in the development of healthy, psychosocial behavior. He was elected President of the American Psychological Association in 1958.
# TIMELINE

<table>
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<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1883</td>
<td>G. Stanley Hall published <em>The Contents of Children’s Minds</em>, one of the earlier American studies on child development.</td>
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<td>1893</td>
<td>Hall founded the National Association for the Study of Childhood, one year after founding the American Psychological Association.</td>
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<td>1895</td>
<td>James Baldwin, whose views influenced those of Piaget, published <em>Mental Development in the Child and the Race</em>.</td>
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<td>1914–1918</td>
<td>World War I was fought.</td>
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<td>1920</td>
<td>James Watson and Rosilie Raynor published the results of their “Little Albert” study.</td>
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<td>1921</td>
<td>Lewis Terman initiated the first large-scale longitudinal study of child development, focusing on the gifted child.</td>
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<td>1925</td>
<td>Arnold Gesell began publishing his studies on normal growth in preschool children. A few years later, Gesell began using motion pictures to analyze child behavior.</td>
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<td>1929</td>
<td>The Great Depression began in America.</td>
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<td>1950</td>
<td>Erik Erikson published <em>Childhood and Society</em>, highlighting the importance of cultural considerations in child rearing.</td>
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<td>1950</td>
<td>Jean Piaget published <em>The Psychology of Intelligence</em>, one of his many books on cognitive development of children.</td>
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<td>1950–1953</td>
<td>The Korean War was fought.</td>
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<td>1957</td>
<td>Sidney Bijou published the first research concerning the application of behavioral principles.</td>
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<td>1958</td>
<td>Harry Harlow published his first research on social attachment in infant rhesus monkeys.</td>
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<td>1963</td>
<td>President John F. Kennedy was assassinated.</td>
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<td>1969</td>
<td>Humans first landed on the moon.</td>
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<td>1969</td>
<td>K. Warner Sliaie, among others, organized the first major American conference on life span developmental psychology. Nine years later in 1978, the first journal of the topic, <em>Lifespan Development and Behavior</em>, was published.</td>
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SUGGESTIONS FOR FURTHER READINGS


Csikszentimihalyi, M., & Larson, R. (1984). *Being Adolescent: Conflict and Growth in the Teenage Years*. New York: Basic Books. Although an older text, this volume provides an excellent report of day to day adolescent life, complete with research that records adolescent thoughts and activities at all hours of the day and night.


Flavell, J. (1963). *The Developmental Psychology of Jean Piaget*. Princeton, N.J.: Van Nostrand. Includes a presentation of Piaget’s theoretical systems, such as the concepts of assimilation and accommodation, grouping, equilibrium and their various roles within Ws schema of developmental stages. Offers a critical evaluation, both methodologically and in the light of related research by others, of Piaget’s system and work.


Gilligan, C. (1982). *In a Different Voice: Psychological Theory and Women’s Development*. Cambridge: Harvard University Press. A classic exploring the differences in the way that men and women think. An alternative to Kohlberg and seminal in its own right as the first true criticism of
Kohlberg’s theory of moral development.


DISCOVERING PSYCHOLOGY

PROGRAM 4: THE RESPONSIVE BRAIN

Overview
How the brain controls behavior and, conversely, how behavior and environment influence the brain’s structure and functioning.

Key Issues
The effect of human touch on the growth of premature babies, the effect of the mother’s touch on the growth of rats, psychosocial Dwarfism, the effect of stress on memory and learning in rats, how behavior modifies the physiology of the African Cichlid fish, and the effects of social status on the health of baboons.

Interviews
Tiffany Field explains the benefits of touch on the cognitive and motor development of premature babies.
Saul Shanberg underscores the importance of contact by the mother in the process of growth and development in rats.
Michael Meaney examines the effects of stress on memory and learning in rats.
Russ Fernald examines the effects of behavior on the physiology of the brain and the effects of the brain on behavior in African Cichlid fish.
Robert Salopisky discusses the direct effects of social status on the health of wild baboons.

Archival Demonstrations
Effects of change in social status on sexual reactions and growth of fish. (18:09)
Effects of social status on hormones and behavior in wild baboons. (21:56)

Demonstrations
Effects of physical stimulation on growth of brain, body, and health of rats. (6:27)
Relationship between early stimulation and adult resistance to stress-induced decline in memory of rats. (12:52)

PROGRAM 5: THE DEVELOPING CHILD

Overview
The nature versus nurture debate, and how developmental psychologists study the contributions of both heredity and environment to the development of children.
Key Issues
Nature versus nurture debate, volume perception in children, infant’s understanding of object permanence, symbol understanding of young children, depth perception in babies on the “visual cliff,” inherited behavioral differences among preschool children, and genetically shy monkeys.

Demonstrations
Steve Suomi examines how overly nurturing foster mothers may alter the introverted behavior of individual monkeys.

Archival Demonstrations
Richard Walk and Eleanor Gibson developed the visual cliff in 1960 to study the development of depth perception and the emotion of fear in children.

Interviews
Dr. Baillargeon observes the infant’s understanding of physical and spatial qualities, such as object permanence.
Dr. Judy DeLoache studies how children understand symbols.
Steven Suomi studies the upbringing and behavior of genetically shy monkeys.
Psychologist Jean Piaget asks children of varying ages to assess the volume of liquid in a short, wide glass after it is poured into a taller, thinner glass. Responses vary with the age of the child.

Experimental Re-Creation
Development of the principle of object permanence at a very young age.

PROGRAM 6: LANGUAGE DEVELOPMENT

Overview
The development of language and how psychologists hope to discover truths about the human mind, society, and culture by studying how children use language in social communication.

Key Issues
Biological basis of language acquisition and development, the role of social interaction in language development, universal adaptability in language development, grammar acquisition, and the rules of conversation.

Demonstrations
The role of parent–child interaction in language development.
Unique patterns of speech sounds made by mothers to their infants.

**Interviews**

Psychologist Jean Berko-Gleason explains the role of social interaction in language development.

Anne Fernald examines how pre-verbal children interpret the melodies, intonations, and tones of mothers of various languages.

Psychologist Dan Slobin discusses how children invent their own system of grammar and syntax regardless of the adult grammatical patterns that they hear around them.

Linguist Noam Chomsky examines how a child acquires the ability to produce sophisticated sentence structures.

**PROGRAM 18: MATURING AND AGING**

**Overview**

What really happens, physically and psychologically, as we age, and how society reacts to the last stages of life.

**Key Issues**

Erikson’s eight stages of psychosocial development, societal treatment of the elderly, mid-life crisis, modifying biological and psychological effects of aging, the elderly and sexuality, the effects of media on the perception of the elderly, and the elderly’s ability to learn.

**Demonstrations**

Similarities among aged rabbits and human beings in the classic conditioning of the eyelid response.

**Archival Demonstrations**

Journalist Pat Moore dresses as an elderly woman and walks the streets to demonstrate prejudice against the aged.

**Interviews**

Dr. Daniel Levinson examines the life cycle as divided into four eras of development: childhood, early adulthood, middle adulthood, and late adulthood.

Diane Woodruf-Pak examines parallels between aged rabbits and aged human beings in their underlying brain circuits.

Sherry Willis examines new educational training methods that help the elderly function more effectively.

B. F. Skinner discusses how he has remained active and able in his field.

Werner Schaie examines the physical and psychological qualities the aged share.
Erik Erikson examines the identity crisis he experienced as a newcomer to the United States. Erikson’s eight stages of psychosocial development are examined.
FILMS AND VIDEOS

**Baby Talk (1984). IU (MG), 49 minutes**
Examines modern research into child language development. Explores fetal and infant responses to speech, the innateness of language ability in humans, the relationship between cognition and language, the overgeneralization of syntactic rules by young children, and the processes by which infants and young children interpret adult speech to build a grammar. Contains interviews with Jerome Bruner, Noam Chomsky, Dan Slobin, Peter Eimsn, Catherine Snow, Jean Berko-Gleason, Andrew Malzoff, and Eve Clark. The interviews make this film worthwhile.

**Child Language: Learning without Teaching (1981). IU (DAVSN), 20 minutes**
Follows the development of children’s language acquisition from infancy through early childhood. Introduces one of the most involved learning processes a child encounters: mastering the complex system of meanings, grammatical rules, and sounds called language. Shows many of the problems children face while learning to communicate. Gives examples of misunderstandings that can occur between a child and an adult because of differing interpretations of words and sentences.

Traces the development of neurons and glial cells in fetal brain development. Portrays experiments designed to track the beginning of memory and children’s ability to categorize. Discusses the maturational milestones of developing a sense of self and moral development.

**Piaget’s Developmental Theory: Classification (1975). POLY, 20 minutes**
Piaget’s theory of cognitive development, with emphasis on adapting to parenthood. Shows how the expectations for the arrival of the first baby may differ from the reality of sleepless nights, crying infants, etc. The adaptation required is still on point for new parents.

**Coping with Serious Illness (1980). TLF, 25 to 33 minutes**
A series that documents the last years of Joan Robinson, a woman dying of cancer.

- **Episode 1: Facing Death**
  Deals with the issue of terminal illness and facing death. The Robinsons are shown going through the painful process of realizing that Joan is going to die. Psychiatrists, doctors, and others experienced in dealing with the dying discuss the current knowledge of facing death and the various choices the ill and their families need to make: whether to die at home, in a hospital, or in a hospice for the terminally ill.

- **Episode 2: Finance**
  Examines ways of coping with the financial aspects of being seriously ill. Lawyers and consumer advocates discuss patients’ rights and legal issues.

- **Episode 3: Pain**
  Shows approaches to coping with both pain and the fear of pain. Explains the effects of suffering on the personality, the differences between types of pain, and methods available for treating pain.

- **Episode 4: Relationships and Stress**
  The Robinson family and friends address the changing relationships with family, friends, and medical personnel. Discusses how serious illness materially changes relationships, and coping with the emotions and strain, following diagnosis of a serious illness.

- **Episode 5: Sexuality**
Deals with the difficult issue of sexuality and the need for loving at critical times as well as during times of little stress. Interviews with the Robinsons and testimony from other men and women illustrate the difficulties married couples face dealing with this issue. Experts discuss ways of showing and receiving physical expressions of love while coping with illness.

**Euthanasia: Murder or Mercy (1985). CHUK, 30 minutes**
A look at a current social problem: the control of dying and a patient’s right to die. With the advent of Jack Kevorkian’s position, this film may be more relevant than ever.

Attributes the differential effects of aging on cognitive processes to an interaction between genetic and environmental factors. Depicts experiments conducted to pinpoint the areas of the brain involved in cognitive deficits. Contradicts the myth that memory deficits are an inevitable part of aging. Emphasizes that an active, purposeful old age depends on staying physically and mentally active. Shows research on the biological mechanisms that cause Alzheimer’s disease, and discusses one possible solution for decreasing the debilitating effects of this disease.

**On Death and Dying (1974). FI, 40 minutes**
Dr. Elisabeth Kubler-Ross discusses her experiences in helping the terminally ill face death without fear. She stresses the importance of communicating with them in a way that recognizes their feelings. Somewhat dated, but the basic issues remain constant.

**Vygotsky’s Developmental Theory (1994). Davidson Films**
Presents Lev Vygotsky’s early childhood learning theories and demonstrates them in classrooms. Development, according to Vygotsky, cannot be separated from its social context: it is misleading to evaluate children only on what they accomplish independently.

**The Infant Mind (1992). Insight Media, 30 minutes**
Jean Piaget’s stage theories of object permanence and sensory-motor development are explained and challenged. Research with newborns has revealed that infants possess a basic perception of cause and effect, number, and object permanence and that memory skills and the capacity to form concepts are present much earlier than formerly believed.

**The Seven Ages of the Brain (1995). Films for the Humanities & Sciences, 58 minutes**
Focuses on how a brain grows from a fertilized egg and how our brains change, even after birth, right up to old age. The establishment of connections between brain cells occurs not only in the womb, but also after birth. These connections can be modified, or even abolished, in accordance with certain changes in the environment. Part of the British Royal Institute Lecture series.

Discusses the concepts developed by the Baltes for assessing the means by which some people cope better psychologically with old age. Selection, optimization, and compensation are three important coping strategies to deal with the decline in physical and some mental functions, while developing wisdom.

**Complaints of a Dutiful Daughter (1995). Women Make Movies, 44 minutes**
Shows interactions between an Alzheimer’s patient and her daughter. The daughter discusses the various stages of the disease, how she dealt with each and how she arrived at a positive resolution.
CHAPTER 12
Motivation

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe the five functions of motivational concepts
2. Explain the various sources of motivation, including instinctual, emotional, and cognitive sources
3. Communicate the difference between William James’ and Sigmund Freud’s conception on instinctual behaviors
4. Describe social learning theory and its relationship to internal and external sources of attributions
5. Identify the two major eating disorders
6. Explain the different reproductive strategies that may be employed by males and females
7. Describe the four phases of human sexual response for males and females
8. Show an understanding of the concept of need for achievement and discuss how it relates to motivation
9. Describe the concept of locus of control and its relationship to motivation
10. Explain Maslow’s hierarchy of needs

CHAPTER OUTLINE
I. Understanding Motivation
   A. Motivation is the general term for all the processes involved in starting, directing, and maintaining physical and psychological activities
   B. Functions of Motivational Concepts
      1. To relate biology to behavior
      2. To account for behavioral variability
      3. To infer private states from public acts
      4. To assign responsibility for actions
      5. To explain perseverance despite adversity
   C. Sources of Motivation
      1. Drives and Incentives
         a) Drive is defined in biological terms as energy released from an organism’s store, the fuel of action
         b) Drive Theory was fully developed by Hull, who believed
Motivation was necessary for learning to occur

(i) Learning is essential for successful adaptation to the environment

(ii) *Tension reduction* is reinforcing, but is not sufficient to explain all types of motivated behavior

(iii) Organisms seek to maintain *homeostasis*, a state of equilibrium

c) Behavior can also be motivated by incentives, external stimuli or rewards that do not relate directly to biological needs

2. Reversal Theory

a) Apter’s reversal theory hypothesizes four pairs of metamotivational states, states that give rise to distinct patterns of motivation

   (i) *Telic–Paratelic*: serious vs. playful
   
   (ii) *Conformist–Negativistic*: compliant vs. rebellious
   
   (iii) *Mastery–Sympathy*: power-oriented vs. care-oriented
   
   (iv) *Autic–Alloic*: concern for self vs. concern for others

b) Seeks to explain motivation in terms of reversals from one state to another

3. Instinctual Behaviors and Learning

a) *Instincts* are preprogrammed tendencies that are essential for the survival of their species

b) To what degree is human behavior instinctual?

   (i) James (1890) proposed humans are more reliant on instinct than other animals, stating both human and animal behaviors are purposive, serving important purposes in the organism’s adaptation to its environment

   (ii) Freud (1915) proposed that humans experience drive states arise from life and death instincts, calling the drive state psychic energy

   (iii) Behaviorist data indicating behaviors and emotions are learned rather than instinctive in nature helped to found instinct theory as an explanation for motivated behavior

4. Expectations and Cognitive Approaches to Motivation

a) An *expectation* is an idea about the future likelihood of getting something that is wanted

b) Significant human motivation derives from the individual’s subjective interpretation of reality

c) *Social-learning theory* developed the importance of expectations in motivating behavior. The probability of engaging in a given behavior is determined by:

   (i) Expectation of attaining a goal that follows the
activity
(ii) Personal value of that goal to the individual

(iii) A discrepancy between expectations and reality can motivate the individual to perform corrective behaviors
d) Heider posited that behavioral outcome can be attributed to:
   (i) Dispositional forces, such as lack of effort or low intelligence
   (ii) Situational forces, such as a biased exam or instructor
   (iii) Attributions influencing the way the individual will behave

II. Eating

   A. The Physiology of Eating

      1. Regulation of effective food intake requires organisms to be equipped with mechanisms that accomplish four tasks
         a) Detect internal food need
         b) Initiate and organize eating behavior
         c) Monitor quantity and quality of food eaten
         d) Detect when sufficient food has been eaten and stop eating

      2. Peripheral Responses
         a) Cannon (1934) proposed gastric activity in an empty stomach was the sole basis for hunger, an unsupported position on discovery that stomach contractions are not a necessary condition for hunger
         b) Research shows gastric distension caused by ingestion of food causes the individual to stop eating

      3. Central Responses
         a) Early theories about brain centers for initiation and cessation of eating were built around observations of the lateral hypothalamus and the ventromedial hypothalamus, leading to the dual-center model of response
         b) Dual-center model discredited after learning that the two basic signals that initiate eating come from receptors monitoring levels of sugar and fat in the blood

   B. The Psychology of Eating

      1. Psychological focus is on circumstances in which people try to exercise control over the consequences of eating

      2. Obesity and Dieting
         a) Resting metabolic rate is the rate at which an individual’s body burns calories that maintain basic functions
         b) Biological predisposition may or may not “cause” an
individual to become obese
c) Key is how individual thinks about food and eating behaviors
d) Herman and Polivy propose the dimension underlying the psychology of eating behaviors to be restrained vs. unrestrained eating
   (i) Restrained eaters put constant limits on amount of food they will let themselves consume
   (ii) Restrained eaters gain weight even when dieting, because they become periodically disinhibited and indulge in high-calorie bingeing
   (iii) Psychological consequences of constant dieting can create circumstances more likely to lead to weight gain than to weight loss
3. Eating Disorders and Body Image
   a) *Anorexia nervosa:* Individual weighs less than 85% of expected weight, but continues to express fear of becoming fat. These individuals may also be bulimic
   b) *Bulimia nervosa:* Characterized by periods of intense, out-of-control eating, or bingeing, followed by efforts to purge the body of excess calories through:
      (i) Self-induced vomiting
      (ii) Misuse of laxatives
      (iii) Fasting
   c) Both disorders result in systematic starvation of the body that may have serious medical consequences
d) Prevalence of anorexia nervosa in late-adolescent and young adult females is about 0.5 to 1.0 percent
e) Prevalence of bulimia nervosa during late-adolescent and young adult females is about 1.0 to 3.0 percent
f) Females suffer eating disorders at approximately 10 times the rate of males

III. Sexual Behaviors
   A. *Nonhuman Sexual Behaviors*
      1. Nonhuman sexual behaviors have reproduction as their primary motivation
      2. Sexual arousal is primarily physiologically determined by
         a) Secretion of hormones
         b) Stereotypical sexual behaviors for all members of a given species
         c) Arousal may be initiated by environmental stimuli (e.g., ritualized behavior by potential partners may be a necessary condition for sexual response)
d) Chemical signals, *pheromones*, are secreted by some species to attract suitors

B. Human Sexual Arousal and Response

1. Hormonal activity has no known effect on sexual receptivity or gratification in most men and women

2. Sexual Arousal is the motivational state of excitement and tension brought about by physiological and cognitive reactions to erotic stimuli
   a) Erotic stimuli, which may be physiological or psychological, give rise to sexual excitement or feelings of passion

3. Research by Masters and Johnson provided four basic conclusions regarding human sexuality
   a) Men and women have similar patterns of sexual response
   b) Although the sequence of phases of the sexual response cycle is similar in the two sexes, women are more variable, tending to respond more slowly but often remaining aroused longer
   c) Many women can have multiple orgasms, while men rarely do so in a comparable time period
   d) Penis size is generally unrelated to any aspect of sexual performance (other than the attitude of the male regarding having a large penis)

4. Phases of the sexual response cycle, according to Masters and Johnson:
   a) *Excitement:* Vascular changes in pelvic region, including erection of penis and clitoral swelling; sexual flush appears
   b) *Plateau:* Maximum level of arousal is reached, with increased heart rate, respiration, and blood pressure; vaginal lubrications increase and breasts swell
   c) *Orgasm:* Intense, pleasurable release from sexual tension; very high respiration rate and blood pressure, and heart rate may double
   d) *Resolution:* Body returns gradually to normal, pre-excitement state. Most males enter a refractory period during which no further orgasm is possible. With sustained arousal, females are capable of multiple orgasms in rapid succession

C. The Evolution of Sexual Behaviors

1. Evolution may have led men and women to different strategies that underlie their sexual behavior
   a) Male role tends toward *short-term mating*, giving signs of loyalty and commitment followed by leaving the female
   b) Female role is more inclined to *long-term mating*, attraction of a loyal male who will remain with her, helping to raise her
D. Sexual Norms

1. Sexual norms are culturally acquired behaviors that are considered to be appropriate for expression of sexual impulses.

2. Sexual scripts are socially learned programs of sexual responsiveness that include prescriptions (usually unspoken) of:
   a) What to do
   b) When, where, and how to do it
   c) With whom or with what to do it
   d) Why it should be done

3. Sexual scripts include not only expectations of appropriate behavior for ourselves, but also expectations of appropriate behavior for our partner(s).

4. Date Rape
   a) Research with college students indicates date rape is an area of devastating conflict between sexual scripts of males and females.
      i) Research indicates that for both genders, unwanted sex was related to perceiving male-female relationships as adversarial.
      ii) Specific correlation was the male script that females will offer token resistance to avoid appearing promiscuous.

E. Homosexuality

1. Homosexuality should not be considered a deviation from heterosexuality but like all sexual behavior, involves a combination of both internal and external motivational forces, including the excitement and tension brought about by physiological and cognitive reactions to erotic stimuli.

2. Homosexuality is set apart from heterosexuality by the continuing hostility toward homosexual behaviors from many areas of society.

3. Many gay men and lesbians suffer internalized homophobia or internalized homo-negativity as a result of societal hostility.

4. Much anxiety attached to homosexuality is a function of the individual’s need to reveal or conceal his/her homosexuality from family, friends, and co-workers, rather than being a function of actually being homosexual.

5. Data suggest much of the stress associated with homosexuality is not from the sexual motivation itself, but from the ways in which people respond to the revelation of that sexual motivation.

IV. Motivation for Personal Achievement

A. Need for Achievement
1. Murray postulated a need for achievement (n Ach) as a variable that fluctuated in strength in different people, and influenced their tendency to approach success and evaluate their own performances.

2. McClelland used the Thematic Apperception Test (TAT) to measure strength of n Ach.

3. n Ach reflected individual differences in the importance of planning and working toward attainment of one’s goals:
   a) High scores on n Ach reflected upward mobility.
   b) High n Ach individuals typified by a need for efficiency.
   c) Level of n Ach may derive from parenting practices.

B. Attributions for Success and Failure

1. Attributions are judgments about the causes of outcomes that can impact level of motivation.

2. Attributions can vary along three dimensions: locus of control, stability versus instability, and global versus specific:
   a) Locus of control orientation is a belief that outcomes of our actions are contingent on:
      i) What we do (internal control orientation)
      ii) Environmental factors that are outside our personal control (external control orientation).
   b) The dimension of stability versus instability can be assessed by asking to what extent is a causal factor likely to be stable and consistent over time?
   c) The global versus specific dimension can be assessed by asking to what extent is a causal factor highly specific and limited to a particular task or situation.

3. Attribution made will impact both emotions and subsequent motivation settings, regardless of the true reason for success or failure; thus beliefs are important because they lead to:
   a) Different interpretations of past performance and general worth.
   b) Different emotions, goals, and effort in the present situation.
   c) Different motivation in the future.

4. Seligman posits explanatory style, the individual’s level of optimism or pessimism, as affecting activity and passivity, persisting and giving up, taking risks and playing it safe:
   a) Pessimistic attributional style focuses on causes of failure as being internally generated, with situation and one’s role in causing it as stable and global.
   b) Optimistic attributional style attributes failure to external causes and to events that are unstable or modifiable and specific.
   c) Causal explanations reverse when outcome is a success.
C. Work and Organizational Psychology

1. Organizational psychologists study various aspects of
   a) Human relations
   b) Overall quality of life at work

2. Apply theories of management, decision making, and development to work settings
   a) Equity theory proposes that workers are motivated to maintain fair or equitable relationships with other relevant persons
      (i) Workers note their own inputs and outcomes, and compare them with inputs and outcomes of other workers
      (ii) Satisfaction occurs for Worker A when \( \frac{\text{Outcome A}}{\text{Input A}} = \frac{\text{Outcome B}}{\text{Input B}} \)
      (iii) Dissatisfaction for Worker A occurs when \( \frac{\text{Outcome A}}{\text{Input A}} \neq \frac{\text{Outcome B}}{\text{Input B}} \)
   b) Expectancy theory proposes that workers are motivated when they expect their efforts and performance on the job will result in desired outcomes. The theory emphasizes three components:
      (i) Expectancy: the perceived likelihood that a worker’s efforts will result in successful performance
      (ii) Valence: the perceived attractiveness of particular outcomes
      (iii) Instrumentality: the perception that performance will be rewarded

V. A Hierarchy of Needs

A. Maslow posited that the individual’s basic motives formed a Hierarchy Of Needs, with needs at each level requiring satisfaction before achieving the next level

1. Biological: Bottom level needs such as hunger and thirst require satisfaction before other needs can begin operation.
2. Safety: Requirement to attend to protection from danger, need for security, comfort, and freedom from fear.
3. Attachment: Needs to belong, to affiliate with others, to love and to be loved.
4. Esteem: Needs to like oneself, to see oneself as competent and effective, and to do what is necessary to earn the esteem of others.
5. Cognitive: Humans demand stimulation of thought, need to know our past, to comprehend puzzles of current existence, and to predict the future.
7. Self-actualization: Individual has moved beyond basic needs in the
quest for fullest development of his/her potential. Individual is self-aware, self-accepting, socially responsive, creative, spontaneous, open to novelty and challenge.

8. Transcendence: a step beyond fulfillment of individual potential, may lead some individuals to higher states of consciousness and a cosmic vision of one’s part in the universe.

B. Maslow’s hierarchy presents an upbeat view of human motivation, with the core of the theory being the need for each individual to grow and actualize his/her highest potential.

**DISCUSSION QUESTIONS**

1. William James proposed that humans rely on instinctual behaviors even more than other animals. Twenty-five years later, Sigmund Freud posited that humans experience drive states that arise from life instincts and death instincts. What is significant about the difference in these two perspectives?

2. How could the educational system be changed so that children have greater feelings of choice, responsibility, and hope? What effect might such changes have on learning and motivation?

3. Suppose that public displays of eating were considered socially inappropriate and that one could eat only at home with one’s family or alone. How would the following behaviors be affected?
   - Typical topics of conversation
   - Popularity of magazines
   - Priorities of morality

   In contrast, what would happen if society deemed it appropriate to engage in sex, a basic biological drive, whenever and wherever one wished?

4. How can we make a tedious job more enjoyable, satisfying, or rewarding? Ask students to apply the principles of learning and motivation to transform their most dreaded task into a more rewarding one.

5. Ask students for personal examples of momentary actualization or peak experiences. Include times when they felt they found the truth, were filled with energy, or volunteered to work for a cause. What was it that motivated them?

**SUPPLEMENTAL LECTURE MATERIAL**

**Motivation in the Marketplace**

The goal of advertising is to motivate the consumer to buy products. There are three basic components to the advertising strategies used to get you to part with your money. They are:

*The Audience*
In marketing the audience is called the “target market.” These people are the actual or potential buyers of the product. They can be either the decision makers or people who influence the person who makes the actual buying decision. For example, parents purchase goods for their children, but children often have a significant influence on the products their parents buy. Sometimes advertising is aimed at trying to change or enlarge the market, such as the makers of a certain automobile finding that most of their buyers are older. Because of that finding, the manufacturers may change their advertising strategy to target a younger population. The “baby boom” generation is currently between the ages of about 40 to 50 years old, and provides a very lucrative market because of its large numbers and relative affluence.

The Message
There are two components of any motivational message. There is the verbal (or written) message and the nonverbal message. The nonverbal message is subtler, not directly stated, but nonetheless implied by the contents of the message. The nonverbal message may be transmitted by the background against which the product is displayed, such as the American flag, the shelves of impressive books, the beautiful home, the spacious office, or the cozy bar. All of these project a desirable image. The nonverbal message can also include clothes, facial expressions, and body language of the actors or models involved in producing the message. In the U.S., this might include the presence of the “family dog.”

The Communicator
The communicator is the person who delivers the message or who is the central figure in print advertising. One characteristic of persuasive communicators is their credibility—the reputation of the individual as believable, as an expert or authority in his or her field. Attractiveness is another characteristic that advertisers exploit. This may mean that the person is admired as an actor, athlete, or musician, or as a person who has been outstandingly successful in whatever he or she is known for. Sometimes the communicator is an individual that potential buyers can identify with, “a person just like me!”

Recognizing these three components of advertisements can help us better understand why individual advertisements are constructed the way that they are and help us be more critical of, and less susceptible to, their message. Now let us look at a few specific examples.

Automobiles

The Audience
Every car has its own intended market. How many 70-year-olds do you see driving Corvettes? Who is the market for a Cadillac? For BMWs? For pickup trucks? Car makers are sophisticated in targeting sexes, ages, and income groups in their advertisements.

The Message
The verbal message may involve such issues as value, gas mileage, dependability, safety, performance, and prestige. The nonverbal messages may be far more potent and persuasive, exploiting such motives as sex appeal, social status, power, envy, success, and confidence. Backdrops of polo matches and mansions imply wealth; steelyards and factories imply durability; and bright lights and tall buildings imply success. For Americans, especially males, the automobile is almost an extension of one’s self. Cars convey an image of ourselves, as we would like others to perceive us.
The Communicator

Individuals in automobile advertisements are usually very attractive, modeling the sort of person the buyer would want to be. Occasionally, the communicator is someone expected to know a lot about cars, such as a famous racecar driver or greasy mechanic.

Beer

The Audience

The audience for beer is middle- and working-class males, “good ol’ boys” who like to get together to go fishing, watch football games, or play pool. Females appear in beer commercials, but often only as props. Beer is a man’s drink, and women are often targeted with other beverages such as wine coolers.

The Message

Beer is associated with good times. Young, attractive, healthy people are often seen running around beaches, attending terrific parties, and engaging in thrill-seeking sports. People who drink beer can also be portrayed as “down to earth” folk, just like you. These “normal” people are more likely to sit in the kitchen or the backyard than in a formal setting, and they eat hamburgers and apple pie. The motivation for drinking beer is to have good friends and to have good times with them, to reward yourself at the end of the day with a beer or two while watching ball games.

The Communicator

Most often, a male without a necktie, or at least a loosened tie, possibly in a flannel work shirt, touts the beer. He is a good “All-American” man’s man. He knows how to hunt and fish, is a skilled athlete, can fix cars, and is not afraid of an honest day’s work.

You might have your class discuss other products such as pain relievers, colas, and clothes. Have your class use their critical thinking skills to figure out the advertiser’s motivation the next time that they see an advertisement. They might want to ask themselves:

- Am I a member of the target audience?
- Is the product really special and different, or just trying to be?
- What claims does the advertisement make of the product? How are the claims substantiated?
- If statistics are used, are they used fairly?
- If the product is compared to another, is it compared to a relevant product in a reasonable way?
- What are the nonverbal messages that the advertisement tries to impart?
- How were the communicators chosen to maximize impact and believability?
- What need does the product fill? Is the need real, or created by the advertisement?

Finally, advertising is not all bad. If it was, it might not be allowed. Ask your class why advertisements are legal, although their only purpose is to influence people to do things that they might not do without advertisements. One positive aspect of advertisements is their informational value. They alert consumers to the presence of new products, and to legitimate differences among
exiting products. Are there others? In closing, remember what the Romans said, “Caveat emptor!” (Let the buyer beware).

**Psychological Factors and Obesity**

While genetic and metabolic factors clearly influence many cases of obesity, personal, social, cultural, and environmental factors also play a distinct role. As the text states, the number of people you are with can affect how much you eat. Also, we may eat more in certain social situations where eating is expected. Low self-esteem, having been sexually abused, and high levels of depressive anxiety are correlated with obesity. Family and cultural norms may also play a part. Some cultures perceive what we consider obesity to be attractive. In our culture, we idolize health and thinness, but we have slipped into lifestyles in which so many Americans have access to fat-rich foods and are physically inactive, that large numbers of Americans are obese and dieting has become the norm for a majority of American women. Many younger women also develop eating disorders such as bulimia and anorexia, largely in response to trying to achieve unrealistic standards of thinness. This can be a useful topic to discuss with the class, because many college students are in the highest-risk group for developing these disorders. They are also at an age where they are beginning to develop lifestyle norms that can have long-term implications for their risk for obesity.

**Extrinsic Rewards May Spoil Pleasure**

The following tale is useful as a lead-in to a discussion of extrinsic and intrinsic rewards:

An Italian shoemaker in New York became the target of epithets shouted gleefully by boys in the neighborhood. “Dirty wop!” “Greaseball, go back to Sicily!” And other obscenities not fit for print. The boys were a general nuisance and disrupted business. The shoemaker ignored the boys in vain. He tried to reason with them, and he tried to chase them away, all to no avail. One day when he saw them approaching, the shoemaker tried a new approach. “Don’t ask me why,” said the shoemaker to the boys, “but I will give each one of you 50 cents if you will shout, “Dirty wop! No greaseballs in our neighborhood!” as loud as you can.” The boys were delighted and enthusiastically shouted the phrases at the top of their lungs.

The next day, right after school, the boys reappeared, expecting more of the same. The shoemaker met them with a smile and said, “You did such a wonderful job yesterday, I will gladly pay 50 cents to each of you that shouts the same things that you did yesterday, and makes up one new one.” Again, the boys complied, screaming at the top of their lungs until they were hoarse.

The boys appeared the third day, and again the shoemaker met them with a smile. Nevertheless, today he was apologetic. “I am sorry,” he said, “but business has been slow. You put on a marvelous show yesterday, but all that I can afford today is a nickel.” The boys obliged by shouting the epithets with somewhat less enthusiasm than they had the day before.

On the fourth day, the boys appeared right on schedule. Again, the shoemaker met them apologetically. “The show that you put on yesterday was indeed worth it, but business is so bad that I can not afford to pay you today.” At this point, so the story goes, the boys grumbled that they had better things to do than entertain a dumb Italian, and wandered off, never to be seen again. Why did this approach at changing the boys’ behavior work when none other had? It worked because it changed what had been an intrinsically rewarding activity into an activity that was done for an extrinsic monetary reward. Then, when the extrinsic reward was removed, the boys no longer had intrinsic or extrinsic motivation to engage in the problem behavior. In simple terms, the fun was taken out of it.

Psychologist Mark Lepper offers the following conclusions about the research and theory on the
effects of reward on subsequent motivation:

- Punishment is usually thought to create compliant behavior change without internalization of the underlying attitudes, values, morality, or principles. Reward has been assumed to enhance likelihood that the desired behavior change will be internalized.
- Festinger's dissonance theory clearly distinguishes between public compliance and private acceptance in terms of the person's perception of the external versus internal locus of pressure to behave in the given way. Private acceptance (internalized behavior change) involves the actor believing he or she had sufficient freedom of decision to refuse to do a behavior and that the decision was not overdetermined by threats, incentives, or someone else's justification.
- When extrinsic rewards are imposed on an activity that was formerly freely chosen because of its intrinsic value to the child, subsequent motivation to engage in that activity is reduced. This is true for task-contingent rewards.
- Performance-contingent rewards do not necessarily undermine intrinsic motivation as task-contingent rewards do.
- The greatest loss of intrinsic motivation comes when the pupil perceives his or her task behavior to be under surveillance and extrinsically rewarded.

Basis of Motivation and Its Theoretical Perspectives

Motivation is defined as the concept we use when describing the forces acting on or within an organism to initiate and direct behavior. We also use the concept to explain differences in intensity of behavior and to indicate the direction of behavior. Increased intensity of behaviors is thought to result from increased levels of motivation. For example, when we are hungry, we direct our energies to obtaining food.

We study motivation because both casual and scientific observation tell us that behavior is often triggered by something. Something motivates us to behave in a certain way. Motivation includes certain characteristics, such as activation, persistence, and vigor:

**Activation**

Although motivation is often viewed as being behaviorally activating, the resulting behavior activated may not always be overt and observable. For example, a rabbit freezes when a hawk flies overhead. The rabbit's motivation for survival results in an “activity” of immobilization, although the rabbit's heart rate is high because of the activation of its peripheral nervous system. Therefore, motivation is not necessarily overt, physically observable activation. It may be, but it also may not be.

**Persistence**

Persistence appears to be one of several possible indices of motivation. That is, the level of persistence appears to be an indicator of the level of motivation. If your cat is just a little hungry, or maybe just bored, it may follow you to the kitchen and meow around its bowl in a half-hearted attempt to be fed. If your cat is starving, however, it may meow vociferously while pacing back and forth near the kitchen door. It may try to get your attention by sinking its claws deep into your leg or by licking your face. If you still refuse to feed it, your cat may rummage for food on its own, knocking jars over, opening cabinets, and eating through wrappers.

**Vigor**

The intensity of the response may be associated with motivation level, but it may also be a learned factor. For example, if a rat learned that it had to really bang on a lever to get the food pellet to fall
because the lever had a stiff spring, the rat will bang the stuffing out of any other response level that you put in its path. If you are a casual observer, you might assume the rat is highly motivated due to the vigor with which it bangs the lever when, in fact, that is the only way he knows how to press a lever. It is what it has learned to do.

As with most issues in psychology, there are various approaches to studying motivation, three of which are the biological, the drive or learning, and the cognitive. Let us look at each of them.

**The Biological Approach**

The biological approach espouses naturally occurring behavior and evolution. Part of this perspective is instinct theory. Instinct theory, as an explanation for motivated behavior, reached its peak in the United States in the late 1800s and early 1900s. As the popularity of this theory grew, it tried to “explain” all behaviors as “instinctive”, which led to the nominal fallacy.

For example, if you saw me playing with a three-year-old, you might explain my playfulness, my behavior, in terms of a “paternal instinct.” However, by labeling my behavior as “paternal”, you have done nothing but name it. You have explained nothing. Simply naming something as an instinct does not explain it. In order to explain behavior, you cannot just label it; you must understand the conditions that led to the behavior and the consequences that result from it. Explanation presumes a cause-and-effect relationship and labeling a behavior provides no causal explanation.

Early instinct approaches emphasized the continuity of human and animal behavior and were important because they provided a foundation on which later ethological theories, motivated behavior theories, could build. Ethological theories were based on Darwin’s theory of evolution and were concerned with the evolution, development, and function of behavior.

**Drive Theories**

The concept of drive assumed that the motivation of behavior depends on a physiological need, such as hunger, thirst, or sex. This perspective posits that the organism becomes motivated to reduce the need or drive in any way that it can. As a motivational construct, drive is usually associated with maintenance of homeostasis, a process in which bodily mechanisms attempt to keep the body’s systems functioning at their optimal levels.

One significant theory in this grouping was proposed by Clark Hull (1943). Hull’s theory was motivated by both learning theory and motivational thought, and his model for behavior was one of survival. Hull assumed that motivation developed to meet the organic needs of the organism, because such a system gives the animal an advantage in the struggle to survive. This is based on the various theories of evolution. Hull proposed that behavior resulted from three factors:

- What has been learned
- The current level of drive
- The characteristics of the goal

**Cognitive Theories**

This group of theories involves an expectancy-value construct. Edward Tolman (1934) proposed that theories of behavior should be studied as a whole, proposing that behavior is molar, rather than studying it as a function of its component parts (as in a reductionist model). Tolman posited three defining properties for molar behavior.

1. Behavior is always directed toward or away from some specific goal; behavior that is directed toward a goal is persistent.
2. Behaviors leading toward a goal form a consistent pattern of responses. Behavior is not random, but represents the way in which the organism attempts to reach the goal.

3. There is selectivity to molar behavior. The shortest or easiest path to the goal will be taken.

These three characteristics imply that the organism has some understanding of the goal toward which its behavior is leading. In a word, Tolman saw behavior as being “purposive.” Further, he posited cognitive expectancy, suggesting that organisms learn that particular behaviors lead to particular goals. Organisms develop an expectancy that a specific set of behaviors will lead to a specific goal.

Achievement and Motivation

What is achievement? A passable working definition is the development of motives, capabilities, interests, and behaviors that have to do with performance in evaluative situations. How does that pertain to the average child or adolescent in a realistic format? Achievement is an important concept for all of us relative to issues such as:

- Grades during our school years
- Scores on college entrance exams
- Ability to pass a football or hit a softball
- Engaging in appropriate social behavior (to be popular)

These are all examples of achievements, but where or how does achievement become relevant to us? First, it is important for all of us in terms of the need for achievement (n Ach), the degree to which the individual strives for success. The Need for Achievement is based on expectancy theory. McClelland explained achievement motivation as the need to perform the difficult as well and as quickly as possible. In 1983, Spence and Helmreich identified three factors as contributing to achievement tendencies: work, mastery, and competition. Spence and Helmreich found that females scored higher on work and males scored higher on both mastery and competition. Have your class try to determine why. One reason is that they were well socialized into traditional gender roles.

Do males and females have any tendency to adhere to specific patterns of motivation? Research by Dweck (1986) found the girls’ pattern of motivation differed from that of boys and that very bright females showed greater debilitation after failure; that is, they displayed greater decrements in motivation and performance than did other females or any males. Conversely, the brightest males showed facilitation following failure. Dweck posits that lower math achievement for females may be at least partially attributable to this difference in motivational patterns because sex/gender differences in both math and motivation are greatest among the brightest students. Dweck also found that females show a lower preference for novel or challenging tasks than do males and that females are more likely to attribute their failure to lack of ability than are males.

In addition to the determinants of achievement behavior already mentioned, let us look at the cognitive determinants of this construct. Two factors that strongly impact what an individual is likely to achieve are the:

- Value placed on achievement of the goal. An individual’s willingness to set high standards and work to attain them will fluctuate in accordance with how valuable the achievement is to them personally. Obviously, value then becomes a significant predictor of achievement.
behavior.

- **Expectation** of achieving the goal. When dealing with children and adolescents, those who expect to succeed usually do and those who do not expect to succeed usually do not.

### Attributional Theories of Achievement

Rotter’s (1954) locus-of-control model was expanded by Virginia Crandall (1967) as follows. Individuals with an *internal locus of control* (internalizers) assume that they are personally responsible for their success or failures. Individuals with *external locus of control* (externalizers) believe their success-to-failure rates depend on luck or fate, rather than on their own effort or ability. Crandall feels that an internal locus of control is conducive to achievement. Individuals must believe that their efforts will lead to positive outcomes if they are to work for success and become high achievers. Work by Findley and Cooper supported Crandall’s hypothesis, in finding that internalizers do earn higher grades and typically outperform externalizers on standard tests of academic performance.

Once we have taken a test or made a decision, to what do we attribute our success or failure? What sorts of *causal attributions* do we make? Weiner (1974, 1986) added a dimension of stability to Crandall’s theory. This dimension states that if you find one specific type of problem to be exceedingly difficult for you, there is good reason to expect problems of a similar nature also to be difficult for you. If they are, it is a *stable* cause. Combine this dimension with ability, effort, luck, and task difficulty, and we get the following matrix:

<table>
<thead>
<tr>
<th>Locus of Causality</th>
<th>Internal Cause</th>
<th>External Cause</th>
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<tbody>
<tr>
<td>Stable Cause</td>
<td>Ability</td>
<td>Task Difficulty</td>
</tr>
<tr>
<td>Unstable Cause</td>
<td>Effort</td>
<td>Luck</td>
</tr>
</tbody>
</table>

A final issue we need to address regarding motivation is learned helplessness. Learned helplessness deals with patterns of attributions displayed by the individual during explanations of achievement outcomes, and the effects of these attributional styles on later achievement. Dweck et al. found reliable individual differences in the way children react to achievement outcomes, especially failure.

Some kids are *mastery oriented*. They attribute failures to unstable causes, such as insufficient effort, and will increase their effort on the next occasion. Conversely, those children who perceive failure as deriving from stable causes often show little expenditure of effort and subsequent deterioration of performance on future tasks. These children seem to give up when they fail and often will not attempt a task that they mastered earlier. Dweck felt this to be a variation of learned helplessness. If failure is attributed to a cause over which the child exercises little control, they see little reason to keep trying. They give up before they even begin. So convinced that they will fail yet again, they save themselves the effort and do not even begin to try. They learn to be helpless. Dweck also noted these helpless children were often at the top of their class in earlier achievement. So what happened? Sadly, the culprit is often the evaluations of the child’s work by a teacher. If a teacher praises luck or other unstable factors on success and emphasizes lack of ability on failure, children will attribute success to luck and failure to a lack of ability. This is the pattern seen in learned helplessness. If, however, teachers praise ability on success and emphasize unstable factors on failure, children will learn mastery orientation.
BIOGRAPHICAL PROFILES

Clark Hull (1884–1952)
Clark Hull was born in Akron, New York, the son of an unschooled farmer. Hull missed much school himself as a child when duties on the farm assumed greater importance than “book learning.” He attended Alma College, intending to be an engineer, but having read James’ *Principles of Psychology*, he settled on the study of philosophy and psychology. In 1918, Hull completed the requirements of the Ph.D. at the University of Wisconsin, where he taught until 1929, when he moved to Yale, where he remained until his death.

Hull is perhaps the most significant contributor to the grand era of learning theory in America during the 1930s and 1940s. His particular theory involved a sophisticated mathematical system that took full advantage of the hypothetico-deductive method, generating more empirical research during the 1940s and 50s than all competing theories of learning combined. Hull’s theoretical system is presented in both *Principles of Behavior* (1943) and *A Behavior System* (1952). He was president of the American Psychological Association in 1936.

David McClelland (b. 1917)
David McClelland attended Wesleyan University and the University of Missouri before earning his Ph.D. at Yale in 1941. He returned to teach at Wesleyan, then Bryn Mawr, Harvard, and Boston University. McClelland’s research and theoretical work on human motivation, particularly regarding achievement and power, has influenced an entire generation of research psychologists. Additionally, his research, and that of his colleagues, has been applied to many social contexts, including industry and the study of problem drinking. McClelland has authored a number of books, including *The Achievement Motive* (1953).

Abraham Maslow (1908–1970)
Maslow received his Ph.D. at the University of Wisconsin in 1934, having studied under Harry Harlow. He taught at Wisconsin for a year, followed by appointments at Teacher’s College of Columbia University, Brooklyn College, and, finally, Brandeis University, where he spent most of his academic career. Maslow moved to Menlo Park, California, in 1969 as a resident fellow of the Laughlin Foundation.

Maslow is considered one of the foremost spokespeople of humanistic psychology, and was founder of the *Journal of Humanistic Psychology*. He is best known for his theory of motivation, and the concept of a hierarchy of needs, ranging from basic survival needs to the need for self-actualization. His influential works include *Toward a Psychology of Being* (1962) and *Religion, Values, and Peak Experiences* (1964). He served in 1968 as president of the American Psychological Association.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1929</td>
<td>The Great Depression in America began.</td>
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<tr>
<td>1938</td>
<td>Henry Murray postulated that many human behaviors are motivated by the “need to achieve,” an internal tendency to strive for success.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
</tr>
<tr>
<td>1943</td>
<td>Clark Hull, a psychologist at Yale, proposed that behavior is motivated primarily through drive reduction, through reinforcement that decreases biological tension within an organism.</td>
</tr>
<tr>
<td>1950-1953</td>
<td>The Korean War was fought.</td>
</tr>
<tr>
<td>1953</td>
<td>David McClelland developed the first research methods for studying achievement motivation.</td>
</tr>
<tr>
<td>1955</td>
<td>Physiologist Donald Hebb proposed that motivation to obtain or maintain an optimal level of arousal is the force that directs and organizes behavior.</td>
</tr>
<tr>
<td>1969</td>
<td>The first human moon landing occurred.</td>
</tr>
<tr>
<td>1970</td>
<td>Abraham Maslow proposed that all people are motivated by deficiency and growth needs to achieve their innate potential as human beings.</td>
</tr>
<tr>
<td>1974</td>
<td>Richard Solomon and J. D. Corbit published their opponent-process model of motivation, the notion that a strong emotional state stimulates organisms to seek the opposite emotional state.</td>
</tr>
</tbody>
</table>
SUGGESTIONS FOR FURTHER READINGS


Zimbardo, P. (1966). *The Cognitive Control of Motivation*. *Transactions of the New York Academy of Sciences*, 28(7), 902–921. Series of studies shows that both biological drives and emotional behavior are controlled by cognitive, psychological, and social variables. These data accord with predictions from cognitive dissonance theory. The experiments involve both behavioral and physiological responses to shock, cognitive control of conditioned eye blink, hypnosis, and thirst.

**DISCOVERING PSYCHOLOGY**

**PROGRAM 12: MOTIVATION AND EMOTION**

**Overview**
A review of what researchers are discovering about why we act and feel as we do, from the exhilaration of love to the agony of failure.

**Key Issues**
Maslow’s Hierarchy of Needs, biological motivation for sexual behavior, reproductive behavior
of rats and the physiological effects, physiological and psychological motivation for romantic love, the universality of emotions, and the effects of optimism and pessimism on physiology.

**Demonstrations**
Rat sexual behavior.

**Interviews**
Psychologist Norman Adler studies reproductive behavior and its physiological consequence in rats.

Martin Seligman studies the effects of optimism and pessimism on physiology and behavior.

Abraham Maslow examines the effects of the interplay between human nature and society on motivation.

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**FILMS AND VIDEOS**

**Fear of Fat (1987). CHUH, 26 minutes**
Five young women describe their eating disorders and how they overcame them. For centuries, plumpness was considered pretty, but in recent years society has focused on being thin. So much so that for some a simple diet may develop into an erratic, life-threatening pattern of behavior. An excellent, timely film, it accomplishes four goals:

1. Explains how societal pressures encourage eating disorders
2. Explains three eating disorders
3. Lists behaviors that aid in overcoming eating disorders
4. Explains the different body types.

**Motivation (1990). Insight Media, 30 minutes**
Provides examples of motivation, explaining thoughts, actions, and choices. Explores factors that influence motivation and demonstrates some behavioral extremes such as thrill seeking. Also includes Maslow’s hierarchy of needs.

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**CASE STUDY LECTURE LAUNCHER**

**“Mike, Let’s Do El Capitan!”**
Many climbers dream of scaling the majestic domed cliff that rises 3200 feet from California’s Yosemite Valley, but few succeed. Mark Wellman had more than the normal number of obstacles to overcome and number of reasons for not trying. In 1982, a fall from another Yosemite peak had paralyzed both his legs. However, seven years later, Mark announced that he would climb El Capitan.

For six months, 29-year old Mark strengthened the muscles of his upper body with daily weight training and many practice climbs, climbing only with his arms. Finally, he was ready to do what most others thought impossible. In July 1989, Mark looked up the sheer rock face at its handholds on the arduous ascent. Mark grabbed the first rope and pulled himself up, six inches at a time. He grasped the next rope, another six inches closer to his goal. For a week, Mike placed ropes and
Mark did pull-ups, hundreds a day, six inches at a time.

On some afternoons, the temperature topped 100°F. The heat, however, was never as bad as the wind, which gusted fiercely between 11 A.M. and 8 P.M. everyday. At times, the wind pushed them out from the cliff face, but they persevered. On the eighth night of their adventure, Mark and Mike tied themselves into their sleeping bags and bivouacked on a narrow ledge. The next morning they would begin their final ascent: 300 feet for Mike, 600 pull-ups for Mark. After a total of more than 7,000 pull-ups, Mark’s body ached. Nevertheless, the next day pain gave way to euphoria as Mark pulled himself up the last six inches to the top of El Capitan. He had achieved what some thought impossible.

What motivates someone to try what others deem impossible? Having already become paralyzed from one fall, why did he choose to risk another? What distinguishes him from those of us who, with all limbs functioning, can barely roll out of bed in the morning to hit the snooze button on the alarm clock? What about Mark’s friend, Mike? What made him take on the major responsibility of helping Mark? Centuries ago, the gallant Sir Walter Raleigh, in the company of Queen Elizabeth, wrote on a fogged windowpane, “Fain would I climb, yet fear I to fall.” The Queen responded, “If thy heart fails thee, climb not at all.”
CHAPTER 13
Emotion, Stress, and Health

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Define emotion in terms of its psychological, physiological, and cultural constraints
2. Explain Darwin’s perspective of the adaptive function of emotional response
3. Discuss the universality of emotional response relative to cultural constraints
4. Discuss the physiological aspects of emotion
5. Explain the impact of emotion on cognitive functioning
6. Describe the physiological responses to both acute and chronic stress
7. Define and describe the field of psychoneuroimmunology
8. Describe the biopsychosocial model of health and the field of health psychology
9. Identify relationships between personality type and health

CHAPTER OUTLINE
I. Emotions
   A. Basic Emotions and Culture
      1. Are Some Emotional Responses Innate?
         a) Tompkins observed that infants respond with immediate, unlearned affective reactions to certain stimuli, such as loud sounds
         b) Research confirms that some emotional responses are universal
         c) Emotional responses are less well differentiated in infants than in older individuals
      2. Are Emotional Expressions Universal?
         a) Ekman posits that all people share an overlap in facial language
         b) Seven facial expressions are recognized and produced cross-culturally in response to the emotions of happiness, surprise, anger, disgust, fear, sadness, and contempt
         c) Ekman used a neuro-cultural position to reflect the joint contributions of the brain and culture in emotional expression
      3. How does Culture Constrain Emotional Expression?
         a) Different cultures have varying standards for management of emotion
         b) Cultures establish social rules or norms regarding when and where certain emotions should be displayed
B. Theories of Emotion

1. Theories of emotion attempt to explain the relationship between physiological and psychological aspects of the experience of emotion

2. The physiology of emotion refers to those responses that are designed to mobilize the body for action to deal with the source of the emotion
   a) The autonomic nervous system (ANS) prepares the body for emotional responses through action of the sympathetic and parasympathetic nervous systems
      (i) The sympathetic nervous system is more active when stimuli are mild and unpleasant
      (ii) The parasympathetic nervous system is more active when stimuli are mild and pleasant
   b) Strong emotions such as fear or anger activate the body’s emergency reaction system, which prepares the body for potential danger
   c) Integration of hormonal and neural aspects of arousal is controlled by the hypothalamus and the limbic system
      (i) The amygdala (part of the limbic system) serves as a gateway for emotion and a filter for memory
      (ii) The hypothalamus, located in the cortex, is involved as a switching station, with its connections to other parts of the body

3. James-Lange Theory of Body Reaction
   a) Holds that emotion stems from bodily feedback, in which the perception of stimulus causes autonomic arousal and other bodily actions that lead to the experience of an emotion
   b) Considered a peripheralist theory, it assigns the most prominent role in the chain of emotional response to visceral reactions of the ANS

4. Cannon-Bard Theory of Central Neural Processes
   a) Takes a centralist focus on the actions of the central nervous system (CNS)
   b) Four objections to James-Lange Theory:
      (i) Visceral activity is irrelevant for emotional experience
      (ii) Visceral responses are similar across different arousal situations, e.g., love making and fear
      (iii) Many emotions are not distinguishable from others simply by their physiological components
      (iv) ANS responses are too slow to be the source of emotions elicited in a split-second
   c) Cannon-Bard proposed that emotion requires the brain to intercede between input of stimulus and output of response
   d) Proposed that emotion-arousing stimuli have simultaneous effects, causing both bodily arousal and the subjective experience of emotion (via the cortex)
5. Cognitive Appraisal Theories of Emotion
   a) Schachter proposed emotion to be the joint effect of physiological arousal and cognitive appraisal, with both necessary for emotion to occur.
   b) Lazarus maintains that “emotional experience cannot be understood solely in terms of what happens in the person or in the brain, but grows out of ongoing transactions with the environment that are evaluated.”
   c) Challenges to Lazarus-Schachter
      (i) Awareness of physiological arousal is not a necessary condition
      (ii) Experiencing strong arousal without obvious cause does not lead to a neutral, undifferentiated state
      (iii) Zajonc demonstrates possibility of having preferences without inferences, and to feel without knowing why— the mere exposure effect
   d) Safest conclusion is that cognitive appraisal is an important, but not the only, aspect of emotional experience.

C. Functions of Emotion

1. Motivation and Arousal
   a) Emotions serve a motivational function by arousing the individual to take action with regard to an experienced or imagined event
   b) Emotions direct and sustain behaviors toward specific goals
   c) Emotions provide feedback by amplifying or intensifying selected life experiences, by signaling that a response is significant or has self-relevance
   d) Emotions give an awareness of inner conflicts
   e) Yerkes-Dodson law: Performance of difficult tasks decreases, as arousal increases, whereas performance of easy tasks increases as arousal increases
      (i) Relationship between arousal and performance has a U-shaped function, predicting that too little or too much arousal impairs performance
      (ii) Explores possibility that optimal arousal level produces peak performance
      (iii) Key to level of arousal is task difficulty

2. Social Functions of Emotion
   a) Emotions serve the function of regulating social interactions
      (i) Stimulation of prosocial behaviors
      (ii) Aid in social communication

3. Emotional Effects on Cognitive Functioning
   a) Mood-congruent processing: Material congruent with one’s prevailing mood is more likely to be attended to, noticed, and processed at a deeper level than noncongruent material
II. Stress of Living

A. Definitions

1. Stress is the pattern of responses an organism makes to stimulus events that disturb its equilibrium and tax or exceed its ability to cope

2. Stressor refers to a stimulus event that places a demand on an organism for some kind of adaptive response

B. Physiological Stress Reactions

1. Acute stress refers to transient states of arousal, with typically clear onset and offset patterns

2. Chronic stress refers to a state of enduring arousal, continuing over time, in which demands placed on the organism are perceived by the organism as being greater than the inner and outer resources available for dealing with them

3. Emergency Reactions to Acute Threats

   a) Cannon first described the fight-or-flight response, a sequence of internal activity that prepare the body to either defend itself or to run away when faced with danger

   b) Physiology of the stress response:

      (i) Hypothalamus referred to as the stress center due to its dual functions in emergencies:

         (a) Control of autonomic nervous system

         (b) Activation of the pituitary gland

      (ii) ANS regulates activities of organs

         (a) The adrenal medulla to release epinephrine and norepinephrine

         (b) The pituitary to secrete thyrotrophic hormone (TTH) (stimulating the thyroid) and adrenocorticotropic hormone (ACTH) (stimulating the adrenal cortex)

4. The General Adaptation Syndrome (GAS) and Chronic Stress

   a) Selye described the GAS as including three stages:

      (i) Alarm reaction

      (ii) Stage of resistance

      (iii) Stage of exhaustion

   b) Process is successful at restoration of body’s balance only when stressor is short-lived or acute

   c) Chronic stress compromises integrity of the immune system

   d) Application of GAS has been valuable in explaining psychosomatic disorders
C. Psychological Stress Reactions

1. Major Life Events
   a) Major changes in the life situation are the root cause of stress for many individuals
      i) The Social Readjustment Rating scale (SRRS) rates degree of adjustment required by life changes, both pleasant and unpleasant, is measured in total number of life-change units
      ii) The life experience survey (LES) measures effects of life events in a different manner than the SRRS
         a) Provides scores for both increases and decreases
         b) Scores reflect individual appraisals of events
   iii) Considerations for interpreting measurements of stressful life events include:
       a) Tendency for studies to be retrospective, thus dependent on recall
       b) Prospective studies finding significant correlations between development of medical problems and earlier accumulation of life stress units

2. Catastrophic and Traumatic Events
   a) Catastrophic events are particularly stressful due to uncontrollability, unpredictability, and ambiguity
   b) Posttraumatic stress disorder (PTSD)
      i) Delayed reaction to stress, that occurs repeatedly
         a) Emotional numbing to daily events
         b) Feelings of alienation from others
         c) Emotional pain
         d) Sleep disorders
         e) Survivor guilt
         f) Concentration problems
         g) Exaggerated startle response
      ii) Clinical manifestations of PTSD are described as conditioned responses, learned in the context of a life-threatening stimulus situation
      iii) Responses can persist, becoming a chronic syndrome known as the residual stress pattern

3. Chronic Stressors
   a) Chronic stressors endure over time. Such as:
      i) Overpopulation and crime
      ii) Health crisis such as cancer and AIDS
      iii) Threat of nuclear war
   b) Some population groups experience chronic stress as a function of their SES or racial/ethnic identity
4. Daily Hassles
   a) Daily hassles are recurring day-to-day stressors that confront most people much of the time
   b) Relationship between hassles and health problems indicates that the more frequent and intense the hassles, the poorer the health of the individual, both physically and mentally
   c) Stressors that occur on a daily basis may have a negative impact on cognitive functioning, including memory impairment

D. Coping with Stress

1. Coping is the process of dealing with internal or external demands that are perceived as straining or exceeding an individual’s resources
2. Coping may consist of behavioral, emotional, or motivational responses and thoughts
3. Appraisal of stress
   a) Cognitive appraisal plays a central role in defining the situation, refers to the cognitive interpretation and evaluation of a stressor
   b) Lazarus distinguished two phases in cognitive appraisal
      i) Primary appraisal is used for initial evaluation of the seriousness of a demand
      ii) Secondary appraisal begins the process of deciding that something must be done
   c) Stress moderator variables are those variables that change the impact of a stressor on a given type of stress reaction
4. Types of Coping Responses
   a) Anticipatory coping precedes a potentially stressful event
   b) Two main methods of coping
      i) Problem-directed coping, attempts to change the stressor or one’s relationship to it through direct actions and/or problem-solving activities; most often used for controllable stressors
      ii) Emotion-focused coping, changing the self through activities that make one feel better, but do not change the stressor; most often used for uncontrollable stressors
5. Modifying cognitive strategies are adaptive methods of changing one’s evaluations of stressors and self-defeating cognitions about addressing them; two methods of mentally coping with stress are:
   a) Reappraisal of the nature of the stressors
   b) Restructuring of one’s cognitions about one’s stress reactions
   c) Meichenbaum proposed a three-phase process that allows for stress inoculation
      i) Phase 1: Individuals work to develop greater awareness of their actual behavior — what instigates it and what the results are
(ii) Phase 2: Identification of new behaviors that negate the maladaptive, self-defeating behaviors of the past

(iii) Phase 3: Once engaged in adaptive behaviors, appraisal of consequences of new behaviors from a positive perspective

d) Perceived control is a main theme of coping, the feeling that one has the ability to make a difference in the outcome of an event or experience

6. Social Support as a Coping Resource

a) Social support refers to the resources others provide, giving the message that one is loved, cared for, esteemed, and connected to others in a network of communication and mutual obligation

b) Other forms of support include:

(i) Tangible support: money, transportation, housing

(ii) Informational support: advice, personal feedback, and information

c) Positive effects of social support can improve recovery from diagnosed illness and reduce risk of death from disease

III. Health Psychology

A. Definitions

1. Health psychology is the branch of psychology devoted to understanding the way people stay healthy, the reasons they become ill, and the way they respond when they do become ill.

2. Health refers to the general condition of the body and mind in terms of soundness and vigor.

B. The Biopsychosocial Model of Health

1. Traditional health practices employ practices that enhance the quality of life

a) Hozho, a Navajo concept, sees illness as the outcome of disharmony, with traditional healing ceremonies that seek to banish illness and restore health through efforts of the shaman and the combined efforts of the family members, working with the ill person to reach a state of harmony

b) Among the Nyukusa peoples of Africa, any sign of disharmony or deviation from expected norms generates swift communal intervention to rectify the situation

c) Western view of medicine typically involves solely a biological or pharmacological intervention

2. Toward a Biopsychosocial Model

a) In contrast to non-Western cultures, which often assumed a link between body and mind, the traditional Western biomedical model is dualistic, medically treating the body separately from the psyche

b) The biopsychosocial model links physical health to state of mind and environment. It has three components:

(i) Bio acknowledges the reality of biological illness
(ii) *Psycho* and *social* acknowledge the psychological and social components of health

c) Concept of *wellness* incorporates physical, intellectual, emotional, spiritual, social, and environmental aspects of your life

d) *Health behavior* refers to the undertaking of an activity for purposes of preventing disease or detecting it while still asymptomatic

### C. Health Promotion

1. *Health promotion* means development of general strategies and specific tactics to eliminate or reduce the risk of getting sick

2. Smoking
   
   a) Smoking may be initiated as a sensation-seeking mode
   
   b) Readiness to quit smoking entails five stages:
      
      (i) *Precontemplation*, not yet thinking about quitting
      
      (ii) *Contemplation*, thinking about quitting but no behavioral changes
      
      (iii) *Preparation*, getting ready to quit
      
      (iv) *Action*, taking of action by establishing behavior goals
      
      (v) *Maintenance*, now a nonsmoker, individual tries to remain so

3. AIDS (Acquired Immune Deficiency Syndrome)
   
   a) The causal agent is HIV (Human Immunodeficiency Virus)
      
      (i) Infectious agent is not airborne
      
      (ii) Requires direct access to the bloodstream to produce infection
   
   b) The virus is passed from one person to another in one of two ways:
      
      (i) The exchange of semen or blood during sexual contact
      
      (ii) The sharing of intravenous needles and syringes used for injection of intravenous drugs
   
   c) Who is at risk for AIDS?
      
      (i) Everyone!
      
      (ii) According to Centers for Diseases Control and Prevention, 35,000 individuals—1 in every 500 college students—are HIV positive
   
   d) Coates’ multidisciplinary team approach uses psychological principles to prevent spread of AIDS
   
   e) Successful interventions require three components
      
      (i) *Information*: Provide knowledge about transmission and how to prevent transmission
      
      (ii) *Motivation*: People must be motivated to practice prevention
      
      (iii) *Behavioral skills*: People must be taught how to put knowledge to effective use

### D. Treatment

1. Treatment focuses on helping individuals adjust to illnesses and recover from them
2. Three aspects of treatment
   a) Patient Adherence
      (i) Treatment regimens are often not followed, a serious problem in health care
      (ii) Health-care professionals can improve patient adherence to treatment regimen through:
         (a) Improving trust in efficacy of treatment as outweighing treatment costs
         (b) Communicating clearly, being courteous, and conveying a sense of caring and support
         (c) Health practitioners must recognize the role of cultural and social norms in treatment, involving family and friends when appropriate
   b) Harnessing the mind to heal the body
      (i) Psychological strategies can improve physical well-being
      (ii) Relaxation response decreases muscle tension, cortical activity, heart rate, and respiration rate
      (iii) Biofeedback is a self-regulatory technique used for control of blood pressure, relaxation of forehead muscles, and (even!) extreme blushing
   c) Psychological Impact on Health Outcomes
      (i) Psychological factors influence serious illness
      (ii) Social support and emotional disclosure can positively influence the course of diseases such as cancer

E. Job Burnout and the Health-Care System
   1. Job burnout is a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment
      a) Often experienced by workers in the health care system
      b) Increasing today due to corporate downsizing

F. A Toast to Your Health
   1. Set goals and restructure life so as to forge a healthy foundation
   2. Nine steps to better health:
      a) Give yourself and others only constructive criticism
      b) Compare your reactions, thoughts, and feelings to those of other individuals in your life who are in a comparable situation
      c) Share feelings, joys, and worries with social support network
      d) Develop a sense of balanced time perspective
      e) Take credit for your successes and happiness
      f) When feeling you are losing control over emotions, distance yourself from situation to gain perspective
      g) Learn from your failures
      h) If you are unable to help either yourself or another individual in distress, seek the counsel of a trained specialist
i) Cultivate healthy pleasures and past times
DISCUSSION QUESTIONS

1. Motivation and emotion are constructs that have much in common, though each has significant aspects that distinguish it from the other. Discuss with the class what seems to be the primary difference between the two concepts? Why is it significant?

2. Have the class think of times when they felt strongly motivated but not “emotional.” Is it also possible to feel strong emotion, without simultaneously feeling motivated to act in some way on those feelings? If either case is possible, is something “missing” when motivation lacks emotion? What is missing, and does it matter?

3. Think about emotion in an evolutionary sense. What functions does it serve? What functions has it served in the past? Is emotion still a necessary phenomenon for us, living as we do, in our locked homes and automobiles?

4. Living with stress on a long-term basis is a part of the lives of many people, and that stress can be acute (Honey, I just wrecked the car!) or chronic (if one more fool cuts in front of me on the freeway ...). Consider the physiological and psychological impacts of having severe, chronic respiratory allergies; what issues would this bring to mind in terms of coping and attempting to live an unencumbered lifestyle?

5. Discuss coping styles in terms of Type A, Type B, and Type C personalities. Which personality type is most likely to use which coping style? Have students determine why a particular personality type responds with a given coping style.

6. Discuss learned helplessness from the perspective of controllable versus uncontrollable stressors.

7. Can students give any examples of how one person’s eustress might be another person’s distress? (What about the obvious examples of watching horror movies, riding on roller coasters, being in certain occupations, or even studying for a final exam?)

8. Have the class name some ways in which they could reduce the stress in their lives. As they listen to others name their stress-reducing strategies, do they (or do you) hear any that could reduce yours? Do you also hear some ideas that would only make your stress worse?
SUPPLEMENTAL LECTURE MATERIAL

Theories of Emotion

Emotion, as a concept, seems to imply that a person is “changed” or “moved” from one state to another, as from happy to sad or angry. Emotion consists of several components. They are:

1. The affective component is observed in the reaction of the body. Reactions may take the form of sweating, trembling, and turning white. This component is a function of the activity of the autonomic nervous system, preparing your body for action, if action becomes necessary.

2. The cognitive component consists of the thoughts and beliefs that accompany any given emotion. This component provides a label for what your body is expressing.

3. The facial expression is the look on your face.

4. The reactions to the emotion, such as running from a menacing bear.

These varied components imply that emotion is a multifaceted construct. There are three dominant traditions or perspectives from which to study emotion. They are, in order of historical appearance: biological, learning, and cognitive.

**Biological/Psychophysical Tradition**

This approach is based on Darwin’s theory of evolution, and proposes that the ways in which organisms express emotion have had survival value in the past. This would imply that dogs snarl when they feel threatened because snarling itself has been interpreted by other dogs and animals as threatening behavior. Snarling helped drive off threats and avoid fights. As Darwin proposed, this form of emotional response has (or had) survival value.

**Learning Tradition**

This approach is a drive theory perspective. Kenneth Spence divided the study of emotion into motivational events, and proposed two categories of events. They are:

- **Appetitive states**, such as hunger and thirst, involve situations that lead to approach behavior
- **Aversive states** involve situations that lead the organism to withdraw or flee the situation. Pain is the most well known aversive stimuli, and the most frequently studied.

Spence argued that the drive that activates aversive states was a result of the development of an internal, emotional response in the organism, that the organism’s emotionality was aroused by an aversive stimulus (pain, fear, and electric shock). Spence’s basic premise was that organisms learn from experience which situations have aversive potential, and then strive to avoid those situations.

**Cognitive Tradition**

This approach stresses the importance of cognitive appraisal of a situation. Richard Lazarus felt that bodily (affective) changes were not sufficient for the experience of a true emotional feeling, that we must assess a situation as emotion producing before we can experience emotion. The first model to posit this idea was that proposed by the Lazarus–Schachter theory of appraisal.

We now have a foundation for the study of emotion, so let us discuss theories that have been popular at different times throughout the years.
The James–Lange Theory
James and Lange proposed that feelings of emotion did not occur immediately after the perception of an event in the environment, but because of our bodily responses to the event or object. In a diagram form, the chain of events looks like this:

| PERCEPTION | ⇒ | BODILY CHANGES | ⇒ | EMOTION | ⇒ | BEHAVIOR |

As an example of how this might look in real life, imagine meeting an angry bear in the woods:

| SNARLING BEAR | ⇒ | INCREASED HEART RATE, BP & RESPIRATION | ⇒ | FEAR! | ⇒ | FIGHT OR FLIGHT! |

James and Lange felt that the perception of a stimulus, such as a snarling bear, led to changes in the body. These changes are then fed back to the brain, indicating a “changed state” and prompting a change in the subjective experience of emotion. James and Lange felt that the perception of changes in bodily sensations led to emotional experience. James and Lange would argue that you do not run because you are afraid of the bear, but rather you are afraid because you run.

The Cannon–Bard Theory
The James–Lange model of emotional response was popular for quite some time, until W. B. Cannon came along about 1930 and criticized the James–Lange model on different grounds:

1. Cannon felt that bodily changes that were supposed to provide feedback to the brain and thus provide “emotional quality” to experiences could be eliminated without disturbing the emotions. He proceeded to denervate cats so that no bodily change could occur. The cats still displayed “normal” emotion (fear) in the presence of a barking dog.
2. Cannon noted that bodily changes that occur during varied emotional states are nearly the same, regardless of the emotion felt. For example, in both fear and anger, heart rate and blood pressure increase, eyes dilate, and hair stands erect. Similar changes are observed in response to extreme heat or cold.
3. Cannon felt that changes occurring in the body, changes in the autonomic nervous system, were too slow to provide the experience of emotion.
4. Cannon felt that if the James–Lange theory were correct, then exercise, which increases heart rate and leads to other bodily changes, should produce an emotional response.

Cannon believed emotion to be associated with activation of the sympathetic nervous system, which, among other functions, prepares an organism for fight or flight by increasing heart rate, blood pressure, and other bodily functions. Cannon argued that control of emotion was based in the thalamus, which receives information from various senses and that emotional response patterns were activated by the thalamus when external sensory information was received, via activation of the sympathetic nervous system. He felt emotion occurred at the same time as activation of the body. His model looks like this:

| PERCEPTION | ⇒ | BODILY CHANGES & EMOTION | ⇒ | BEHAVIOR |

As an example of how this might look in real life, imagine meeting an angry bear in the woods:

| SNARLING BEAR | ⇒ | INCREASE HEART RATE & FEAR | ⇒ | FIGHT OR FLIGHT! |

The Schachter—Singer Theory
The Cognitive–Physiological Theory of Emotion, proposed by Schachter and Singer, suggests that emotional experience involves both cognitive attributions and physiological arousal. This theory assumes that both
physiological arousal and a cognitive label are necessary for the full experience of emotion. If either component is missing, the subjective state experienced would be incomplete. In some ways, this model combines and modifies the James–Lange and Cannon–Bard theories. Like James and Lange, this theory proposed that bodily changes are a part of the emotional experience, and, like Cannon and Bard, it posits that interpretation of the event is important for full experience. However, this model goes beyond previous theories in the position that both physiological and cognitive labeling are required for the full experience of emotion. This theory has been quite popular since its introduction in 1963. Support for the theory, however, has been modest; it has been criticized on both methodological and empirical grounds. Attempts to replicate Schachter’s work have been unsuccessful. In diagram form, this theory would look like this:

<table>
<thead>
<tr>
<th>PERCEPTION</th>
<th>⇒</th>
<th>BODILY CHANGES &amp;</th>
<th>⇒</th>
<th>EMOTION</th>
<th>⇒</th>
<th>BEHAVIOR</th>
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<tbody>
<tr>
<td>COGNITIVE LABEL</td>
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</table>

As an example of how this might look in real life, imagine meeting an angry bear in the woods:

<table>
<thead>
<tr>
<th>SNARLING BEAR</th>
<th>⇒</th>
<th>INCREASED HEART RATE,</th>
<th>⇒</th>
<th>FEAR!</th>
<th>⇒</th>
<th>FIGHT OR FLIGHT!</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETC. &amp; COGNITIVE APPRAISAL</td>
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Since this model first appeared, some psychologists have suggested that the cognitive component alone may be both a necessary and sufficient component for the generation of emotion.

**The Survival Value of Emotions**

Plutchik, a psychologist who has done a great deal of research on emotion, says, “The organic tradition reminds people of their biological connection to each other, and the survival value of emotions such as guilt, shame, pity, remorse, gratitude, and empathy.” One could claim the emotions have survival value because they have survived in the evolutionary process. However, social, political, and economic changes among humans occur much more rapidly than evolutionary changes, and characteristics that were once adaptive may cease to be adaptive as the environment changes.

The emotions that Plutchik mentions are related to altruism and cooperation. An individual with these emotions may be at a disadvantage in competition with an individual who does not have these emotions and is selfish and without conscience, as ordinary people are often the victims of people with antisocial personalities. However, if all the members of a group or species were lacking in altruistic emotions, they would find it difficult to form a cooperative society and might destroy each other.

**Stress: Causes and Coping**

Stress refers to the reaction of an individual to disturbing events in their environment. Our reaction to stress is fundamentally physiological, with any or all of the following manifestations:

- A heightened state of awareness
- A dry mouth
- Increased heart rate
- Shaky hands
- Increased perspiration

One thing that makes stress difficult to define, explain, diagnose, and treat is that stress is a subjective state. What stresses you may not stress other people. Negative or unpleasant events are more likely to be perceived as stressful than positive events, although positive events such as childbirth can also be stressful. Negative events cause more psychological distress and produce more physiological symptoms than do positive events. Uncontrollable or unpredictable events are more stressful than those that are controllable or predictable. Unpredictable events may be more stressful, because there is no opportunity to prepare for coping with them. Ambiguous events are more stressful than are clear-cut events, whether the events are good or bad. Ambiguous events can leave you stuck in a problem-solving stage in which you attempt to understand what caused the event and its meaning.
Stress is a potential causal factor in illness, in that it can open the door for both physical and psychological problems. Some of the earlier work in this area looked at the role played in illness by Major Stressful Life Events (MSLE). This research showed the impact of MSLEs using a questionnaire entitled the Social Readjustment Rating Scale (SRRS). Each item on the scale has been given a certain number of points, with higher numbers corresponding to more stressful events. Once a respondent has completed the scale, the points for each item are totaled. The higher the score on the scale, the higher the stress level.

In addition to large stressful events, psychologists have recently come to believe that daily hassles may have a larger detrimental impact on us than previously thought. Research suggests that these chronic stressors are more predictive of physical and psychological illness than are the more acute stressors found on the SRRS.

COPING WITH STRESSFUL EVENTS

According to Lazarus, coping is the process of attempting to manage demands that are viewed as taxing or exceeding one's resources. It is the process of trying to manage and master stressful events. Researchers distinguish between two types of coping that can occur simultaneously:

- Problem-Solving Efforts, which are attempts to do something constructive to change the stressful circumstances
- Emotion-Focused coping, which involves efforts to regulate the emotional reactions to stressful events.

What constitutes successful coping? Researchers in this area differ in the criteria by which they measure successful coping. However, we can say that coping efforts are deemed successful if they:

- Reduce physiological arousal and its indicators such as heart rate
- Permit a quick return to previous life patterns
- Reduce psychological distress, such as anxiety and depression

COPING STYLES

Coping style is an internal coping resource, consisting of a general tendency for a person to deal with a stressful event in a particular way. Examples of coping styles include:

Avoidance versus Confrontation

Some people meet events head-on, tackling problems directly. Others attempt to minimize the significance or withdraw from such events, often through alcohol and drugs. Avoiders may not be able to deal with the possibility of future threats and may fail in their attempts at making efforts to anticipate and manage subsequent problems. On the other hand, confronters may deal effectively with long-term threats, although in the short-run they may be more anxious as they deal directly with the stressor.

Type A Behavior

There are coping styles that successfully deal with stress, but that also have an adverse impact on health. One of them, Type A Behavior, has been associated with heart disease for several years. The Type A individual was first identified in 1978 and is characterized by aggression, competition, achievement, time urgency, and hostility. Type A individuals lead fast-track lives. Many of your students are probably junior Type A’s. They work long hours, are impatient with what they perceive as slow behavior in others, and often finish other people’s sentences for them. The Type A behavior syndrome is important because it has been reliably related to the development of coronary artery disease, as a function of excessive physiological arousal in response to stressful events. Recently, researchers have identified the hostility component of Type A behavior as more damaging than time urgency or competitiveness to the circulatory system.
SOCIAL SUPPORT FOR STRESS

Socially supportive relationships may mitigate the effects of stress by helping people cope with and resolve problems. Social relationships promote health. Social support is an interpersonal exchange in which one person gives help to another. It may be provided in numerous ways, including:

- Emotional concern, as expressed through liking, love, sympathy, and empathy
- Instrumental aid through the provision of goods or services during someone’s time of need
- Providing information about a stressful situation, perhaps a similar one experienced by them
- Reassurance by others that you are acting in a reasonable, responsible manner

We have a great deal of data to indicate that social support during times of stress can effectively reduce psychological distress. People who had families who stayed in the Middle East with them during the Gulf War did much better psychologically than those who had no family there and those whose families returned to their native country. Social support also seems both to decrease the likelihood of physical illness and to speed recovery. Research has been attempting to identify precisely how social support mitigates stress and has arrived at two hypotheses:

- The Direct Effects Hypothesis suggests that social support is always beneficial, during both stressful and nonstressful times.
- The Buffering Hypothesis suggests that the physical and mental health benefits of social support occur mainly during periods of high stress and not during periods of low stress.

Extensive research suggests that both hypotheses are at least partially correct.

STRESS MANAGEMENT

Some of us have a tough time managing and coping with stress on our own. In such cases, stress management programs are helpful. As an example, college can be an appallingly stressful experience for students. Being away from home, living with strangers, sharing living space, taking demanding courses, and increased competition for grades can be very stressful. Many colleges offer programs to help students adjust to and cope with the stresses of university life by teaching them stress management techniques. One important lesson of these courses is that stress is subjective and self-reinforcing. The more stressful you perceive an event to be, the more stressful it will become. These programs also teach students to recognize and record things that stress them out and to write down their reactions to these events. Sharing experiences and learning relaxation techniques are also useful components of many courses. The goal of these courses is not to eliminate stress, but rather to recognize its causes, to cope with them effectively, and to keep stress to a manageable level.

Gender Differences in Expressed Emotion

You might discuss with your class gender differences in the expression of emotion. In our culture, men have traditionally been taught to “bottle-up” their emotions and “tough things out.” To be seen as “strong” for males often has meant not allowing themselves to cry or show any sign of emotional “weakness.” Even today, many males are embarrassed to cry in public, no matter how justified they may be in expressing sadness. On the other hand, the one emotion that males in our culture have been allowed to express is anger. In certain situations, expressions of anger and aggression are seen as “macho” whereas passive failure to express anger or be aggressive is seen as a sign of weakness. What impact do these social norms and expectations have on young boys growing up? Does this contribute to the higher rates of violent crime among males? Does it contribute to males’ higher rates of heart disease and certain types of stress-related illnesses? What could be done to make it easier for males to express emotions of sadness and not feel pressured to be aggressive, and still feel like healthy males?

On the other hand, females are often socialized to express a wide range of emotions, including sadness, and are not usually chastised for crying in public. We have traditionally encouraged females to “get in touch with” their feelings and express them. But females have much higher rates of reported depression than
males. How much of that may be due to excess rumination about feelings of sadness based on “getting in touch” with those feelings? Also, females have historically been chastised for openly expressing anger in public, as it was not considered “ladylike.” But society put females in a somewhat impossible situation, by encouraging them to cry and express sadness, but not show anger, and then labeling them as “weak” when they did. Other than increased risk of depression (mentioned above), in what ways have these social norms and expectations affected females?

**BIOGRAPHICAL PROFILES**

**Hans Hugo Selye (1907–1982)**

Hans Selye was known as “Dr. Stress” by press and colleagues alike, a name he rightly earned after more than 42 years of conducting research on the effects of stress on humans. Born in Vienna in 1907, Selye was first exposed to medical science through his father, a military surgeon in the Austro-Hungarian army. He received his early formal education from the Benedictines and later attended medical school at the German University of Prague, where he specialized in endocrinology. Even in his early years in medical school, he was struck by the fact that the patients he encountered in the hospital exhibited an overall syndrome of “just being sick” that was more than the mere sum of the specific symptoms of their disease. This observation led him in later years to study the body’s reaction to environmental stimuli, a process he called stress, and to which he attributed aging and, in many cases, illness.

Selye joined the faculty of the Institute of Experimental Medicine and Surgery at the University of Montreal in 1932 and later founded the International Institute of Stress there. He wrote more than 30 books but is best known for *Stress Without Distress*, which has been printed in over a dozen languages.

Selye’s general prescription for the individual living in modern society is that “the secret is not to avoid stress but to ‘do your own thing.’ Do what you like and what you were made to do at your own rate.... Earn thy neighbor’s love. Be a hoarder of good will to make your environment less stressful.” If this advice sounds like a combination of biblical saying and medical advice, it is nevertheless typical of Selye’s highly personal and humanistic style. His own philosophy is what he termed “altruistic selfishness.” He claimed that in acting in a helpful manner toward others that one is really helping him- or herself by creating a less stressful environment.
## TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1920</td>
<td>Physiologist Walter Cannon confirmed that the stress response is part of a unified mind-body system.</td>
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<tr>
<td>1929</td>
<td>The Great Depression began in America.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<tr>
<td>1956</td>
<td>Hans Selye published his theory of chronic stress, known today as the General Adaptation Syndrome.</td>
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<tr>
<td>1960's</td>
<td>Neal Miller found that rats can modify their heart rates if given pleasure through brain stimulation when their heart rate increases or decreases.</td>
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<tr>
<td>1963</td>
<td>President John F. Kennedy was assassinated.</td>
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<td>1967</td>
<td>Holmes and Rahe published the Social Readjustment Rating Scale.</td>
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<tr>
<td>1968</td>
<td>Kenneth Cooper extolled the virtues of aerobic exercising, spawning the fitness movement.</td>
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<tr>
<td>1969</td>
<td>The first human moon landing occurred.</td>
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<tr>
<td>1974</td>
<td>Friedman, Meyer, and Rosenhan published <em>Type A Behavior and Your Heart</em>.</td>
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<tr>
<td>1975</td>
<td>Herbert Benson popularized the notion of the relaxation response and its role in dealing successfully with stress.</td>
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<tr>
<td>1980</td>
<td>Ronald Reagan was elected President.</td>
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<tr>
<td>1980's</td>
<td>Psychoneuroimmunology emerged as a discipline as researchers explored the relationship between psychological processes, the nervous system, endocrine system, and the immune system.</td>
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</tbody>
</table>
**SUGGESTIONS FOR FURTHER READINGS**


**DISCOVERING PSYCHOLOGY**

**PROGRAM 12: MOTIVATION AND EMOTION**

**Overview**
A review of what researchers are discovering about why we act and feel as we do, from the exhilaration of love to the agony of failure.

**Key Issues**
Maslow’s Hierarchy of Needs, biological motivation for sexual behavior, reproductive behavior of rats and the physiological effects, physiological and psychological motivation for romantic love, the universality of emotions, and the effects of optimism and pessimism on physiology.

**Demonstrations**
Rat sexual behavior.

**Interviews**
Psychologist Norman Adler studies reproductive behavior and its physiological consequence in rats.
Martin Seligman studies the effects of optimism and pessimism on physiology and behavior.
Abraham Maslow examines the effects of the interplay between human nature and society on motivation.

**PROGRAM 23: HEALTH, MIND, AND BEHAVIOR**

**Overview**
How research is forcing a profound rethinking of the relationship between mind and body. A new biopsychosocial model is replacing the traditional biomedical model.

**Key Issues**
How psychological factors affect the physical health and immune systems of the aged, how psychological factors affect the outcome of in-vitro fertilization, the psychology of biofeedback, the sources and consequences of stress, behavioral modification and AIDS, and the General Adaptation Syndrome.

**Demonstrations**
Philip Zimbardo demonstrates the process of biofeedback by consciously lowering his pulse rate through relaxation and concentration.
The three stages of Selye’s General Adaptation Syndrome theory.
Anti-drinking Public Service Announcement.

**Interviews**
Judith Rodin explains how an increased sense of control and empowerment can have positive effects on the physiology of the aged. Rodin also discusses how the stress of in-vitro fertilization procedure may account for its 80% failure rate.

Neal Miller discusses how individuals can change the functioning of their own internal organs through biofeedback.

Thomas Coates discusses how the combination of medical and psychological research can improve the understanding of the AIDS virus.

Canadian physician Hans Selye studies how stress can affect physical functioning.

**FILMS AND VIDEOS**

City Spaces, Human Places (1985). PBS (WBGH), 58 minutes
If you are planning a lecture on environmental psychology, this videotape provides a humorous view of the urban environment and how people make use of a city. A NOVA presentation.

Health, Stress, and Coping (1990). Insight Media, 30 minutes
Explores a variety of stressors including daily stress, loss of a love relationship, and posttraumatic stress disorder. Includes information on Norman Cousins and the work of Hans Selye.

Learning to Live with Stress: Programming the Body for Health (1976). DOCA, 20 minutes
Doctors Hans Selye and Herbert Benson discuss the study of stress and its effects on the human brain and body. Describes how stress contributes to psychosomatic illnesses, such as heart problems, hypertension, high blood pressure, and ulcers.
LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Describe the constructs of personality and self
2. Identify the various sources of data on personality
3. Differentiate between type and trait theories of personality
4. Define traits, as operationalized by Allport
5. Explain the five-factor model of personality
6. Understand the significance of the consistency paradox
7. Describe the major theories of personality and identify important differences between them
8. Explain the criticism of each theory of personality
9. Explain the significance of the reciprocal relationship between self-esteem and self-presentation

CHAPTER OUTLINE
I. Definitions
   A. Personality is the complex set of unique psychological qualities that influence an individual’s characteristic patterns of behavior, across different situations and over time.
   B. Core aspect of the self is the subjective, private aspect of personality that gives coherence and order to behavior.

II. Type and Trait Personality Theories
   A. Categorizing by Types. Some personality theories group people into distinct nonoverlapping categories that are called personality types
      1. One early type theory proposed by Hippocrates, positing humors associated with particular temperaments
         a) Blood: Sanguine temperament, cheerful and active
         b) Phlegm: Phlegmatic temperament, apathetic and sluggish
         c) Black bile: Melancholy temperament, sad and brooding
         d) Yellow bile: Choleric temperament, irritable and excitable
      2. Sheldon related physique to temperament, assigning people to one of three categories, based on body build
         a) Endomorphic: Fat, soft, round
         b) Mesomorphic: Muscular, rectangular, strong
c) **Ectomorphic**: Thin, long, fragile

3. Sulloway proposed a theory of personality based on birth order
   a) Each child fills a niche within the family
   b) Firstborn children fill the most convenient niche; they identify with their parents
   c) Laterborn children must find different niches, and, thus, are usually more open to experience and deviance

**B. Describing with Traits**

1. **Traits** are enduring qualities or attributes that predispose individuals to behave consistently across situations

2. Allport’s trait approach
   a) Allport posited that each individual has a unique combination of traits, the building blocks of personality. Three kinds of traits have been identified:
      (i) **Cardinal traits** are those around which the individual organizes his or her life
      (ii) **Central traits** represent major characteristics of the individual
      (iii) **Secondary traits** are specific, personal features that help predict the individual’s behavior, but are less useful for understanding personality
   b) Allport’s interest was in discovery of the unique combinations of these traits that made each individual a singular entity. He viewed personality structures rather than environmental conditions to be the critical determinants of individual behavior

3. Identifying Universal Trait Dimensions
   a) Cattell proposed that 16 factors provide the underlying source of the surface behaviors that we think of as personality
   b) Eysenck derived three broad personality dimensions:
      (i) **Extroversion**: internal vs. external orientation
      (ii) **Neuroticism**: emotionally stable vs. emotionally unstable
      (iii) **Psychoticism**: kind and considerate vs. aggressive and antisocial
   c) Eysenck proposed that personality differences on these dimensions were caused by genetic and biological differences

4. Five-Factor Model: Recent research indicates that five factors overlap Eysenck’s original three, best characterize personality structure
   a) The five-factor model (the Big Five) brings categories having a common theme together in the following dimensions:
(i) **Extroversion:** Talkative, energetic, and assertive vs. quiet, reserved, and shy
(ii) **Agreeableness:** Sympathetic, kind, and affectionate vs. cold, quarrelsome, and cruel
(iii) **Conscientiousness:** Organized, responsible, and cautious vs. careless, frivolous, and irresponsible
(iv) **Neuroticism** (emotional stability): Stable, calm, and contented vs. anxious, unstable, and temperamental
(v) **Openness to experience:** Creative, intellectual, and open minded vs. simple, shallow, and unintelligent
b) Factors are not intended as replacement for specific trait terms, rather they outline a taxonomy that better describes individuals in capturing the dimensions on which they differ

C. **Traits and Heritability**

1. **Behavioral genetics:** The study of the degree to which personality traits and behavior patterns are inherited
2. Heritability studies show that almost all personality traits are influenced by genetic factors

D. **Do Traits Predict Behaviors?**

1. The **consistency paradox** refers to the observation that personality ratings across time and different observers are consistent, while behavior ratings of a person across situations are not consistent
2. Paradox refers to levels of analysis, the use of specific vs. summary types of data, rather than to actual consistency
3. Different situations are more or less likely to “allow” expression of traits, with those situations most likely to influence behavior occurring when:
   a) Situations are novel
   b) Situations are ill-defined, offering multiple alternatives but without guidelines on propriety
   c) Situations are stressful or challenging
4. Forced definition of traits in a more precise manner resulted in the observation that personality is not about behavioral consistency, rather it is a matter of patterns of behavioral coherence

E. **Evaluation of Type and Trait Theories**

1. Criticism based on fact that these theories do not generally explain how behavior is generated, or how personality develops; they only identify and describe characteristics correlated with behavior
2. Trait theories typically portray a static (or at least stabilized) view of personality structure, as it currently exists

III. **Psychodynamic Theories**

A. Common to all psychodynamic personality theories is the assumption that powerful inner forces shape personality and motivate behavior
B. Freudian Psychoanalysis

1. Freud’s theory attempts to explain:
   a) Origins and course of personality development
   b) Nature of mind
   c) Aspects of abnormal personality
   d) Ways personality can be changed by therapy

2. Presumes the core of personality to be the events within a person’s mind (intrapsychic events) that motivate behavior

3. Freud presumed all behavior was motivated, that so-called chance or accidents did not cause behavior, but were determined by motives

4. Drives and Psychosexual Development
   a) Postulating a common biological basis for behavioral patterns observed in his patients, Freud ascribed motivational source to psychic energy within each individual
   b) Individuals presumed to have inborn instincts or drives that were tension systems
   c) Freud originally postulated two basic drives:
      i) Self-preservation, associated with the ego
      ii) Eros is related to sexual urges and preservation of the species, and is used with the term libido to identify source of energy for sexual urges
   d) After World War I, Freud added Thanatos, the concept of the death instinct
   e) Eros operates from birth, and is evident in infants’ pleasure in stimulation of erogenous zones, leading Freud to posit that the physical source of sexual pleasures changed in an orderly progression (i.e., five stages of psychosexual development)

5. Psychic determinism: Assumption that all mental and behavioral reactions are determined by earlier experiences, leading to belief in unconscious processes
   a) Freud believed behavior has both manifest and latent content
      i) Manifest content of behavior refers to what one says, does, and perceives (indicating awareness)
      ii) Latent content includes neurotic symptoms, dreams, slips of the pens and slips of the tongue at the unconscious level of and information-processing

6. The Structure of Personality
   a) Id: Storehouse of fundamental drives, operating irrationally and on impulse, pushing for expression and immediate gratification; governed by the pleasure principle
   b) Superego: Storehouse of individual’s values, including moral values; corresponds roughly to the notion of conscience
      i) The inner voice of “oughts” and “should nots”
(ii) Includes ego ideal, the individual’s view of the kind of person he/she should strive to become

(iii) Often in conflict with the id

c) **Ego:** Reality-based aspect of the self, arbitrating conflict between id’s impulses and superego’s demands and choosing actions that gratify id without undesirable consequences

(i) Governed by the reality principle

(ii) When id and superego conflict, ego arranges a compromise both can live with

7. Repression and Ego Defense

   a) **Repression** is the psychological process that protects the individual from experiencing extreme anxiety or guilt about impulses, ideas, or memories that are unacceptable and / or dangerous to express. Ego’s most basic defense against being overwhelmed by id and superego

   b) **Ego defense mechanisms** are mental strategies used by the ego to defend itself in the daily conflict between id impulses that seek expression, and the superego’s demand to deny them

   c) **Anxiety** is an intense emotional response, triggered when repressed conflict is about to emerge into consciousness. Signals that repression is not working, and a second line-of-defense to relieve anxiety is required

C. Evaluation of Freudian Theory

1. Bases for criticism

   a) Conceptually vague and not operationally defined, making scientific evaluation of the theory difficult

   b) Freudian psychoanalytic theory is “good history, but bad science”

      (i) Unreliable predictive power

      (ii) Is applied retrospectively

      (iii) Typically involves historical reconstruction, rather than scientific construction of probable actions and predictable outcomes

      (iv) Directs focus away from current stimuli that may be inducing and maintaining the behavior

   c) Psychoanalytic theory is a developmental theory, but never included studies of children

   d) Minimizes traumatic experiences by reinterpreting memories of them as fantasies

   e) Male-as-norm model makes theory androcentric

2. Modifications and improvements

   a) Ongoing research reveals much of daily experience is shaped by processes outside of awareness

   b) Freud’s theory is the most complex, compelling, and
comprehensive view of both normal and abnormal personality functioning, even when its predictions are wrong

3. Like any theory, Freud’s theory must be treated as unconfirmed until it can be confirmed, element by element

D. Post-Freudian Theories

1. Intellectual descendants of Freud made several changes in the psychoanalytic view of personality
   a) More emphasis on ego functions
   b) Social variables viewed as playing a more significant role in shaping of personality
   c) Less emphasis on importance of libidinal energy
   d) Extension of personality development beyond childhood, including the entire life span

2. Alfred Adler
   a) Alfred Adler rejected the significance of Eros and the pleasure principle
   b) Adler believed personality structured around striving to overcome feelings of inferiority

3. Karen Horney
   a) Challenged Freud’s phallo-centric emphasis
   b) Placed greater emphasis on cultural factors
   c) Focused on present character structure rather than on infantile sexuality

4. Carl Jung expanded the conception of the unconscious to include the:
   a) Collective unconscious: the fundamental psychological truths shared by the entire human race
   b) Archetype: a primitive, symbolic representation of a particular experience or object, associated with the instinctive tendency to feel, think about, or experience the object in a special way.
      (i) Animus, the male archetype
      (ii) Anima, the female archetype
      (iii) Mandala, the archetype of the self
   c) Jung’s view of personality as a constellation of compensating internal forces, in dynamic balance, resulted in analytic psychology

IV. Humanistic Theories

A. Humanistic approaches to personality are characterized by concern for integrity of the individual’s personal and conscious experience and growth potential

B. Features of Humanistic Theories Include:

1. Some humanists believed motivation for behavior derived from the individual’s unique tendencies, both innate and learned, to develop
and change in a positive direction

2. Self-actualization, a constant striving to realize one’s inherent potential, to develop one’s own capacities and talents
   a) Drive for self-actualization sometimes conflicts with need for approval from the self and others, especially when the individual feels certain obligations or conditions must be met to gain approval, as in:
   b) Rogers’ mandate of unconditional positive regard in child-rearing
   c) Horney’s idea that people have a “real self” that requires favorable environment to be actualized

3. Humanistic theories have also been described as holistic, dispositional, phenomenological, and existential
   a) Holistic: explain individuals’ separate acts in terms of their entire personalities
   b) Dispositional: focus on innate qualities within the individual that exert a major influence over the direction behavior will take
   c) Phenomenological: emphasize the individual’s frame of reference and subjective view of reality, rather than the frame of an observer or a therapist
   d) Existentialist: focus on higher mental processes

C. Evaluation of Humanistic Theories

1. Criticisms
   a) Concepts are fuzzy, and difficult to explore empirically
   b) Traditionally, did not focus on particular characteristics of the individual
   c) Theories were more about human nature and qualities shared by all people, than about individual personality or the basis of difference among individuals
   d) Emphasis of the role of the self as source of experience and action neglects environmental variables that also influence behavior

2. Contemporary research emphasizes psychobiography, “the systematic use of psychological theory to transform a life into a coherent and illuminating story”

V. Social-Learning and Cognitive Theories

A. Introduction

1. Learning theory orientation looks to environmental circumstances that control behavior
2. Personality is viewed as the sum of overt and covert responses that are reliably elicited by the individual’s reinforcement history
3. Learning by social imitation is by observation of others’ behavior, without actual performance of the response.

4. Contemporary theories emphasize importance of both cognitive and behavioral processes.

B. *Mischel’s Cognitive-Affective Personality Theory*

1. Posits that response to a specific environmental input depends on a person’s:
   a) *Encoding strategies*, the way incoming information is processed:
      i) Selective attending
      ii) Categorization
      iii) Making associations
   b) *Expectancies and beliefs*: anticipation of likely outcomes for given actions in particular situations
   c) *Affects*: your feelings and emotions, including physiological responses
   d) *Goals and values*: outcomes and affective states valued by the individual
   e) *Competencies and self-regulatory plans*, rules developed by the individual for guiding performance, setting goals, and evaluating effectiveness

2. Nature of variables for a given individual result from history of observations and interactions with others and with inanimate aspects of the physical environment.

3. Beliefs about others’ personalities comes from tracking the way different situations bring out different behaviors.

C. *Bandura’s Cognitive Social-Learning Theory*

1. Combines principles of learning with an emphasis on human interactions in social settings.

2. Stresses the cognitive processes involved in acquiring and maintaining patterns of behavior and, thus, personality.

3. Critical constructs:
   a) *Reciprocal determinism*: the examining of all components if one wishes to understand human behavior, personality, and social ecology completely
   b) *Observational learning*: the process by which the individual changes his or her behavior, based on observations of another individual’s behavior
   c) *Self-efficacy*: the belief that one can perform adequately in a particular situation. Self-efficacy judgments include:
      i) Vicarious experience
      ii) Persuasion
      iii) Monitoring of emotional arousal when thinking
4. Self-efficacy acknowledges the importance of the environment, including perceptions of supportiveness or unsupportiveness of that environment.

D. Cantor’s Social Intelligence Theory

1. Social intelligence refers to the expertise the individual brings to his or her experience of life tasks.
2. Three types of individual differences are defined:
   a) Choice of life goals
   b) Knowledge relevant to social interactions
   c) Strategies for implementing goals
3. Social intelligence offers a new perspective on how personality predicts consistency.

E. Evaluation of Social-Learning and Cognitive Theories

1. One set of criticisms points out that theories generally overlook emotion as an important component of personality:
   a) Emphasize rational, information-processing variables
   b) Emotions are perceived as by-products of thoughts and behavior, instead of being assigned specific, independent importance
   c) Theories do not fully recognize the impact of unconscious motivation on both behavior and affect
2. A second set of criticisms focuses on vague explanations relative to creation of personal constructs and competencies:
   a) Cognitive theories focus on the individual’s perception of current behavior setting serves to obscure the individual’s history
   b) Kelly’s theory is more a conceptual system than a theory, as it focuses on structure and processes, saying little about content of personal constructs

VI. Self Theories

A. William James was the earliest advocate of theories addressing how each individual manages his or her sense of self. James identified three components of the self-experience:
   1. Material me: the bodily self, along with surrounding physical objects
   2. Social me: the individual’s awareness of how others view him or her
   3. Spiritual me: the self that monitors private thoughts and feelings

B. Dynamic Aspects of Self-Concepts

1. Self-concept is a dynamic mental structure that motivates, interprets, organizes, mediates, and regulates intrapersonal and interpersonal behaviors and processes
2. Components of self-concept include
   a) Memories about one’s self
   b) Beliefs about one’s traits, motives, values, and abilities
   c) Ideal self: the self that one would most like to become
   d) Possible selves that one contemplates enacting
   e) Positive or negative evaluations of one’s self (self-esteem)
   f) Beliefs about what others think of one’s self

3. Self-concept includes schemas about the self, self-schemas, that allow one to organize information about one’s self and influence the way one processes information about others

4. Possible selves are “the ideal selves that we would very much like to become,” and are also “the selves we could become and the selves we are afraid of becoming”

C. Self-Esteem and Self-Presentation

1. Self-esteem is a generalized evaluation of the self, influencing thoughts, moods, and behavior
   a) Low self-esteem may be characterized (in part) by less certainty about the self and may include the feeling that one does not know much about one’s self
   b) Doubt in one’s ability to perform a task may see engagement in self-handicapping behavior, in which one deliberately sabotages one’s own performance, for purposes of
      (i) Having a ready-made excuse for failure that does not imply lack of ability
      (ii) Failure can be blamed on low effort, without finding out if one really had the ability to make it

2. Self-presentation is an aspect of self-esteem, explaining behavioral differences between individuals with high and low self-esteem
   a) Individuals with high self-esteem present themselves to the world as ambitious, aggressive risk takers
   b) Individuals with low self-esteem present themselves as cautious and prudent
   c) Both of these presentations are for public consumption
   d) Self-monitoring, a personality trait related to the individual’s habitual style of self-presentation, is the tendency to regulate behavior to meet social demands or to create a desired social impression

D. The Cultural Construction of Self

1. Individualistic cultures encourage independent construals of self
2. Collectivist cultures encourage interdependent construals of self

E. Evaluation of Self-Theories

1. Self theories succeed at capturing the individual’s concept of their
own personality and how they wish to be perceived by others

2. Critics of self theory approach to personality argue against its limitless boundaries. Because many issues are relevant to the self and to the self-concept, it is not always clear which factors are most important for predicting behavior.

3. Emphasis on the self as a social construct is not entirely consistent with evidence that some facets of personality may be heritable.

VII. Comparing Personality Theories

A. The Five Most Important Differences in Assumptions about Personality

1. Heredity versus Environment
   a) Trait theories are split on this issue
   b) Freudian theory depends heavily on heredity
   c) Humanistic, social-learning, cognitive, and self theories emphasize either
      i) Environment as a determinant of behavior
      ii) Interaction with environment as a source of personality development and differences

2. Learning Processes versus Innate Laws of Behavior
   a) Trait theories are (still) divided
   b) Freudian theory favors inner determinant view
   c) Humanists posit change as a result of experience
   d) Social-learning, cognitive, and self theories posit that behavior and personality change as a result of learned experiences

3. Emphasis on Past, Present, or Future
   a) Trait theories emphasize past causes
   b) Freudian theory stresses past events of early childhood
   c) Social-learning theories focus on past reinforcements and present contingencies
   d) Humanistic theories emphasize present phenomenal reality or future goals
   e) Cognitive and self theories emphasize past and present (and future, in the instance of goal-setting)

4. Consciousness versus Unconsciousness
   a) Trait theories pay little attention to this distinction
   b) Freudian theory emphasizes unconscious processes
   c) Humanistic, social-learning, and cognitive theories emphasize conscious processes
   d) Self theories are unclear

5. Inner Disposition versus Outer Situation
a) Trait theories emphasize dispositional factors
b) Social-learning theories emphasize situational factors
c) All others allow interaction between person-based and situation-based variables

B. Theoretical Contributions to Understanding of Human Personality

1. Trait theories provide a catalog, describing parts and structures
2. Psychodynamic theories add a powerful engine and fuel to get the vehicle moving
3. Humanistic theories put the person in the driver’s seat
4. Social-learning theories supply the steering wheel, directional signals, and other regulation equipment
5. Cognitive theories add reminders that the way the trip is planned, organized, and remembered will be affected by the mental map the driver selects for the journey
6. Self theories remind the driver to consider the image his or her driving ability projects to back-seat drivers and pedestrians

VIII. Assessing Personality

A. Objective Tests

1. Minnesota Multiphasic Personality Inventory (MMPI), developed using empirical strategy, is most frequently used personality inventory
   a) Items included on scales only if they clearly differentiated between two groups
   b) Each item demonstrates its validity by being answered similarly by members within each group, but differently between groups
   c) Ten clinical scales, each differentiating a different clinical group
   d) Validity scales detect suspicious response patterns
   e) Major revision over the last ten years, resulting in the MMPI-2, added fifteen new content scales

2. The NEO-Personality Inventory (NEO-PI)
   a) Measures the five-factor model of personality. The five dimensions are:
      (i) Neuroticism
      (ii) Extraversion
      (iii) Openness
      (iv) Agreeableness
      (v) Conscientiousness
   b) A new inventory based on the five-factor model, The Big Five Questionnaire (BFQ), is designed to have validity across cultures
B. Projective Tests

1. Basics

   a) Projective tests have no predetermined range of responses, but use ambiguous stimuli

   b) Among the assessment devices most commonly used by psychological practitioners

   c) Used more frequently outside the U.S. than are objective tests because they are less sensitive to language variation

2. Specifics

   a) The Rorschach test, developed by Hermann Rorschach, uses ambiguous stimuli that are symmetrical inksblots, with responses scored on three major features:

      i) Location or part of the card mentioned in the response—does respondent refer to the whole stimulus or only part of it?

      ii) Content of the response, nature of the object and activities seen

      iii) Determinants, those aspects of the card that prompted response

      iv) Correctly utilized, test is both reliable and permits valid assessments about the underlying personality

   b) The Thematic Apperception Test (TAT), developed by Henry Murray

      i) Respondents shown pictures of ambiguous scenes and asked to generate stories about them, describing what people are thinking and doing, what led up to each event, and how each situation will end

      ii) Individual administering test evaluates structure and content of stories, as well as behavior of individual telling them, attempting to discover respondent’s major concerns motivations, and personality characteristics
DISCUSSION QUESTIONS

1. Have the class suppose that there was no continuity in behavior or personality and that we faced each situation anew, without reference to prior experiences and reactions. Discuss with the class the changes this scenario might evoke in one’s self-concept.

2. What might be the advantage or disadvantage to describing the personality of a developmentally delayed child using the trait orientation? What about use of the type orientation? Ask the class for a show of hands indicating how many prefer each perspective. Have individual class members indicate why they prefer one perspective to the other.

3. In what sense does our personality limit our freedom to act? In what sense does our personality give us greater freedom to act than a cat or dog enjoys?

4. Discuss the five-factor model of personality. Aside from the obvious applications in the mental health industry, ask the class what other applications they see for this model. Have students expand on their perspective.

5. Of the various approaches to personality detailed in this chapter, which do students find to be most satisfying in a personal sense? Is this an emotional or an intellectual choice? Discuss the implications.

6. We all assume somewhat different roles and personalities in different social situations. If you could be only one of these “people,” which would you choose? How would other people’s reactions to you be changed in those situations where you now displayed a new set of characteristics?

7. A surprisingly large percentage of college students (about 50 percent) describe themselves as “shy.” Can such a self-imposed label be changed by the time one reaches college age? If so, how? How does someone come to be “shy”? What is the difference between being a “shy person” and being “situationally shy”?

8. You might want to discuss Judith Rich Harris’s book, The Nurture Assumption: Why Children Turn Out the Way They Do; Parents Matter Less than You Think and Peers Matter More, in which she argues that peers, not parents, play the most important role in shaping a child’s personality. As the text explains, there is abundant research that consistently indicates that parents play a large, if not critical, role in shaping a child’s personality. As the text suggests, if parents had little or no impact, then there would be no observable birth order effects. Additionally, Harris ignores the fact that since children tend to grow up in neighborhoods where many families have similar values and behavior standards, they are surrounded by other children with fairly similar values to their own. Children may also self-select friends based on how similar their attitudes and interests are to their own. While peers clearly have some effect, especially during the middle school and high school years, there is no evidence that the effects of peer influence override parental influences in the long run to the degree argued by Harris. How do students feel about this? Do their own experiences confirm or deny Harris’s theories? Why or why not?
Harry Stack Sullivan and the Interpersonal Relations Theory of Personality

The founder of this position, Harry Stack Sullivan, was an interesting individual, and his areas of concentration were:

- The dynamics of personality
- The dynamics and treatment of schizophrenia (he coined the term and concept of the “schizophrenic mother”)

Sullivan posited his theory of personality within the context of developmental psychology, feeling that to be the only viable avenue for his perspective. Sullivan felt that it was “completely preposterous’ to assume that human behavior was determined solely by instinct, feeling instead that human nature was so pliable and adaptable that even “the most fantastic social rules and regulations [could] be lived up to, if they were properly inculcated in the young.” Sullivan concluded that personality was shaped primarily by social forces, with the lengthy period of dependence in childhood making the child particularly susceptible to the influence of others. He proposed an incredibly powerful need for interpersonal relationships, to the extent that he believed individuals who were deprived of interpersonal contact for extended periods would undergo deterioration in their basic personality structure.

Consider Sullivan’s definition of personality for a moment (the relatively enduring pattern of recurrent interpersonal situations which characterize a human life). The significant aspect of this definition is that Sullivan intended it to include those interpersonal relationships that are illusory as well as those which are real. So, in Sullivan’s theory, even the recluse and the psychotic have a “personality.” Many other theories seem to apply only to the normally functioning psyche.

Sullivan and Freud shared a belief that human beings strive toward a reduction of inner tension, that the ideal human state is one of euphoria—a condition of total equilibrium. Sullivan saw tension as the opposite of euphoria, reciprocally related to it, and as a state similar to a state of terror. Of course, both extremes can only be approached and neither exists in nature; we exist somewhere on the continuum between the two. He posited seven specific epochs or stages through which personality may develop, each epoch representing an optimal time for certain innate capacities to reach fruition. Since he posits “epochs,” you can see that Sullivan was a stage theorist.

*Epoch 1: Infancy.* Infancy begins at birth and continues until the appearance of articulate speech. This time is highlighted by the influence of maternal tenderness and anxiety. The oral zone is important here, as it brings food and sustenance, as well as breathing, crying, and thumb-sucking.

Nursing provides the infant with its first prototaxic mode or experience in interpersonal relationships. This is a primitive mode of experiencing internal and external stimuli, is prominent in early infancy, consists of successive momentary discrete states, and cannot be communicated to others or formulated into symbols (i.e., language).

Around 12 to 18 months of life, trial-and-error language begins to appear, with early sounds being imitations of those in the environment. This represents the parataxic mode, and it ushers in the second stage of personality development. The parataxic mode is a way of experiencing internal and external stimuli that is characterized by use of private symbols and a lack of the conventional concepts of cause and effect.

Past infancy and moving into childhood, we see the development of the self-system, the organized
perception of one’s self. The self-system includes the desirable “good-me” and the undesirable “bad-me.” The system is a result of experiences with one’s own body and the reflected opinions of significant others, and has anxiety reduction as its primary goal.

**Epoch 2: Childhood.** Children now begin to develop use of language and to acquire responses for averting anxiety and parental punishment. These responses include deception, rationalization, behaving in the way parents expect in order to please them, and increasing the use of sublimation. Of course, some punishment does inevitably occur, and this results in growth of the “bad-me” part of the self-system. As long as parents continue to reinforce the “good-me” part of the child’s self-system, the child will adjust normally.

**Epoch 3: The Juvenile Era.** This epoch begins with the emergence of the need for playmates, which is about the time the child enters school. The *syntaxic mode* becomes prominent now, and is the most highly developed mode of experiencing internal and external stimuli. This mode is characterized by use of socially understood symbols (i.e., words and numbers), and by the understanding of conventional ideas of cause and effect. According to Sullivan, the ability to live with and among other people will have developed by the end of this epoch.

**Epoch 4: Preadolescence.** This stage begins with the emergence of the need for a more intimate relationship with a specific member of the same sex; Sullivan called this individual the *chum*. The need for the chum appears around ages 8 to 10 years, and Sullivan considered this relationship critical to the child’s future ability to form intimate relationships of both a sexual and nonsexual nature during the adult years. Sullivan felt that an effective chumship could be instrumental in altering excessive egocentricity (such as tendencies to pout when things go wrong), over dependence and irresponsibility, and the misguided belief that we should be liked by everyone. He saw the chum as a sort of reality check between childhood and adolescence. In addition, during this period, we see the formation of the first structured social groups, such as scout troops.

**Epoch 5: Early Adolescence.** This epoch begins with puberty and the appearance of the lust dynamism that leads to the desire for a close relationship with a member of the opposite sex. Sullivan felt this period to be a great one for maladjustment, due to the societal restrictions on the adolescent’s ability to satisfy the lust dynamism. He also noted that the adolescent’s early attempts at heterosexual relationships can (and often do) lead to embarrassing outcomes, such as impotence, frigidity, premature ejaculation, any and all of which can lead to serious damage to one’s self-esteem. He felt that parental support during this time was critical to the successful transition of this period. If the attempts at heterosexual relationships are successful, and they usually are, then the child has taken another positive step up the ladder of interpersonal relations.

**Epoch 6: Late Adolescence.** Late adolescence originates with the achievement of satisfying sexual activity. Of course, the adolescent is now functioning (at least part of the time) in the realm of reality, such as working and paying taxes, and having increased social responsibilities (helping care for an elderly grandparent or a younger sibling, moving away from home and accepting the concurrent adult life-roles). Sullivan feels that those adolescents having the experience of attending college have an advantage. They have an extra few years to make this transition beyond their high-school graduation.

**Epoch 7: Adulthood.** Harry Stack Sullivan did not say a great deal about adulthood, except that it represented the completion of personality development. The reason Sullivan did not say much about adulthood is that he was a psychiatrist, and psychiatrists do not get many opportunities to observe normally functioning adults. Sullivan was smart enough to know that what he observed in the pathological adult population was not applicable to the rest of the nonpathological population.

**Nature versus Nurture**
An issue that has dominated developmental psychology for years is the nature—nurture
controversy. This issue is directly related to any discussion of personality as well. You might ask students how much of personality they believe is genetically inherited (nature) and how much is learned from the environment (nurture). While generally, researchers argue that both appear to play a role in personality, you might point out that how much of a role each plays may depend on what part of personality you are discussing. For example, genetics clearly plays an important role in nervous system development, which can affect traits such as introversion. On the other hand, the environment (nurture) plays an important role in emotional maturation, as evidenced by Harlow and Spitz’s studies on the effects of early isolation. Ultimately, one of the best ways to sum up the research on this controversy is to say that nature sets a potential range of development, and nurture determines where, within that range, a person will end up. With some aspects of personality, nature sets a wide range of development, giving the environment plenty of room to have an impact. With other aspects of personality, nature sets a narrow range of development, leaving the environment room for only a minor impact. With most aspects of personality, nature appears to set a moderate range of potential development.

**Personality: Add Women and Stir!**

The topic of personality serves as an excellent base for discussing the feminist perspective within the field of psychology. Torrey (1987) has incorporated a five-phase sequence of sex-integration, proposed by McIntosh, into the psychology of personality.

**Phase 1: Womenless Psychology.** Torrey provides several interesting examples of womenless psychology, for example, only four of the 707 pages of Hall and Lindzey’s text on personality are devoted to a woman’s theory of personality (Karen Horney’s). Sullivan, Murray, McClelland, and Kohlberg based their work on studies of men, although the theories usually are described as universal.

**Phase 2: Adding Women to Psychology.** In this phase, women’s work is included in the field of psychology, but usually within the overall male-oriented paradigm. Karen Horney’s contributions within the psychoanalytic field would represent this phase.

**Phase 3: Women as Inherently Different and Deviant.** Viewing men as the norm and women as special exceptions occurs in Phase 3. Freud’s view of mature female sexuality is used to illustrate the point. Although aware of the sexual role of the clitoris, Freud insisted that mature sexuality is located in the vagina. Regarding research, Torrey notes that when differences did appear, psychologists have usually interpreted them as showing female inferiority. Witkin, for example, described the holistic style of perception he found in his female participants as a liability to thinking analytically, rather than as a capacity for global synthesis (Torrey, 1987, p. 157).

**Phase 4: Taking the Psychology of Women Seriously.** This phase involves the feminist study of women, their development and social rules. Gilligan’s challenge to Kohlberg’s theory represents this stage, as does Homer’s extension of achievement motivation (McClelland).

**Phase 5: All the Human Experience, Psychology Redefined.** A paradigmatic shift would be necessary within psychology to describe the human experience as a discipline. Until extensive work concerning women is accomplished, it will be difficult to envision the changes within the field. Do different theories represent different phases? Are men and women really so different? If so, what are the social, political, and economic implications of personality differences? Since women are becoming the majority in the field of psychology, what impact do you think this will have on the psychology of the 21st century?
BIOGRAPHICAL PROFILE

Gordon Willard Allport (1897–1967)

As a student, Gordon Allport was deeply influenced by the writings of William James, whom he resembles in his style of investigation and his uncompromising interest in the individual as self. Allport was born in Montezuma, Indiana, in 1897, one of four children. His father, a physician, ran his clinic in the Allport home. He indulged his strong belief in the imposition of discipline and responsibility at an early age by assigning each of his sons a task to carry out in the clinic. Mrs. Allport, a former schoolteacher, introduced the children to philosophy, providing them with the foundations of the classics and encouraging their independent inquiry into the nature of things. She was a religious woman and stressed the importance of faith. Allport himself has described his upbringing as one of “plain Protestant piety and hard work.”

On completion of high school, Allport followed his brother Floyd to Harvard. His education was interrupted briefly when he served a short time in the armed forces during World War I. He eventually earned his B.A. in 1919. Gordon did not immediately pursue a graduate degree, choosing instead to teach in Istanbul, Turkey, but returned to Harvard a year later to earn his doctorate in psychology at the age of 24. He did not remain in the United States for long, again feeling the need to travel and study abroad. This time Allport spent two years at large universities in England and Germany. When he returned, he secured a permanent academic position at Harvard.

Allport’s most significant book, Personality: A Psychological Interpretation, was published in 1937 and enjoyed a great reception. (The book was thoroughly revised 24 years later under the title Pattern and Growth in Personality.) His approach to understanding human personality as a growing, changing system of traits, attitudes, and habits became well known. Allport is responsible for emphasizing the importance of both the concept of attitudes in social psychology and the concept of personality traits.

From 1939 to 1949, he was the Harvard University editor of the Journal of Abnormal and Social Psychology and was elected president of the American Psychological Association in 1939. He co-founded the Department of Social Relations at Harvard in 1946 and, thereafter, was closely identified with the “third force” in psychology, the humanistic psychologists. Allport received the Distinguished Scientific Contribution Award in 1964 and continued to pursue his research and writing until his death in 1967.

Hans Jargon Eysenck (b. 1916)

Hans Eysenck, the grandson of a medical doctor and an only child, was born in Berlin, Germany. In order to gain admission to the University of Berlin, Eysenck was required to join the Nazi party as a member of the SS. He tolerated these circumstances for only a short time, leaving eventually for France and, finally, England. Eysenck studied psychology at the University of London, obtaining his Ph.D. in 1940. He became director of the psychology department at Maudsley Hospital in London after World War II, and has traveled often to the United States as a visiting professor.

Eysenck’s contributions to psychology have been varied. He is regarded most for his empirical and theoretical work on personality and his contributions to behavior therapy. He is particularly well known for his personality test battery, the Eysenck Personality Inventory, and for his critical review, in 1952, of the value and effectiveness of psychotherapy, especially psychoanalysis, in the treatment of psychological disorders. Eysenck founded the journal Behavior Research and Therapy in 1962, and is the author of more than 350 books and articles, including the Biological Basis of Personality (1964) and Personality, Structure and Measurement (1969).
Sigmund Freud (1856–1939)

Sigmund Freud was born in Pribor, Czechoslovakia, in 1856. Although Freud was a gifted student, it took him eight years to finish his medical degree at the University of Vienna, partly because he was interested in so many topics. Freud first pursued a career as a neurologist, but financial concerns forced him into general medical practice. In cooperation with his friend Joseph Breuer, Freud began to treat hysterical women. This is unusual, because at the time there was no known cure for hysteria, which is now known as a conversion disorder. Through trial and error and feedback from clients, Breuer and Freud developed the technique known as psychoanalysis.

The fundamental rule of psychoanalysis is honesty; clients must relay all thoughts and feelings uncensored to the analyst. Clients then follow their stream of thought wherever it may lead, a process known as free association. In the course of free association, clients often uncover traumatic events in the past, and, upon reliving these events, often experience relief from their symptoms. Freud’s first major work, _The Interpretation of Dreams_ (1900), detailed the process of dream interpretation, which he felt was the “royal road to the unconscious.” Although it took six years to sell the first 600 copies printed, this work would go through eight additional printings during Freud’s lifetime.

Although the technique of psychoanalysis is perhaps Freud’s most important legacy, he made many other substantial contributions to psychology. These include the recognition of the importance of sexuality and unconscious processes, a fully developed system of personality, and an appreciation for the conflict between individual desires and the constraints of society. His work has influenced so many aspects of our thinking that he is often not given full credit for the development of his ideas. Freud’s many detractors are quick to point out that his theories are not based on empirical research. While this is certainly true, just because they lack empirical evidence does not mean that they are wrong. It just means that they are less likely to be right. Because of the breadth of his intellectual contributions, he remains the most cited psychologist in _Psychology and Life_ and most comparable texts.

Carl Gustav Jung (1875–1961)

Carl Jung was born in Kesswil, Switzerland, the son of a pastor. From childhood, Jung was fascinated by the problems of religion and spiritualism. He received his M.D. from the University of Basel in 1901, with an emphasis in psychiatry. Having read Freud’s _The Interpretation of Dreams_, he sought the master out and soon became Freud’s most famous disciple. An eventual split between Freud and Jung occurred, prompted by Jung’s belief that the psychosexual theory of development was too restrictive.

Jung advanced his own brand of psychology, known as analytic psychology, introducing the concepts of the collective unconscious and archetypes. Like Freud, Jung developed a large following of loyal adherents. In his later writings, Jung returned often to an analysis of religion and mysticism, addressing themes that had fascinated him from his youth.

Neal Miller (b. 1909)

Neal Miller has been in the vanguard of American psychology for more than 30 years. He sees himself as a “builder of bridges between disciplines” and, indeed, his contributions run the gamut from social-learning theory and frustration-aggression hypotheses, to physiological research into brain stimulation and control of autonomic responses through biofeedback.

Miller received his undergraduate training at the University of Washington and his master’s degree at Stanford University. In 1935, he earned his doctorate at Yale, the school with which he would be associated for the next 30 years. In light of the strongly behavioristic approach his research has taken, it is interesting to note that he received considerable formal training in psychoanalytic theory.
and practice. Perhaps his participation at the Institute of Human Relations at Yale, where he was in contact with anthropologists and sociologists primarily concerned with the influence of the social milieu on the individual, impressed him with the limitations of analysis.

With the publication of two landmark books, *Social Learning and Imitation* in 1941 and *Personality and Psychotherapy* in 1950, he and his colleague, John Dollard, created a sensation. These works demonstrated that social learning, psychoanalytic treatment, and the origins of neurosis could be understood in terms of classical learning theory. The intelligent, innovative nature of Miller’s accomplishment brought him a Newcomb-Cleveland Prize in 1951 and a Warren Medal in 1954.

In the same year that *Personality and Psychotherapy* was published, Miller applied his theories of behavior modification to victims of combat neurosis with a high degree of success, essentially abandoning the psychoanalytic approach to therapy. True to his self-portrait as a “bridge-builder,” he translated the implications of his research and therapeutic techniques to a more physiologically based line of inquiry, investigation into the physiology of learned responses. He used electrical stimulation of parts of the brains of animal participants to elicit motivational sensations such as fear, pain, and pleasure, and demonstrated that an electrical or chemical stimulation of the brain may bring about sensations of hunger. Following the example of Pavlov, he continues to explore a wide range of learned visceral responses. In accord with what he has already discovered about learned visceral responses, he designed a lightweight electromechanical instrument that alerts children with scoliosis whenever they lapse into incorrect posture. The results of this treatment have been encouraging.

Although he is now an emeritus professor, Miller remains active in his research and conceptual contributions to the field of behavioral medicine. Miller served as president of the American Psychological Association in 1961, was awarded the National Medal of Science, and has been elected to the National Academy of Sciences.

### Carl Rogers (1902–1987)

Carl Rogers, the founder of client-centered therapy and one of the best-known figures in humanistic psychology, is often described by friends as the “man who gave people permission to be themselves.” A firm believer in the basic goodness of human beings, Rogers based his approach to therapy and education on the assumption that individuals, when given the proper opportunity and encouragement, can decide for themselves the best course to follow. This doctrine placed the mild-mannered Rogers squarely in the face of controversy throughout his career, as he attempted to go beyond the mere formulation of pleasant-sounding philosophies, to implement his notions in the context of social institutions.

A student of agriculture, Rogers made an abrupt change of plans after traveling to China with a student religious group. He began to see that he would only truly satisfy his needs and interests in a milieu that encouraged communication and offered him an opportunity to help others. He enrolled in a theological seminary, but soon found the emphasis on dogma and hierarchy to be contradictory to his highly personal approach. He switched to the study of psychology, a discipline in which he felt he would be better able to develop and act on his ideas. He received his bachelor’s degree from the University of Wisconsin in 1924. After graduating from Columbia Teachers College, he became director of the Rochester Child Guidance Clinic in New York and there began to construct the techniques that would eventually evolve into Rogerian, or client-centered, therapy.

Rogers finally joined forces with a group of like-minded psychologists at the Western Institute for Behavioral Sciences in California. This nonprofit center is involved in several projects, including a tremendously popular two-week summer course of encounter groups. An even more ambitious project is designed to put physicians in closer touch with the “human” and ethical aspects of medical practice.

Throughout his career, Rogers continued to believe that the purpose of therapy was to assist the
client in realizing his or her potential, and he conducted some of the first empirical studies of the process and effectiveness of psychotherapy. He was instrumental in elevating humanistic psychology to its stature as a “Third Force” in psychology, and was elected president of the American Psychological Association in 1947.

In spite of all his successes, Rogers continued to be criticized from many sides. Even friends and colleagues described his views as overly optimistic—particularly his faith that tense situations such as racial confrontations can be resolved by person-centered therapy techniques. Nevertheless, Rogers, if anything, grew more optimistic. During the last few years of his life, in response to the growing popularity of his client-centered therapy, he trained facilitators (therapists) in Germany, Japan, and Brazil. His notable works include *Client-Centered Therapy* (1951) and *On Becoming a Person* (1961).

**TIMELINE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1900</td>
<td>Freud published what many believe was his greatest work, <em>The Interpretation of Dreams</em>.</td>
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<tr>
<td>1913</td>
<td>Carl Jung broke ranks with Freud and soon became a major figure in the development of an alternative psychoanalytic theory, analytic psychology.</td>
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<td>1914-1918</td>
<td>World War I was fought.</td>
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<td>1920</td>
<td>Alfred Adler published the <em>Practice and Theory of Individual Psychology</em>, outlining his views on the social ramifications of psychoanalysis.</td>
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<td>1921</td>
<td>Hermann Rorschach developed his famous projective test, composed of a series of symmetrical inkblots.</td>
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<td>1929</td>
<td>The Great Depression began in America.</td>
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<tr>
<td>1937</td>
<td>Gordon Allport published <em>Personality: A Psychological Interpretation</em>, outlining his trait theory of personality.</td>
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<tr>
<td>1937</td>
<td>Karen Horney published <em>The Neurotic Personality of Our Time</em>, describing her theory of personality.</td>
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<tr>
<td>1938</td>
<td>Henry Murray published <em>Explorations in Personality</em> and developed a projective test called the Thematic Apperception Test (TAT), a series of black-and-white drawings of a person or persons in ambiguous situations.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<tr>
<td>1940s</td>
<td>Carl Rogers developed his ideas on the humanistic view of personality development.</td>
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<tr>
<td>1943</td>
<td>Starke Hathaway and J. C. McKinley published the first edition of the MMPI, which soon became the most widely used personality test ever.</td>
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<tr>
<td>1950</td>
<td>Raymond Cattell developed the 16 PF, which later became a widely used personality inventory.</td>
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1951 Carl Rogers published *Client-Centered Therapy*, explaining how his ideas could be applied to therapy.

1954 Abraham Maslow published *Motivation and Personality*, explaining the relationship of his hierarchy of needs to both motivation and personality development.

1957 Sputnik, the first satellite, was launched.

1963 Albert Bandura, with R. H. Walters, published *Social Learning Personality and Development*, explaining the influences of social learning on personality growth.

1973 Walter Mischel challenged the basic idea that personality traits have cross-situational consistency, and proposed a cognitive-social learning theory of personality.

1980 Ronald Reagan was elected President.


1989 The University of Minnesota published the second edition of the MMPI, which was standardized on a larger, more heterogeneous group of people than the first edition.

**SUGGESTIONS FOR FURTHER READINGS**


Carlson, J. F. (1989). *Psychosexual Pursuit. Enhancing Learning of Theoretical Psychoanalytic Constructs*. *Teaching of Psychology*, 16, 82–84. Carlson developed a game that can accommodate as many as 50 players. This article reproduces a game board on which players must move through the stages of psychosexual development and eventually become adults. Play money represents psychic energy; the goal is to retain as much psychic energy as possible for adult life tasks. Defense mechanisms and fixation are incorporated into the game rules.

Carver, C. S., & Scheier, M. F. (1992). *Perspectives on Personality, 2nd Ed.* Boston: Allyn & Bacon. Presents very readable and current coverage of personality psychology by two of the better-known researchers in the area; includes much of their own research.


accumulation of Eysenck’s 50 years of research on personality. Intended for students of psychology, psychiatry and sociology.


Hogan, R. (1986). *What Every Student Should Know About Personality.* In V. P. Makosky (Ed.), *The G. Stanley Hall Lectures Vol. 6.* Washington, D.C.: American Psychological Association. A brief, entertaining summary of some of the most important research and theoretical issues in personality psychology. As with Hall’s other works, this is worth the read.


**DISCOVERING PSYCHOLOGY**

**PROGRAM 15: THE SELF**

**Overview**

How psychologists systematically study the origins of self-identity and self-esteem, social determinants of self-conceptions, and the emotional and motivational consequences of beliefs about oneself.

**Key Issues**

The process of individualization in children, Freud’s Ego, Id, and Superego, the theory of self-efficacy, the relationship between nonverbal communication and status, the effects of self-presentation on the reaction of others, and the effects of reward and competition on creativity.

**Demonstrations**

Status differences in nonverbal behavior on communication.

**New Interviews**

Hazel Markus looks at the relationship between the self and culture and examines the mutual constitution of the two.
FILMS AND VIDEOS

First Feelings (1992). RMI Media Productions, 30 minutes
From the Coast Telecourse, this program addresses the question of how much of an infant’s personality can be attributed to the relationship with caregivers and how much can be explained by the baby’s inborn temperament.

Freud: The Hidden Nature of Man (1970). IU(LCA), 29 minutes
Analyzes Freud’s revolutionary theories of the power of the unconscious; the Oedipus complex; dream analysis; and the ego, superego, and id. Points out the impact of his ideas on man’s attitude toward himself, particularly Victorian man’s approach to sexuality. Uses the technique of dramatic reenactment of his ideas, with actors playing Freud and his patients.

Freud Under Analysis (1987). IC(CORT), 58 minutes
Profiles Freud’s life and contributions to the development of psychoanalytic theory, which established the study of the mind as a science. Discusses his major ideas, including the function of sexual repression in the development of the personality, the role of the unconscious, the importance of childhood experiences to adult development, and the therapeutic techniques of psychoanalysis in controlling neurotic behaviors. Produced for the NOVA series.

Neurotic Behavior: A Psychodynamic View (1973). CRM, 19 minutes
Illustrates several varieties of neurotic behavior and classical defense mechanisms in a vignette about the life of Peter, a college student. A psychodynamic approach to behavior is used to analyze Peter’s life as he experiences anxiety, then repression, rationalization, displacement, and finally phobias and obsessive-compulsive neurosis in reaction to the psychological trauma induced by his mother during early training. This film illustrates the unconscious and unintentional nature of defense mechanisms.

Personality (1971). (CRM)MCGH, 30 minutes
Focuses on an articulate, self-aware college senior. It begins with his self-report, which is contrasted with the opinions of his parents, his girlfriend, and his roommate. Thematic Apperception Tests are shown. Good, as the TAT is an instrument many students will never have the opportunity to see, other than in this venue.

Ratman (1974). TLF, 53 minutes
A dramatization of one of Freud’s most famous cases. Freud’s analysis of the obsessive behavior of this patient is reviewed.

67,000 Dreams (1972). TLF, 30 minutes
An interview with Carl Jung in which he talks about the development of his theory, including the concept of the collective unconscious.
CASE STUDY LECTURE LAUNCHER

In 1923, personal tragedy transformed the life of an 18-year-old Texan named Howard. This overprotected college freshman had never made a major decision for himself. When a heart attack killed his father, only two years after the death of his mother, Howard suddenly inherited three-fourths of the interest in the family’s lucrative tool company. His uncle and grandparents, who owned the rest of the business, urged Howard to return to school. Despite his reputation as a shy and obedient boy, Howard refused. Within four months, he bought out his relatives’ share in the company. By the time Howard was 19, a judge had granted him adult status, giving him full legal control of the million-dollar company (Barlett & Steele, 1979). However, he had no interest in running the family business. Instead, he wanted to become the world’s top aviator and most famous motion picture producer. “Then,” he told his accountant, “I want you to make me the richest man in the world” (Dietrich & Thomas, 1972, p. 73).

By the time he was 38, Howard Hughes was an American legend. He founded the Hughes Aircraft Company, manufacturer of the first spacecraft to land on the moon. He transformed Trans World Airlines into a $500 million empire. He designed and built airplanes for racing, military, and commercial uses. As a pilot, he broke many aviation records, capping his triumphs with a 1938 round-the-world flight. Ticker-tape parades in New York, Chicago, Los Angeles, and Houston honored his achievement (Drosnin, 1985). However, long before that, when he was only 20 years old, he had already reaped national honors producing several films, among them an Academy Award winner. As head of the RKO film studio, Hughes used his power to fuel the 1950s anticommmunist purge in Hollywood. Eventually, Hughes realized his ambition; he became the world’s richest man.

Despite his incredible public success, Howard Hughes was a deeply disturbed individual. As his empire expanded, he became increasingly disorganized. He began to focus so excessively on trivial details that he accomplished less and less. He became a recluse, sometimes vanishing for months at a time.

Hughes’s mishaps as a pilot and driver caused three deaths. On several occasions Hughes suffered serious head, face, and, perhaps, brain injuries; one near-fatal plane crash resulted in what became a lifetime addiction to codeine (Fowler, 1986). His risk taking extended to the world of finance as well, where he lost over $100 million of taxpayers’, stockholders’, and his own money (Dietrich & Thomas, 1972).

As he grew older, Hughes became obsessed with germs. On hearing a rumor that an actress he once dated had a venereal disease, he burned all his clothes, towels, and rugs. Eventually, the only people allowed to see him were members of his “Mormon guard,” an elite cadre of men who never questioned his often bizarre orders. Those orders included instructions to “wash four distinct and separate times, using lots of lather each time from individual bars of soap” (Drosnin, 1985, p. 167). Anything their employer might touch they wrapped in 50-tissue swaths of Kleenex; each box opened with a clean, unused knife.

Paradoxically, Hughes lived in squalor. He rarely wore clothes or washed, never brushed his teeth, and used an unsterilized needle to inject himself with large doses of codeine. He stayed in bed for days at a time. The richest man in the world slowly starved his 6-foot, 4-inch frame to an emaciated 120 pounds.

Looking to Hughes’s childhood for clues to the paradox of his personality reveals many possible links between his early experiences and their later transformation. Similar to his father, Hughes loved mechanical gadgets. At age 3, he started taking pictures with a box camera. He tinkered in his father’s workshop, creating objects out of bits of wire and metal. He was allowed to play in the workshop—as long as he kept it spotless.

Hughes’s parents fussed excessively about his health. His quiet, dignified mother devoted herself
full-time to him, taking him to the doctor at the slightest provocation. At 14, his parents sent him to a boarding school in Massachusetts. A developing hearing loss isolated him from friendships. The highlight of his stay in the East was a ride with his father in a seaplane that “fired his fascination with airplanes and marked the beginning of a lifelong love affair with aviation, his most enduring passion.”

Later, when he went to a California school, Hughes spent much of his time alone, riding his horse in the hills and visiting his Hollywood screenwriter uncle. At his uncle’s Sunday brunches, Hughes met many stars and movie moguls, as did his father, who had an eye for beautiful women. Hughes began to perceive people as objects to be avoided or collected. He would bring teenaged aspiring starlets to Hollywood, put them up in apartments, and, as they waited for stardom, forget all about them (Fowler, 1986).

A few years before Hughes’s death, his former barber reflected on the eccentric billionaire’s personality, “I know he has his problems: don’t we all? He just operates a little different from the rest of us. Who’s to say who’s wrong?” (Keats, 1966).
CHAPTER 15
Psychological Disorders

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Define “normal” and “abnormal”
2. Identify distinguishing differences between normal and abnormal behavior
3. Explain current methods of studying and assessing abnormal behavior
4. Describe the goals of psychological assessment and classification of disorders
5. Explain the use of each axis of DSM-IV-TR
6. Demonstrate a basic understanding of the major types of psychological disorders
7. Explain the theoretical positions from which abnormal behavior is studied
8. Describe the evidence that some abnormal behaviors have a genetic component
9. Name and discuss the types of schizophrenic disorders
10. Suggest some factors that may play causal roles in the development of mental illness

CHAPTER OUTLINE
I. The Nature of Psychological Disorders

A. Definitions

1. Psychopathological functioning involves disruptions in emotional,
behavioral, or thought processes that lead to personal distress or that
block one’s ability to achieve important goals

2. Abnormal psychology is the area of psychological investigation most
directly concerned with understanding the nature of individual
pathologies of mind, mood, and behavior

B. Deciding What Is Abnormal

1. DSM-IV-TR provides seven criteria for determining behavior as
abnormal

   a) Distress or disability: An individual experiences personal
distress of disabled functioning, producing risk of physical
and/or psychological deterioration or loss of freedom of
action

   b) Maladaptiveness: An individual behaves in a fashion that
hinders goal attainment, does not contribute to personal
well-being, or often interferes significantly with the goals of
others and needs of society

   c) Irrationality: An individual acts or speaks in ways that are
irrational or incomprehensible to others

d) *Unpredictability:* An individual behaviors unpredictably from situation to situation, as though experiencing loss of control

e) *Unconventionality and statistical rarity:* An individual violates norms of socially acceptable behavior in a manner that is statistically rare

f) *Observer discomfort:* An individual behaviors such that it makes others uncomfortable by feeling threatened or distressed

g) *Violation of moral and ideal standards:* An individual violates expectations for how one ought to behave, according to societal norms

2. No single DSM-IV-TR criteria is, by itself, a sufficient condition to distinguish all instances of abnormal behavior from normal variations in behavior

3. Mental disorder is a *continuum,* that ranges from mental health at one extreme and mental illness at the other

C. The Problem of Objectivity

1. The decision to declare an individual as psychologically disordered or abnormal is a *judgment* about behavior. The goal is to make these judgments as objective as possible, without bias.

2. Following assignment of the label “abnormal,” others tend to interpret the individual so designated in a manner that confirms the judgment as demonstrated by Rosenhan’s “sane in an insane place” experience

3. Laing posits that labeling as “mad” suppresses the creative, unique probing of reality by individuals who are questioning their social context

4. Some psychologists advocate a contextual or ecological model of schizophrenia

5. Ecological models view abnormality not as the result of a disease within the person, but as a product of interaction between individuals and society

6. Abnormality is viewed as a mismatch between the individual’s abilities and the needs and norms of society

D. Historical Perspectives

1. Historically, people have feared psychological disorders, often associating them with evil, and imprisoning and subjecting those affected to radical treatment

   a) *Hysteria* was originally thought to affect only women and to be caused by a wandering uterus under the devil’s control

2. *Emergence of the medical model* occurred in the late 1700s, when society
began perceiving those with psychological disorders as suffering from illness, rather than as possessed or immoral

a) Pinel was an early developer of a classification system for psychological difficulties, based on the premise that disorders of thought, mood, and behavior were somewhat similar to physical, organic illnesses

b) The first comprehensive classification system of psychological disorders was created by Kraepelin in 1896

3. *Emergence of psychological models*, an alternative to the medical model, focusing on the psychological causes and treatment of abnormal behavior, emerged from the late 1700s through the 1800s

a) Mesmer proposed that some disorders were due to disruptions in the flow of a force he called *animal magnetism*, and pioneered new techniques eventually to become known as *hypnotism*

b) Mesmer’s techniques were adopted by Jean Charcot, who passed that knowledge to his student, Sigmund Freud

**E. The Etiology of Psychopathology**

1. *Etiology* refers to the causal or contributory factors in the development of psychological and medical problems

2. Two general categories of causal factors:

   a) *Biological approaches* assume that psychological disturbances are directly attributable to underlying biological factors such as structural abnormalities in the brain

   b) *Psychological approaches* focus on the causal role of psychological or social factors as contributing to the development of psychopathology. Three models predominate.

   (i) *Psychodynamic*. This model, as developed by Freud, posited the causes of psychopathology as located inside the person, holding those factors to be psychological, rather than physiological

       (a) *Symptoms are rooted in unconscious conflict, much of which derives from conflict between id and superego*

       (b) *Defense mechanisms (repression, denial) can be effected to avoid pain resulting from conflicting motives and anxieties*

   (ii) *Behavioral* theorists posit abnormal behaviors as being acquired in the same manner as normal behaviors-through learning and reinforcement

       (a) *Focus is on current behavior and current conditions that may be reinforcing the behavior*

       (b) *Both classical and operant conditioning models are used to understand the processes that can*
result in maladaptive behavior

(iii) Cognitive perspectives may be used to supplement behavioristic views

(a) How the individual perceives and thinks about him- or herself, and his/her relations with others in the environment are important issues

(b) This approach suggests problems are the result of distortions in perceptions of the reality of a situation

(iv) The sociocultural perspective emphasizes the role culture plays in both the diagnosis and etiology of abnormal behavior

c) Most recently, the interactionist perspective is becoming increasingly popular, and is viewed as a product of the complex interactions between a number of biological and psychological factors

II. Classifying Psychological Disorders

A. Psychological Diagnosis: The label given to an abnormality by classifying and categorizing the observed behavior pattern into an approved diagnostic system

B. Goals of Classification

1. A useful diagnostic system provides the following three benefits:
   a) Common shorthand language: A common set of agreed-upon meanings, given that it is imperative that researchers studying different aspects of psychopathology, or evaluating treatment programs, can agree on the disorder they are observing
   b) Understanding etiology: Under ideal circumstances, a diagnosis of a specific disorder should make clear the cause(s) of the symptoms; this is not always possible with psychological disorders
   c) Treatment plan: Diagnosis should suggest types of treatment to consider for particular disorders

C. DSM-IV-TR

1. The 4th revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM) classifies, defines, and describes more than 200 mental disorders

2. DSM-IV-TR emphasizes the description of patterns of symptoms and courses of disorders, rather than etiological theories or treatment strategies

3. DSM-IV-TR uses dimensions or axes that portray information about the psychological, social, and physical factors that may be associated with a psychological disorder

4. Current DSM-IV-TR categories or axes are:
a) **Axis I: Clinical Disorders**

   (i) These disorders present symptoms of patterns of behavioral or psychological problems that typically are painful or impair an area of functioning. Included are disorders that emerge in infancy, childhood, or adolescence

b) **Axis II. Personality Disorders & Mental Retardation**

   (ii) Details mental retardation and personality disorders, i.e., dysfunctional patterns of perceiving and responding to the world

c) **Axis III. General Medical Conditions**

   (iii) Codes physical problems that are relevant to understanding or treating an individual’s psychological disorders, as detailed on Axes I and II

d) **Axis IV. Psychosocial and Environmental Problems**

   (iv) Codes psychosocial and environmental stressors that may impact diagnosis and treatment of an individual’s disorder and his or her likelihood of recovery

e) **Axis V: Global Assessment of Functioning**

   (v) Codes the individual’s overall level of current functioning in the psychological, social, and occupational domains

5. Full diagnosis, in accordance with the DSM system, involves consideration of each axis

6. Methods used to organize and present categories have shifted with each revision of the DSM. DSM-III-R felt neurotic disorders and psychotic disorders had become too generalized in meaning to remain useful as diagnostic categories.

7. In addition to the diagnoses on the five traditional axes, DSM-IV-TR provides an appendix that describes about 25 *culture-bound syndromes*—recurrent, locality-specific patterns of aberrant behavior and troubling experience that may or may not be likened to a particular DSM-IV-TR diagnostic category. Such syndromes include:

   a) **Boufée delirante**: A sudden outburst of agitated and aggressive behavior, marked confusion, and psychomotor excitement (West Africa and Haiti)

   b) **Koro**: An episode of sudden and intense anxiety that the penis will recede into the body and possibly cause death (South and East Asia)

   c) **Taijin kyofusho**: An individual’s intense fear that his or her
body, its parts or its functions, displease, embarrass, or are offensive to other people (Japan)

III. Major Types of Psychological Disorders

A. Important Disorders not Covered in Psychology and Life.

1. Substance-use disorders include both dependence on and abuse of alcohol and drugs

2. Somatoform disorders involve physical symptoms that arise without a physical cause

3. Sexual disorders involve problems with sexual inhibition or dysfunction, and deviant sexual practices

4. Disorders usually first diagnosed in infancy, childhood, or adolescence include mental retardation, communication disorders (such as stuttering), and autism

5. Eating disorders, such as anorexia and bulimia.

6. Some individuals experience more than one disorder at some point in their life span; this is known as comorbidity, the co-occurrence of diseases

B. Anxiety Disorders: Types

1. Involve the experiencing of fear or anxiety in certain life situations when that anxiety is problematic enough to interfere with the ability to function or to enjoy life

2. Generalized Anxiety Disorder: manifests itself as feeling anxious or worried most of the time, when not faced with any specific danger. Presenting symptoms must include at least three of the following:
   a) Muscle tension
   b) Fatigue
   c) Restlessness
   d) Poor concentration
   e) Irritability
   f) Sleep difficulties

3. Panic Disorder manifests in unexpected, severe panic attacks that begin with a feeling of intense apprehension, fear, or terror. Attacks are unexpected, in the sense that they are not evoked by something concrete in the situation. One manifestation of panic disorder is agoraphobia, an extreme fear of being in public places or open spaces from which escape may be difficult or embarrassing.

4. Phobias are diagnosed when the individual suffers from a persistent and irrational fear of a specific object, activity, or situation, when that fear is excessive and unreasonable, given the reality of the threat. Phobias interfere with adjustment, cause significant distress, and inhibit necessary action toward goals. DSM-IV-TR defines two
categories of phobias.

a) Social phobia is a persistent, irrational fear, arising in anticipation of a public situation in which an individual can be observed by others

b) Specific phobias occur in response to several different types of objects or situations

5. Obsessive-Compulsive Disorder is an anxiety disorder in which the individual becomes locked into specific patterns of thought and behavior. It may best be defined in terms of its component parts

a) Obsessions are thoughts, images, or impulses that recur or persist despite the individual’s efforts to suppress them. They are experienced as an unwanted invasion of consciousness, seem to be senseless or repugnant, and are unacceptable to the individual experiencing them.

b) Compulsions are repetitive, purposeful acts performed according to certain rules, in a ritualized manner, and in response to an obsession. The behavior is performed to reduce or prevent the discomfort associated with some dreaded situation, but it is either unreasonable or clearly excessive.

6. Posttraumatic stress disorder (PTSD), an anxiety disorder, is characterized by the persistent reexperiencing of traumatic events through distressing recollections, dreams, hallucinations, or flashbacks

C. Anxiety Disorders: Causes

1. Biological: This view posits a predisposition to fear whatever is related to sources of serious danger in the evolutionary past, thus the preparedness hypothesis suggests that we carry an evolutionary tendency to respond quickly and “thoughtlessly” to once-feared stimuli. Some evidence is available linking this disorder to abnormalities in the basal ganglia and frontal lobe of the brain.

2. Psychodynamic: This model begins with the assumption that symptoms of anxiety disorders derive from underlying psychic conflicts or fears, with the symptoms being attempts to protect the individual from psychological pain.

3. Behavioral explanations of anxiety focus on the way symptoms of anxiety disorders are reinforced or conditioned.

4. Cognitive perspectives concentrate on the perceptual processes or attitudes that may distort a person’s estimate of the danger he or she is facing. Individuals suffering from anxiety disorders may interpret their own distress as a sign of imminent danger.

D. Mood Disorders: Types
1. A mood disorder is an emotional disturbance, such as a severe depression or depression alternating with manic states.

2. *Major Depressive Disorder* occurs so frequently that it has been called the “common cold” of psychopathology; virtually everyone has experienced elements of this disorder at some time during their lives.

3. *Bipolar depression* is characterized by periods of severe depression, alternating with manic episodes.

E. Mood Disorders: Causes

1. **Biological**: Growing evidence suggests that the incidence of mood disorder is influenced by genetic factors.

2. **Psychodynamic**: This approach purports the causal mechanism(s) to be unconscious conflicts and hostile feelings originating in childhood. Freud believed the source of depression to be displaced anger, originally directed at someone else, and now turned inward against the self.

3. **Behavioral**: This approach focuses on the impact and effects of the amount of positive reinforcement and punishments the individual receives. Lacking a sufficient level of reinforcement, the individual feels sad and withdraws from others.

4. **Two Cognitive Theories**:
   a) Beck argued that depressed people have negative cognitive sets, which promote a pattern of negative thought that clouds all experiences and produces the other characteristic signs of depression. Negative thought patterns include negative views of (1) themselves; (2) ongoing experiences; and (3) the future.
   
   b) Seligman’s *learned helplessness* paradigm, the “explanatory style” view of depression, in which individuals believe (correctly or not) that they have no control of future outcomes of importance to them. Learned helplessness is marked by deficits in three areas: (1) motivational; (2) emotional; and (3) cognitive.

F. Gender Differences in Depression

1. Women suffer from depression twice as often as men.

2. Research suggests differences in response style may originate in childhood.
   a) When women experience sadness, they tend to think about causes and implications of their feelings, a *ruminative* response style with an obsessive focus on problems, thus increasing depression.
   
   b) Men attempt actively to distract themselves from negative
feelings through physical exercise or by focusing on something else. Other research has also revealed a maladaptive tendency for men to distract themselves through use of alcohol, drugs, or violent behaviors.

G. Suicide

1. Patterns of suicide
   a) The 8th leading cause of death in the U.S., 3rd among the young, and 2nd among college students
   b) Five million living Americans have attempted suicide
   c) For each completed suicide, there are 8 to 20 attempts
   d) Suicide usually affects at least 6 other individuals

2. Every 9 minutes, a teenager attempts suicide; every 90 minutes one succeeds

3. Suicide rates for African American youths, of both sexes, are roughly half that for white youths. These racial differences persist across the life span.

4. Gay and lesbian youth are at higher risk than are other adolescents

5. Youth suicide is not an impulsive act. It typically occurs as the final stage of a period of inner turmoil and outer distress.

H. Personality Disorders

1. A personality disorder is a chronic, inflexible, maladaptive pattern of perceiving, thinking, or behaving that can seriously impair the individual’s ability to function and can cause significant distress. Examples include:
   a) **Paranoid personality disorders**: Show a consistent pattern of distrust and suspiciousness about the motives of people with whom they interact. These individuals believe others are trying to harm or deceive them they may find unpleasant meanings in harmless situations, and expect their friends, spouses, or partners to be disloyal.
   b) **Histrionic personality disorder**: Characterized by patterns of excessive emotionality and attention seeking. Sufferers offer strong opinions, with great drama, but with little evidence to back their claims. They react to minor occasions with overblown emotional responses.
   c) **Narcissistic personality disorders**: Manifests grandiose sense of self-importance, preoccupation with fantasies of success or power, and need for constant admiration. These individuals often have problems in interpersonal relationships, tending to feel entitled to special favors without reciprocal obligation. They exploit others for their own purposes and experience difficulty in realizing and experiencing how others feel.
d) Antisocial personality disorder: Manifested by a long-standing pattern of irresponsible or unlawful behavior that violates established social norms. These individuals often do not feel shame or remorse for their hurtful behaviors. A violation of social norms begins early in life; the actions are marked by indifference to the rights of others.

I. Dissociative Disorders

1. Consist of a disturbance in the integration of identity, memory, or consciousness. Psychologists believe that in dissociative disorders the individual escapes from his or her conflicts by giving up consistency and continuity of the self

2. Dissociative amnesia refers to the forgetting of important personal experiences, caused by psychological factors in the absence of any organic dysfunction

3. Dissociative identity disorder, formerly known as multiple personality disorder, is a dissociative mental disorder in which two or more distinct personalities exist within the same individual. May involve chronic, severe abuse during childhood.

IV. Schizophrenic Disorders

A. Schizophrenic Disorders are a severe form of psychopathology in which personality seems to disintegrate, thought and perception are distorted, and emotions are blunted

1. Hallucinations occur often, and are assumed real

2. Delusions, false or irrational beliefs maintained regardless of evidence to the contrary, are common

3. Other manifestations
   a) Incoherent language, word salad
   b) Flattened or inappropriate emotions
   c) Disorganized psychomotor behavior

4. Categories of symptoms
   a) Positive symptoms: hallucinations, delusions, incoherence, and disorganized behavior are prominent during the acute or active phases.
   b) Negative symptoms: social withdrawal and flattened emotions become more apparent during the chronic phase.

B. Major Types of Schizophrenia

1. Disorganized type: Individual displays inappropriate behavior and emotions, incoherent language.
   a) Incoherent thought patterns and grossly bizarre and disorganized behavior
   b) Emotions are flattened or situationally inappropriate,
language may be incoherent, communications with others break down

c) If present, hallucinations and delusions lack organization around a central theme

2. **Catatonic type:** Individual displays frozen, rigid, or excitable motor behavior

   a) Major feature is disruption in motor activity

   b) Also characterized by extreme negativism and resistance to all instructions

3. **Paranoid type:** Individuals suffer complex and systematized delusions, focused around a specific theme, often delusions of grandeur or persecution. Symptom onset is usually later in life than in other types of schizophrenia. Manifestations include:

   a) *Delusions of persecution*, in which the individual believes he/she is being constantly spied upon, plotted against, or is in mortal danger

   b) *Delusions of grandeur*, in which the individual believes he/she is an important or exalted being, such as Jesus Christ

   c) *Delusional jealousy*, in which the individual becomes convinced (without due cause) that his or her mate is unfaithful

4. **Undifferentiated type:** The schizophrenic “grab-bag,” describing the individual who exhibits

   a) Prominent delusions, hallucinations, incoherent speech, or grossly disorganized behavior that fit criteria of more than one type, or of no clear type

   b) Hodgepodge of symptoms fails to differentiate clearly among the schizophrenic reactions.

5. **Residual type:** Individuals have typically experienced a major episode within the past, but are currently free of major positive symptoms.

   a) Ongoing presence of the disorder is signaled by minor positive symptoms or negative symptoms, such as flattened affect

   b) Diagnosis of residual type may indicate the individual’s disorder is entering a stage of remission, becoming dormant

C. **Causes of Schizophrenia**

1. Genetic Approaches

   a) Disorder tends to run in families, with increased risk if both parents have the disorder
b) Probability of identical twins both having the disorder is approximately 3 times greater than is the probability for fraternal twins

c) Diathesis-stress hypothesis suggests genetic factors place the individual at risk, but environmental stressors must impinge for the potential risk to be manifested

2. Brain Function and Biological Markers

a) Magnetic resonance imaging (MRI) may be used to show brain structures (i.e., ventricles) that are enlarged by up to 50% in individuals with schizophrenia

b) Imaging also reveals that individuals with schizophrenia may have differing patterns of brain activity than those found in normal controls

c) The dopamine hypothesis posits an association with an excess of the neurotransmitter dopamine, at specific receptor sites in the central nervous system (CNS).

d) A biological marker is a “measurable indicator of disease that may or may not be causal”; that is, it may correlate with the disorder. No known marker perfectly predicts, or brings about, schizophrenia.

3. Family Interaction and Communication

a) Hope remains for identification of an environmental circumstance that increases the likelihood of schizophrenia

b) Research does offer evidence for theoretical position that emphasizes the influence of deviations in parental communications on the subsequent development of schizophrenia

c) Research indicates family factors do play a role in influencing functioning after the symptoms appear

V. The Stigma of Mental Illness

A. The Problem of Stigma

1. Individuals with psychological disorders are frequently labeled as deviant, though this label is not true to prevailing realities

2. Stigma is a mark or brand of disgrace; in the context of psychology, it is a set of negative attitudes about a person that sets him or her apart as unacceptable”

3. Negative attitudes toward the psychologically disturbed, which come from many sources, bias perceptions of and actions toward these individuals

4. Mental illness can become one of life’s self-fulfilling prophecies

5. Research suggests that people who have contact with individuals with mental illness hold attitudes less affected by stigma
DISCUSSION QUESTIONS

1. What if a well-controlled study showed that “crazy” people were more creative, happier, and lived longer than “normal” or “sane” people? Ask the class how this knowledge might change their individual therapies of abnormal or pathological behavior.

2. What if someone were to give each member of your class a psychiatric diagnostic label and offer each of them $100,000 if they would go into a mental hospital ward and live up to their label for a month without being discharged as either cured or normal? How well do class members think they would do? What specific acts would they engage in? Have a student randomly select a diagnostic label from the chapter and then have the class list the specific actions they would perform to demonstrate the accuracy of the diagnosis.

3. What does “abnormal” actually mean? Ask the class to give you an operating definition. Does it mean “crazy”? “Different”? “Nuts”? See how many “definitions” of the term you can get and be ready for responses you would never have imagined!

4. Because of the deinstitutionalization of the mentally ill that occurred in the 1960s and the ensuing lack of community health support for that population, we are confronted with the probability that many of the “homeless” may actually be schizophrenics who are no longer on medication. Does this seem to be a plausible explanation for the increase in homeless individuals?

5. Should the mentally ill be forced to take medication if medication exists that will ameliorate their symptoms? Schizophrenics often consider the voices that they hear gifts from God. Should we deprive them of this gift? Should they be “locked up” in an institution where they could receive sound nutrition and protection from the elements? Are they “better off” on the streets? What are the ethical issues involved in each of the above situations?

6. How valid does the class think the “preparedness hypothesis” is as an explanation for phobic disorders? If we “carry around” an evolutionary tendency to jump when startled (i.e., “to respond quickly and ‘thoughtlessly’ to once-feared stimuli”), how did that tendency actually get to us? Think about phobias in terms of the collective unconscious, as espoused by Carl Jung. What sort of justification might we offer for applying Jung’s hypothesis to the preparedness hypothesis?
SUPPLEMENTAL LECTURE MATERIAL

DSM-IV-TR: What Is It?

DSM-IV-TR is the *Diagnostic and Statistical Manual of Mental Disorders, Text Revision Edition*. DSM-IV-TR is a diagnostic manual, published by the American Psychiatric Association and is used by mental health professionals in an attempt at concordance in evaluation and diagnosis of the various mental illnesses. If you have medical insurance that covers mental health care, your carrier probably predicates its decision to pay for your care on the DSM-IV-TR diagnostic criteria, as reported by your therapist.

DSM-IV-TR proposes five categories, each called an axis (plural = axes), according to which an assessment of the disturbance is made. Psychological and psychiatric disorders are classified according to their “fit” on these various axes. This is a *multiaxial* classification system. In order, these axes are:

**AXIS I: CLINICAL DISORDERS**

Clinical syndromes include the major affective disorders, psychoactive substance-induced mental disorders, eating disorders, organic mental disorders (e.g., senility, Alzheimer’s), the schizophrenias, adjustment disorders, and depressive disorders. Axis I and Axis II diagnoses are often indicated at the same time.

**AXIS II: PERSONALITY DISORDERS AND MENTAL RETARDATION**

Disorders included in this category are mental retardation, pervasive developmental disorders (e.g., autism), and specific developmental disorders (e.g., academic skills disorders such as developmental writing disorder, developmental arithmetic disorder, and developmental reading disorder). Specific personality traits or habitual use of particular defense mechanisms are also indicated here, e.g., antisocial personality disorder. These disorders all have the common denominator of having their onset in childhood and/or adolescence. For example, a diagnosis of antisocial personality disorder in adulthood requires a prior diagnosis of conduct disorder in childhood. This conduct disorder usually persists in a stable form (without period of remission or exacerbation) into adult life, at which time it may be “upgraded” to antisocial personality disorder.

Although you will not always have an Axis I and Axis II disorder at the same time, you often will. When you do, you see the diagnoses indicated as follows:

- **Axis I:** Alcohol Dependence
- **Axis II:** Antisocial Personality Disorder (Principal Diagnosis)

When an individual does have both Axis I and II disorders, the “principal diagnosis’ is assumed to be the Axis I disorder unless the Axis II disorder is followed by the qualifying statement “Principal Diagnosis” indicated in parentheses.

**AXIS III: GENERAL MEDICAL CONDITIONS**

This axis permits the clinician to indicate any current physical disorder or condition that is relevant to the understanding or management of the case. Sometimes these conditions have clinical significance concerning the mental disorder. For example, a neurological disorder may be
strongly related to a patient’s manifestations of Senile Dementia.

**AXIS IV: PSYCHOSOCIAL AND ENVIRONMENTAL PROBLEMS**

This axis provides a scale, the “Severity of Psychosocial Stressors Scale,” that enables the clinician to code the overall severity of psychosocial stressors that have occurred in the client’s life during the preceding year and to evaluate their contribution to any of the following:

- development of a new mental disorder
- recurrence of a prior mental disorder
- exacerbation of an already existing mental disorder

Stressors often play a precipitating role in the appearance of a disorder, but they may also be a consequence of the person’s psychopathology. A common situation is to have the Alcohol Dependence of one partner in a marriage lead to marital discord and eventually divorce. The sum of the separation and subsequent divorce (with all its attendant traumas) may progress to the point of a Major Depressive Episode. Types of psychosocial stressors considered for rating on this axis include:

- Conjugal (marital and nonmarital): engagement, marriage, discord, separation, divorce, death of a spouse
- Parenting: becoming a parent, friction with a child, illness of a child
- Other Interpersonal: problems with one’s friends, neighbors, associates, nonconjugal family members, illness of best friend, discordant relationship with one’s boss
- Occupational: work, school, homemaking, unemployment, retirement
- Living Circumstances: change in residence, threat to personal safety, immigration
- Financial: inadequate finances, change in financial status
- Legal: arrest, imprisonment, lawsuit, trial
- Developmental: phases of the life cycle, puberty, transition to adult status, menopause, “becoming 30/40/50”
- Physical Illness/Injury: illness, accident, surgery, abortion
  NOTE: A physical disorder is listed on Axis III whenever it is related to the development or management of an Axis I or II disorder. A physical disorder can also be a psychosocial stressor if its impact is due to its meaning (importance) to the individual. In that case, it will be listed on both Axis III and IV.
- Other Psychosocial Stressors: natural or manmade disaster, persecution, unwanted pregnancy, out-of-wedlock birth of a child, rape
- Family Factors (children and adolescents): in addition to the above, for children and adolescents, the following stressors may be considered: cold, hostile, intrusive, abusive, conflictual, or confusingly inconsistent relationships between parents or toward child; physical or mental illness of a family member; lack of parental guidance or excessively harsh or inconsistent parental control; insufficient, excessive, or confusing social cognitive stimulation; anomalous family situation, complex or inconsistent parental custody and visitation arrangements; foster family; institutional rearing; loss of nuclear family members.
AXIS V: GLOBAL ASSESSMENT OF FUNCTIONING
This axis allows the clinician to indicate his/her overall judgment of the individual’s psychological, social, and occupational functioning on a scale (the Global Assessment of Functioning Scale (GAF) that assesses mental health or illness. Ratings on the GAF are made for two periods:

- Current: level of functioning at time of evaluation
- Past Year: highest level of functioning for a least at few months during the past year

For children and adolescents, this should include at least one month during the school year. The ratings of current level of functioning generally reflect the current need for treatment or care. Ratings of highest level of functioning within the past year are frequently prognostic, because the individual may be able to return to his or her prior level of functioning, following recovery from an illness episode.

Eve White and Eve Black
The most extreme form of dissociation is dissociative identity disorder (DID), formerly known as multiple personality disorder. Until fairly recently, this disorder was thought to be rare. However, within the past few years, we have reason to believe this disorder to be more pervasive than originally thought. Ralph Allison, a therapist with extensive experience in treating this DID, has long believed the actual incidence of this disorder to be much higher, with many cases going undiagnosed (1977).

DID is frequently confused with schizophrenia. The term, schizophrenia, literally means, “splitting in the mind” (Reber, 1985). DID is actually a severe form of neurosis; the personality “in command” at any given moment remains in contact with reality. Schizophrenia is a psychotic disorder, in which the individual’s functioning is “split off” from external reality. Dissociative identity disorder is one of the major dissociative disorders in which the individual develops two or more distinct personalities that alternate in consciousness, each taking over conscious control of the person for varying periods of time. Both dissociative identity disorder and the schizophrasias are Axis I clinical syndromes.

Classic cases of dissociative identity disorder manifest at least two fully developed personalities, and more than two are common. Of cases reported in recent years, about 50% had 10 or fewer personalities and approximately 50 percent had more than 10. Each personality has its own unique memories, behavioral patterns, and social relationships. Change from one personality to another is usually sudden, with the change being accomplished in a matter of seconds to minutes. The change is usually sudden, often triggered by psychosocial stress.

The original personality, the one from which all the others diverge, is usually unaware of the existence of the others. However, the first personality to “split” from the original usually knows about the original, and any additional personalities that may surface subsequently. This first personality to split from the original is the active controller of which personality is “out,” when it is out, why it is out, and for how long. This personality is referred to as the dominant personality, and is often diametrically opposed to the original personality (e.g., Eve White and Eve Black). It is not unusual for one or more of the “new” personalities to have a different gender than the original personality, as well as a different sexual orientation.

At any given moment, there is only one personality interacting with the environment.
Interestingly, the personality that presents for treatment often has little-if any-knowledge of the multiples—they just are aware that something is a little unusual.

Onset of dissociative identity disorder is usually during childhood, but may not be diagnosed until adulthood. The disorder is chronic, and the degree of impairment varies from mild to severe. In nearly all cases, the disorder is preceded by abuse, often sexual in nature, or from some other form of severe emotional trauma during the childhood years. The disorder is seen three to nine times more frequently in females than in males.

There is some indication that the incidence in first-degree biological relatives of dissociative identity disorder is higher than that in the general population. Interestingly, a child is often the first to notice the presence of multiples (e.g., “I have 2 mommies, but it’s okay because they both love me.”)

This dramatic form of reaction is well illustrated by the widely publicized case of Eve White. Eve, 25 years old and separated from her husband, had sought therapy because of severe, blinding headaches, frequently followed by “blackouts.” During one of her early therapy sessions, Eve was greatly agitated. She reported that she had recently been hearing voices. Suddenly she put both hands to her temples, then looked up at the doctor with a provocative smile and introduced herself as “Eve Black.”

It was obvious from the voice, gestures, and mannerisms of this second Eve that she was a separate personality. She was fully aware of Eve White’s doings, but Eve White was unaware of Eve Black’s existence. Eve White’s “blackouts” were actually the periods when Eve Black was in control, and the “voices” marked unsuccessful attempts of Eve Black to “come out.” With extended therapy, it became evident that Eve Black had existed since Eve White’s early childhood, when she occasionally took over and indulged in forbidden pleasures, leaving the other Eve to face the consequences. This habit had persisted, and Eve White frequently suffered Eve Black’s hangovers. After about eight months of therapy, a third personality appeared. This one, Jane, was more mature, capable, and forceful than the retiring Eve White. She gradually came to be in control most of the time.

As the therapist probed the memories of the two Eves, he felt sure that some shocking event must have hastened the development of these distinct alternate personalities in the disturbed child. In a dramatic moment, the climax of therapy, the missing incident became known. Jane suddenly stiffened and in a terrified voice began to scream, “Mother … Don’t make me … I can’t do it! I can’t!” When the screams subsided, a new personality took over. She was able to recall the shocking event that lay at the bottom of the personality dissociation. At the age of six, Eve White had been led by her mother to her grandmother’s coffin and been forced to place a goodbye kiss on the dead face (Thigpen & Cleckley, 1954, 1957; Thigpen, 1961).

“Eve” has since revealed herself to be Chris Sizemore, a Fairfax, Virginia, homemaker. She has manifested twenty-one different personalities over the past two decades. As new personalities manifested, they did so in sets of three, each very different. Eve’s/Chris’s last split selves “died” in 1974, leaving Chris ready to make it on her own (Sizemore & Pitillo, 1977).

The appearance of additional personalities after the “cure” of re-experiencing the event that supposedly hastened the neurosis calls into question the claim of a cure. Some clinicians believe that all cases of dissociative personality reflect the efforts of highly suggestible patients to please their therapists. To develop a dissociative personality requires imaginative involvement with fantasy, and such imagination is a good predictor of hypnotic suggestibility. These patients are invariably responsive to hypnotherapy. The concern is that they may also be so suggestible as to reconstruct their scripts to fit what they believe the therapist would like to hear.
Digging for the Roots of Schizophrenia

It is estimated that one person out of 100 either has chronic schizophrenia, or has had one or more acute episodes of schizophrenia. This rate of incidence seems to be fairly constant from society to society and, it is believed by some, to have persisted over centuries.

Some types of schizophrenia provide the stereotype that people associate with “insanity,” “madness,” or “lunacy.” Untreated schizophrenics can be unrestrained in their behavior, discarding clothing, attacking others for no apparent reason, urinating and defecating in inappropriate places, and masturbating in the presence of others. They may hear voices and have delusions of grandeur and persecution. They may maintain a bizarre posture for hours or days. They may speak in a language that cannot be understood (clang associations or “word-salad”), or withdraw so completely that they go for long periods without speaking. Their emotional responses can be grossly inappropriate: laughing at death and tragedy, and crying when good fortune occurs.

The cause of schizophrenia is not known. Scientists may be getting closer to an answer, but if the lesson of history is heeded, they will be cautious before claiming that the culprit has been identified. Others have thought they had the answer to the riddle of schizophrenia only to have their explanations disproved.

The first evidence of efforts to treat mental illness, probably schizophrenia, was actually an archaeological find. Archaeologists found skulls with holes bored into them; an ancient “remedy” for a variety if problems, called trephining, had been performed on these individuals. We do not know what effect this treatment was supposed to have; some have speculated that it was to relieve pressure or to allow the brain to cool off.

During the era of Greek dominance of the ancient world, physicians looked toward biological causes of mental disorders. Hippocrates suggested that disorders resulted from an imbalance of body fluids, and prescribed rest in tranquil surroundings and good food. This was an enlightened view, inasmuch as the world at the time generally favored the idea of demonic possession. After the fall of the Roman Empire and the onset of the Dark Ages, the idea of demonic possession prevailed as the explanation for schizophrenia and other severe mental disorders. Treatment was aimed at making the schizophrenic’s body a very uncomfortable place for the demon to live. The patient was fed dreadful concoctions, chilled, and physically abused to encourage the demon to depart the premises.

In the late Middle Ages and into the 17th century, the demonic possession explanation evolved into witchcraft theory. An important difference between these views is that in demonic possession the demon was believed to move in uninvited. In witchcraft, however, the demons were supposedly invited in. Thousands of mentally ill people, probably primarily schizophrenics, were tortured and killed in the 16th and 17th centuries. The idea that mental disorders represented punishment by God or deliberate association with evil persists with some to this day.

We finally experienced a breakthrough in the treatment of schizophrenia in the late 1950s. It was noted that a drug given to French soldiers in the Indochina War had a side effect of calming severely wounded soldiers. The physician who noted this was instrumental in having the drug tested to treat schizophrenia. It worked, dramatically reducing the symptoms of schizophrenia in the majority of, but not all, schizophrenics.

The search for the cause of schizophrenia now focused on what the drug does to reduce schizophrenic symptoms. In 1963, a Danish scientist linked antipsychotic drugs with the
neurotransmitter dopamine. The original form of the dopamine hypothesis was that schizophrenia, or at least one form of it, was the result of excessive dopamine activity in the brain. It was soon realized that this hypothesis is an oversimplification, and as other neurotransmitters became involved, the hypotheses became more complex.

Other explanations have been suggested. In 1977, hemodialysis was reported to lead to dramatic improvement in a significant number of schizophrenics. Studies sponsored by the National Institute of Mental Health (NIMH) failed to support the idea that schizophrenia is related to contaminated blood. It has also been suggested that viral infection plays a role in schizophrenia. Perhaps the cause is a slow-acting virus that takes years to flare into an active infection that produces schizophrenic symptoms.

Fetal brain damage during the first trimester of pregnancy has been suggested as a factor that predisposes people to schizophrenia. A study of 50 male schizophrenics showed that they were much more likely than non-schizophrenics to have minor physical abnormalities that presumably resulted from the same interruption of fetal development. Additionally, there is a great deal of evidence from family and twin studies to support the idea of a genetic component in schizophrenia, although a genetic marker has not been identified.

Research on psychosocial causes also continues. Many mental health professionals take an interactionist view, the position that schizophrenia results when biological vulnerability is combined with adverse environmental circumstances. Some psychologists have pointed to intrafamily problems, and some parents have been labeled “schizophrenogenic” because they presumably increase the probability of schizophrenia in their children. Stress has also been suggested as a causal factor in schizophrenia. Research has led scientists to the conclusion that schizophrenia is probably not a single, unitary disorder, but that there are schizophrenias, which have several or many causes.

**Alien Abductions and Out-of-Body Experiences**

In recent years, much publicity has been given to people who claim that they were abducted by aliens while lying in their beds, sleeping. Most scientists are skeptical of such claims, and many believe that these experiences may reflect some type of REM sleep dissociative experience. Two other well-publicized types of dissociation are the so-called "out of body" and "near death" experiences. Most people claiming to have had these experiences appear to be otherwise rational individuals who would make believable witnesses in any courtroom (if they were discussing almost any other topic but this one), and they appear to be truthful in their belief that what they experienced was real. While clearly something has happened to them, what might it be? Although it is remotely possible that they were abducted or have somehow left their body, the lack of any substantial confirming evidence has left scientists doubtful of such claims. If they were not really abducted or did not really leave their body, what else might have happened to them? You might discuss with students alternative explanations for these experiences. Since some researchers have been able to recreate out-of-body sensations in the laboratory by stimulating areas of the temporal lobes, might this explain some of these experiences? While scientists believe so, many of those who have had these experiences do not. Since no one really knows the answer yet, there is plenty of room for speculation on this topic and it makes for an interesting discussion, because it is a topic about which many students are quite curious.

**Narcissistic Personality**

Some people have argued in recent years that narcissistic personality disorder has become the characteristic disorder of our time. They have argued that the “baby boom” generation, in
particular is the most self-centered and “spoiled” generation in American history. Some have
even used this idea of generational narcissism to explain some of Bill Clinton’s problems with his
sexual behavior. Do students agree with this idea? Why or why not? What influences have
fostered this belief? At what point does normal self-interest become narcissistic and self-
defeating? How does intrusive press coverage into the personal lives of public figures and
constant hyping of celebrities, athletes, and even criminals by the media contribute to this?
Is Mental Illness a Myth?

Dr. Thomas Szasz has forcefully argued for years that mental illness is a myth. His position is that mental illnesses are labels we attach to social nonconformists as a way of punishing, discrediting, and stigmatizing them for their nonconformity. You might discuss this with students to see if they agree with this somewhat radical notion. While it is true that historically, political regimes have sometimes labeled their opponents as being mentally ill as an excuse to imprison them, there is little evidence that all people with mental illness are just being labeled for being a threat to the social order. What evidence is there that mental illness is more than just a method of labeling those whose behaviors makes us uncomfortable?

What Is a Nervous Breakdown?

When discussing mental illness, many students will mention knowing someone who has had a “nervous breakdown,” and will ask what it is. You might discuss the fact that the term “nervous breakdown” is not a valid clinical term; technically, there is no such thing. However, it has been informally used by the general public to describe a variety of mental health problems. Sometimes it has been used to describe an individual who has experienced a psychotic episode. Other times it has been used to describe an individual who has had a major depressive episode. You might discuss with students the types of symptoms shown by someone they have heard has suffered a nervous breakdown. Perhaps they can find a more clinically accurate diagnosis of what the person has actually experienced.

**TIMELINE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>1793</td>
<td>Philippe Pinel was appointed head of the Asylum of Bicetre, France. He immediately sought to improve living conditions and treatment of patients.</td>
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<tr>
<td>1796</td>
<td>William Turk opened the York Retreat in England, a country asylum without bars or manacles.</td>
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<tr>
<td>1824</td>
<td>Eli Todd founded the Hartford Retreat in the U.S., an institution that sought to provide proper medical, as well as psychological, treatment for patients.</td>
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<tr>
<td>1841</td>
<td>Dorothea Dix began her campaign for proper care and housing of the mentally ill.</td>
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<tr>
<td>1859</td>
<td>Charles Darwin published <em>On the Origin of the Species by a Means of Natural Selection</em>.</td>
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<tr>
<td>1896</td>
<td>Sigmund Freud eschewed use of hypnosis as a therapeutic tool.</td>
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<tr>
<td>1900</td>
<td>Sigmund Freud wrote what many considered to be his best book, <em>The Interpretation of Dreams</em>.</td>
</tr>
<tr>
<td>1908</td>
<td>Clifford Beers, a former mental patient, founded the National Committee for Mental Hygiene in Connecticut. Among the Committee’s charter members was William James. The committee later became known as the National Association for Mental Health.</td>
</tr>
<tr>
<td>1911</td>
<td>Eugene Bleuler coined the term “schizophrenia.”</td>
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<tr>
<td>Year(s)</td>
<td>Event</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1929</td>
<td>The Great Depression began in America.</td>
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<tr>
<td>1935</td>
<td>Portuguese psychiatrist Egas Moniz performed the first lobotomy.</td>
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<tr>
<td>1940s</td>
<td>David Shakow was influential in establishing clinical training programs in American universities.</td>
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<tr>
<td>1940s</td>
<td>Electroconvulsive shock therapy (ECT) gained popularity as a therapeutic tool.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
</tr>
<tr>
<td>1942</td>
<td>Carl Rogers published <em>Counseling and Psychotherapy</em>, introducing the client-centered approach to therapy.</td>
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<tr>
<td>1950s</td>
<td>Both psychosurgery and drug therapy were introduced in the U.S. Problems with psychosurgery were eventually realized, and drug therapy proved highly successful in controlling many types of psychological disorders.</td>
</tr>
<tr>
<td>1952</td>
<td><em>The Diagnostic and Statistical Manual of the American Psychiatric Association</em> was published.</td>
</tr>
<tr>
<td>1952</td>
<td>Hans Eysenck attacked the value of psychotherapy as a means of improving mental health.</td>
</tr>
<tr>
<td>1950-1953</td>
<td>The Korean War was fought.</td>
</tr>
<tr>
<td>1958</td>
<td>Joseph Wolpe developed a therapeutic technique known as systematic desensitization.</td>
</tr>
<tr>
<td>1961</td>
<td>Thomas Szasz published <em>The Myth of Mental Illness</em>, suggesting that psychological disorders have been conceptualized incorrectly.</td>
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<tr>
<td>1963</td>
<td>President John F. Kennedy was assassinated.</td>
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<tr>
<td>1967</td>
<td>Neal Miller and colleagues performed experimental research leading to the development of biofeedback.</td>
</tr>
<tr>
<td>1977</td>
<td>Albert Bandura published <em>Social Learning Theory</em>, suggesting modeling as a therapeutic tool</td>
</tr>
<tr>
<td>1984</td>
<td>Researchers linked the neurotransmitter dopamine to schizophrenia.</td>
</tr>
<tr>
<td>1987</td>
<td>DSM-III-R was published.</td>
</tr>
<tr>
<td>1994</td>
<td>DSM-IV was published.</td>
</tr>
<tr>
<td>2000</td>
<td>DSM-IV-TR was published.</td>
</tr>
</tbody>
</table>
SUGGESTIONS FOR FURTHER READING

American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of the American Psychiatric Association, 4th Ed.* Washington, DC: American Psychiatric Association. Although not totally turning the diagnostic system on its ear, there are sufficient changes to warrant reading this latest edition—how else would one know that “multiple personality disorder” is now “dissociative identity disorder”?


Goffman, E. (1963). *Stigma: Notes on the Management of Spoiled Identity.* Though an older publication, Goffman’s insights into the daily problems of individuals “stigmatized” by the vagaries of fate or society are excellent; well worth reading.

Maxmen, J. S., & Ward, N. G. (I 1995). *Essential Psychopathology and Its Treatment, 2nd Ed.* New York: W. W. Norton & Co. May be considered as a “companion” volume to DSM-IV, in that it explains DSM-IV, presents its diagnostic categories and illuminates them, as well as providing treatment guidelines and case vignettes.


C: American Psychological Association. Contains a series of descriptive vignettes, based on actual patients, followed by a rationale for the diagnostic category used for that person. This book is a treasure of good examples for lecture.


**DISCOVERING PSYCHOLOGY**

**PROGRAM 21: PSYCHOPATHOLOGY**

**Overview**

The major types of mental illness, including schizophrenia, anxiety, and affective and bipolar disorders, and the major factors that influence them, both biological and psychological.

**Key Issues**

Mistreatment of mentally ill patients in psychiatric hospitals, biological versus psychological study of schizophrenia, the role of genetics in mental disorders, genetic study of schizophrenic and healthy twins, SPECT analysis, and cultural factors in psychopathology.

**Interviews**

David Rosenhan details his dehumanizing treatment at a psychiatric hospital after he was admitted as a patient during an experiment on the perception of mental illness.

Fuller Torrey compares schizophrenia to other biological diseases.

Psychologist Hans Strupp examines the role of early childhood behavior in the development of schizophrenia.

Irving Gottesman and Torrey Fuller examine the biological and genetic basis of schizophrenia though NM and SPECT analysis.

Native American psychologist Teresa LaFramboise examines the psychological consequences of the clash between Native American and generic American cultures.

**PROGRAM 22: PSYCHOTHERAPY**

**Overview**

The relationship among theory, research, and practice, and how treatment of psychological disorders has been influenced by historical, cultural, and social forces.

**Key Issues**

Psychosurgery, electroconvulsive therapy, drug therapy, genetic counseling, psychodynamic therapy, rational emotive therapy, behavioral modification therapy, humanistic therapy.
Archival Demonstrations

A therapist uses fear reduction strategy to help a young boy overcome his fear of dentists. Another therapist trains a young girl to control her epileptic seizures.

Actual therapy session with a girl who fears dating.

Interviews

Hans Strupp explains the kinds of patients most suited for psychodynamic therapy. (10:30)

Enrico Jones explains his problems in selecting the most effective therapy for various people and their various disorders.

Cognitive therapist Albert Ellis explains how to treat patients’ irrational attributes, false beliefs, and expectations of failure through rational emotive therapy.

Humanistic therapist Rollo May discusses therapy for “normal” people seeking greater fulfillment.

Films and Videos

Depression: The Dark Side of the Blues (1986). BARR, 25 minutes

Offers an illuminating perspective of the nation’s number one mental health problem. Clinical depression is a life-threatening disease that affects persons from all occupations. People who are seriously depressed are profiled, and commentary reveals probable causes and available treatments. Symptoms and effects of depression are detailed and hope, through early recognition treatment, is offered.

Dreams So Real: Three Men’s Stories (1981). IFMIJ, 28 minutes

Combines the words and animated films made by three outpatients from a community mental health center. Struggling to make a transition back into the community, these men are striking in their nonconformity to the stereotypes expected of mental health patients. A great film for sensitizing students to the needs and pain of mental health patients.

The Mind Depression (1988). NCAIARR, 24 minutes

Profiles people with bipolar disorders, showing the grandiose delusions that often accompany the manic phase. Contrasts the normal cycle of emotions with the unpredictable swings of bipolar disorders. Interviews one family in which the grandmother, father, and several children all suffer from depression, speculates that their depression is biologically caused, and depicts the suspected genetic basis of bipolar disorders. Focuses on people who perform well with the help of antidepressant drugs, including one young M.D. Describes the benefits of talking therapy in conjunction with drug therapy.

The Mind of a Serial Killer (1993). FFHS, 60 minutes

This program goes behind the scenes to give the real story behind the FBI unit popularized in The Silence of the Lambs. Using a detailed psychological profile, the unit helps the Rochester, New York, police department catch a notorious serial killer that targeted prostitutes. This NOVA program is part of the WGBH collection.

Neurotic Behavior: A Psychodynamic View (1973). CRW, 19 minutes

Illustrates the neurotic behavior and classical defense mechanisms of Peter, a college student. A psychodynamic approach to behavior is used to analyze Peter’s life as he experiences anxiety,
repression, rationalization, displacement, and finally phobias and obsessive-compulsive neurosis in reaction to the psychological trauma induced by his mother during early training. Although the use of the term “neurosis” is outdated according to the DSM-IV, the film provides clear examples of phobic and obsessive-compulsive disorders.

**One Man’s Madness (1974). IUTFF, 32 minutes**

Documentary of a writer who became a bipolar depressive (bipolar depression was previously referred to as manic-depression). Swinging in mood from ecstasy to severe depression, his symptoms of alienation and withdrawal are shown both at home and in the hospital setting.

**The Scandal of Psychiatric Hospitals: When the Goal Is Insurance Reimbursement (1993). FFHS, 52 minutes**

At the same time that mentally ill patients are being discharged into the streets because their insurance benefits have expired, healthy Americans are being locked up in mental hospitals while the hospital draws their insurance. This shocking program reveals some of these abuses. It shows how one group of hospitals herded up patients and, in a cynical and sadistic way, held healthy Americans hostage; it also shows how bona fide psychiatrists are tempted or duped, and how outnumbered and outgunned law enforcement agencies are trying to restore psychiatry to its role as a healing profession, not a get-rich-quick business.

**Teenage Suicide: The Ultimate Dropout (1980). PBS, 29 minutes**

A 14-year-old girl who attempted suicide discusses her feelings of frustration and helplessness. Advice is given for families with problems involving suicide.

**The World of Abnormal Psychology (1991). Intellimation, 60 minutes**

A series built around documentary views of people experiencing a variety of behavioral disorders. Case histories are accompanied by commentaries from educators, clinicians, and researchers who highlight and help interpret what students see. Programs include:

1. Looking at abnormal behavior
2. The nature of stress
3. The anxiety disorders
4. Psychological factors and physical illness
5. Personality disorders
6. Substance abuse disorders
7. Sexual disorders
8. Mood disorders
9. The schizophrenias
10. Organic mental disorders
11. Behavior disorders of children
12. Psychotherapies
13. An ounce of prevention
CHAPTER 16
Therapies for Personal Change

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Identify the overall goals of therapeutic interventions
2. Explain how modern forms of therapy developed
3. Discuss the differences in types of therapists
4. Describe the historical and cultural aspects of treatment of the mentally ill
5. Discuss the differences in the major theoretical models of mental illness
6. Explain what happens when an individual receives therapy
7. Describe the differences and advantages in drug and psychotherapy treatments
8. Comment on the general effectiveness of the different types of treatment for mental illness

CHAPTER OUTLINE
I. The Therapeutic Context
   A. Goals and Major Therapies
      1. The Therapeutic Process Involves Four Primary Goals:
         a) Reaching a diagnosis and classifying the disorder
         b) Proposing a probable etiology
         c) Making a prognosis
         d) Prescribing and carrying out some mode of treatment
      2. Major Therapeutic Models
         a) Biomedical therapies attempt alteration of brain functioning through chemical or physical interventions
         b) Psychotherapy focuses on changing learned, maladaptive behaviors. There are four major types of psychotherapy
            (i) Psychodynamic approach views neurotic suffering as the outer symptom of inner, unresolved trauma and conflict
            (ii) Behavior therapy treats the behaviors themselves as disturbances that must be modified
            (iii) Cognitive therapy attempts restructuring of the individual’s thoughts away from distorted self-thoughts
(iv) Existential-humanistic therapies emphasize patient/client values, directing energies toward self-actualization

B. Therapists and Therapeutic Settings

1. Counseling psychologists provide guidance in areas such as vocation selection, school problems, drug abuse, and marital conflict
2. Clinical social workers are mental health professionals who consider the social contexts of people’s problems
3. Pastoral counselors are members of a religious order, specializing in the treatment of psychological disorders
4. Clinical psychologists have a Ph.D. and concentrated their graduate training in the assessment and treatment of psychological problems, followed by a supervised internship in a clinical setting
5. Psychiatrists have completed medical school, earned an M.D., and completed postdoctoral training in mental and emotional disorders; their training is slanted toward the biomedical basis of psychological problems, and they are the only therapists who can prescribe medical or drug-based interventions
6. Psychoanalysts have either an M.D. or Ph.D. and have completed specialized postgraduate training in the Freudian approach to understanding and treating mental disorders

C. Historical and Cultural Contexts

1. History of Western Treatment
   a) 1403: London’s St. Mary of Bethlehem Hospital admitted its first patient with psychological problems. For the next 300 years the hospital’s mental patients were chained, tortured, and exhibited to an admission-paying public. Through mispronunciation of Bethlehem, the hospital became known as Bedlam, or chaos, due to the confusion that reigned and the dehumanized treatment of its patients.
   b) Late 1700s: French physician Philippe Pinel described psychological problems as mental illness
   c) Mid-1800s: Psychology was gaining credence as a field of study in the U.S., and a “cult of curability” emerged
   d) 1900s: Clifford Beers spurred on the mental hygiene movement, with confinement of the mentally ill taking on a rehabilitative goal, and the asylum became a fixture of the emerging sociopolitical movement

2. Cultural Symbols and Rituals of Curing
   a) Western views and practices emphasize the individual’s uniqueness, independence, and personal responsibility for success and failure, consistent with both the disease model and demonology. Mental disorder is viewed as the failure of the individual.
b) Cultural anthropology analyzes explanations and treatments for psychological disorders across various cultures

(i) Shamanism personalizes the forces of fate or chance that intervene in one’s life, creating problems. Personalization permits action to be taken against presumed evildoers and directs help to be sought from assumed divine healers.

(ii) Ritual healing ceremonies infuse emotional intensity and meaning into the process of healing.

II. Psychodynamic Therapies

A. Freudian Psychoanalysis

1. Psychoanalytic therapy is an intensive, prolonged technique for exploration of the neurotic and anxiety-ridden individual’s unconscious motivations and conflicts

2. The goal is establishment of intrapsychic harmony and understanding of the patient’s use of repression to handle conflicts

3. Psychodynamic therapy is often called insight therapy

4. The “talking cure” began with Joseph Breuer in 1880, as treatment for hysterical conversion resulting from psychogenic causes

5. Free Association and Catharsis

a) Free association involves allowing the mind to wander and giving a running account of thoughts, wishes, while relaxing comfortably

   (i) Freud maintained free associations were predetermined, not random

   (ii) Encouraged expression of strong feelings, repressed through fear of punishment or retaliation, an emotional release termed catharsis

6. Resistance is an inability or an unwillingness to discuss certain ideas, desires, or experiences

7. Dream analysis is a therapeutic technique that examines content of dreams to discover underlying or disguised motivations and symbolic meanings of significant life experiences and desires

8. Transference and Countertransference

   a) Transference is the development by the patient of emotional feelings toward the therapist

   b) Countertransference occurs when the therapist comes to like or dislike a patient because the patient is perceived as similar to significant people in the therapist’s life

B. Neo-Freudian Therapies

1. Freud’s followers placed more emphasis than did Freud on:

   a) Patient’s current social environment, less focus on past

   b) Patient’s continuing life experiences
c) The role of social motivation and interpersonal relations of love
d) The significance of ego functioning and development of self-concept

2. Harry Stack Sullivan felt Freudian therapy failed to recognize the importance of social relationships
   a) Posited building of a self-system to keep anxiety at a tolerable level, with the system deriving from the child’s interpersonal experiences.

3. Karen Horney stressed importance of environmental and cultural contexts in which neurotic behavior is expressed, rejecting Freudian phallocentrism in favor of gynocentrism

4. Heinz Kohut emphasized the self, and founded the object relations school of psychodynamics

III. Behavior Therapies

A. Behavior therapy and behavior modification both refer to the systematic use of principles of learning to increase the frequency of desired behaviors and/or decrease that of problem behaviors

B. Counterconditioning
   1. A new response is conditioned to replace or “counter” a maladaptive response
   2. Systematic Desensitization and Other Exposure Therapies
      a) Joseph Wolpe’s theory of reciprocal inhibition states that the nervous system cannot be relaxed and agitated simultaneously.
      b) Systematic desensitization: A behavioral therapy technique in which a client is taught to prevent the arousal of anxiety by confronting the feared stimulus while relaxed. Desensitization therapy involves three major steps:
         (i) Identification of anxiety-provoking stimuli, and arranging them hierarchically, from weakest to strongest
         (ii) Training in progressive deep-muscle relaxation
         (iii) Actual process of desensitization, the progressive imagining of stimuli, from weakest to strongest
      c) Implosion therapy: the opposite of desensitization. Client is exposed immediately to the most frightening stimuli at the top of his or her anxiety hierarchy, but in a safe setting
      d) Flooding: similar to implosion, but involves clients being placed in the phobic situation

3. Aversion therapy uses counterconditioning to pair stimuli with strong noxious stimuli
C. Contingency Management

1. Relies on operant conditioning principles pioneered by B. F. Skinner
2. Refers to the general treatment strategy of changing behavior by modifying its consequences. Major techniques are:
   a) Positive reinforcement strategies
      (i) Token economies
      (ii) Shaping
      (iii) Behavioral contracts
   b) Extinction strategies are useful when dysfunctional behaviors have been maintained by unrecognized reinforcing circumstances

D. Social-Learning Therapy

1. Social-learning therapy is designed to modify problematic behavior patterns by arranging conditions in which the client will observe models being reinforced for a desirable form of responding.
2. Two aspects of this approach include imitation of models and social skills training
   a) Imitation of models: Individuals acquire responses through observation of others (models)
   b) Social-skills training: Training individuals with inadequate social skills to be more effective using behavioral rehearsal

E. Generalization Techniques

1. Do clients use new behavior patterns generated in the therapeutic setting in everyday situations?
2. Generalization techniques attempt to increase similarity of target behaviors, reinforcers, models, and stimulus demands between therapy and real-life settings

IV. Cognitive Therapies

A. Cognitive Therapies attempt to change problem feelings and behaviors by changing the way the client thinks about significant life experiences

B. Cognitive Behavior Modification

1. Approach combines cognitive emphasis on the role of thoughts and attitudes influencing motivations and response with behaviorist focus on changing performance through reinforcement contingencies
2. Unacceptable behavior patterns are modified by cognitive restructuring
3. Critical aspect is discovery by therapist and client of how the client thinks about and expresses the problem for which therapy is sought
C. Changing False Beliefs

1. Some cognitive therapists argue that many psychological problems arise as a function of how people think about themselves relative to other people and the events they face. Faulty thinking can be based on:
   a) Unreasonable attitudes
   b) False premises
   c) Rigid rules that put behavior on “autopilot”

2. Cognitive Therapy for Depression
   a) The therapist helps the client to identify his or her irrational ways of thinking and to learn more realistic ways to formulate personal experiences
   b) Four tactics used to change the cognitive foundation that supports the depression:
      (i) Challenging basic assumptions about his or her functioning
      (ii) Evaluating evidence the client has for and against accuracy of automatic thoughts
      (iii) Reattributing blame to situational factors rather than client’s incompetence
      (iv) Discussing alternative solutions to complex tasks that could otherwise lead to experiences of failure

3. Rational-Emotive Therapy (RET): A comprehensive system of personality change based on transformation of irrational beliefs that cause undesirable emotional reactions
   a) RET teaches clients to recognize “shoulds,” “oughts,” and “musts” that are controlling their actions and preventing them from choosing the lives they want
   b) RET’s goal is to increase sense of self-worth and potential for self-actualization

V. Existential-Humanistic Therapies

A. Background

1. Existential crises include problems in everyday living, lack of meaningful human relationships, and absence of goals or purpose

2. Existential-humanistic philosophy gave rise to the human-potential movement, which encompassed practices and methods enhancing the potential of the average human being toward greater levels of performance and greater richness of experience

B. Client-Centered Therapy

1. Primary goal is to promote healthy psychological growth of the individual

2. Assumption: All people share the tendency to self-actualize, to reach their potential
3. **Incongruence**: a conflict between naturally positive self-image and negative external criticism. Creates anxiety, unhappiness, and low self-worth

4. **Therapeutic strategy**: To recognize, accept, and clarify client’s feelings in an atmosphere of *unconditional positive regard*, nonjudgmental acceptance and respect for the client.

C. **Gestalt Therapy**

1. Focus on uniting of mind and body to make the person whole

2. Goal of self-awareness by helping clients express pent-up feelings and unfinished business from past conflicts

VI. **Group Therapies**

A. **Marital and Family Therapy**

1. **Couples counseling** seeks clarity in communication between partners, and works to improve the quality of interaction. It is more effective in resolution of marital problems than individual therapy for only one partner

2. **Family therapy** client is the entire nuclear family, with each member treated as a member of a system of relationships
   a) Focus is on altering psychological space between people
   b) The interpersonal dynamics of people acting as a unit
   c) Most family therapists assume problems brought to therapy to represent situational difficulties, rather than dispositional aspects of individuals
   d) Job of family therapist is understanding the structure of the family and the forces acting on it

B. **Community Support Groups**

1. Self-help groups help many people obtain psychological support in the community setting

2. Address four basic problem areas:
   a) Addictive behavior
   b) Physical and mental disorders
   c) Life transition or other crises
   d) Trauma of family and friends of those with specific problems

VII. **Biomedical Therapies**

A. **Psychosurgery and Electroconvulsive Therapy**

1. **Psychosurgery** is the general term for surgical procedures performed on brain tissue to alleviate psychological disorders, with the prefrontal lobotomy being best known
2. **Electroconvulsive Therapy** (ECT) is the use of electroconvulsive shock to treat psychiatric disorders such as schizophrenia, mania, and, most often, severe depression

   a) ECT is successful in treatment of severe depression. It works quickly.

   b) Potentially negative effects of ECT include temporary disorientation and memory deficits

**B. Drug Therapy**

1. **Psychopharmacology:** the branch of psychology investigating the effects of drugs on behavior

2. The three major categories of drugs used today are:

   a) **Antipsychotics** alter symptoms of schizophrenia. Examples include Thorazine, Haldol, and Clozaril.

   b) **Antidepressants** increase the activity of the neurotransmitters norepinephrine and serotonin. Examples include Tofranil, Prozac, Paxil, and Zoloft.

   c) **Antianxiety agents** (anxiolytics) adjust levels of neurotransmitter activity in the brain. Examples include Valium and Xanax.

3. Prescriptions for Psychoactive Drugs

   a) The rate at which drugs are prescribed changes over time

   b) From 1985 to 1994, prescription of antianxiety tranquilizers decreased from 52 to 33 percent of all mental health doctors visits, while prescriptions for antidepressants increased from 30 to 45 percent

4. **When Is Drug Therapy Necessary?**

   a) Although drugs can produce tremendous improvements in psychological functioning, research suggests that some forms of therapy may have the same effect on the brain as a course of drug treatment

**VIII. Does Therapy Work?**

**A. Evaluating Therapeutic Effectiveness**

1. **Spontaneous-remission effect** is one baseline criterion of naturally occurring change against which effectiveness of therapies must be assessed

2. **Placebo therapy:** A neutral therapy that creates expectations of healing

3. **Meta-analysis:** A statistical technique that evaluates general conclusions from data across many different experiments or evaluation studies

**B. Treatment Evaluations:**

1. A study by the National Institutes of Mental Health compared treatments for depression
a) Therapies evaluated were cognitive behavioral therapy, interpersonal psychotherapy, and drug therapy

b) Evidence suggests that cognitive behavioral and interpersonal therapies had an intermediate level of effectiveness, and drug therapy had the greatest effect

c) Research indicates that virtually all therapies will bring some relief

C. Prevention Strategies

1. Preventing a problem is the best solution.

2. Goal of prevention can be realized at different levels
   a) *Primary prevention* tries to prevent a condition from ever beginning
   b) *Secondary prevention* attempts to limit duration and severity of a disorder, once it has begun
   c) *Tertiary prevention* limits the long-term impact of a psychological disorder by seeking to prevent a relapse

3. Implementation of these three types of prevention focuses on paradigm shifts in mental health care, with most important being:
   a) Supplementing treatment with prevention
   b) Going beyond a medical disease model to a public health model
   c) Focusing on situations and ecologies that put people at risk and away from “at-risk” individuals
   d) Looking for precipitating factors in life settings, rather than predisposing factors in people

4. *Clinical ecology* expands the boundaries of biomedical therapies by relating disorder to environmental irritants

5. Ultimate goal of prevention programs is to safeguard the mental health of all members of society

**DISCUSSION QUESTIONS**

1. Does your university have a psychological counseling center for students? The years one spends in college are often some of the more trying years of one’s entire life. If your school is one that does provide counseling services for its students, check it out, in terms of cost, usual duration of therapeutic intervention, treatment modality, and any underlying philosophies. You may wish to prepare a summary of this information for the class.

2. Ask the class what would be most frightening to them if it was learned that tomorrow all the mental hospitals were to close, and all patients were to be released without supervision, medications, or treatment. Elaborate on and discuss your class’s concerns.
3. Have the class propose situations of transference and countertransference in the therapeutic environment and in their own personal relationships outside of the therapeutic milieu. Help them to understand the dynamics of these manifestations.

4. Phobias are a part of life for many of us, and many of us feel foolish in discussing them. Ask students if they know someone who is phobic in some area (this lets them off the hook, relative to self-identification) and ascertain what, if any, coping mechanisms may be employed. Is the individual in therapy? Are they “toughing it out”? Do they avoid situations that might trigger the phobia? How do various individuals deal with their phobias?

5. Is aversion therapy worth the “price”, in terms of the physical and emotional stress that it may cause? How effective does the class believe it to be? Ask if any of the class would engage in aversion therapy for a problem such as smoking or weight loss? Why or why not? Have them be specific.

6. Discuss with the class situations in which social-skills training might be beneficial. What about situations in which it may be less than effective? Are social skills really something that can be “learned” by an adult, or are we hopeless if we fail to learn these skills in childhood? Outline a treatment program for a shy friend.

7. Ask the class if they think cognitive behavior modification might be more successful with one segment of the population than with another? Have them discuss the potential for success with a 38-year-old attorney, as compared to a 75-year-old widower. What might be the motivations involved in accepting therapy, as displayed by these very different individuals? Why is this relevant?

8. What is the class’s “take” on electroconvulsive (shock) therapy? Many people have little if any understanding of what the procedure entails. Help the class develop an understanding of this treatment modality, and the reasons for its success in certain disorders, as well as why it is feared by some individuals.

9. People with personality disorders do not respond well to most attempts at psychological therapy. Success rates in treating males with antisocial personality disorder have been estimated to be as low as 2 to 5 percent. Success rates with other types of personality disorders vary, but are often not significantly higher. Additionally, persons with personality disorders rarely come in for treatment on their own. Often, their only reason for attempting therapy is external pressure, such as a court order or a demand by a spouse who threatens to leave them. Is it ethically justifiable to subject someone to an intensive, expensive effort to alter his or her style of life, especially when that person doesn’t want to be there and the chances of success are often minimal? One might argue that if the person is not harming anyone else, such efforts are not ethically justifiable. On the other hand, people with certain types of personality disorders, such as antisocial, narcissistic, and paranoid personality disorder, can represent a real danger to others in some cases. The duty to protect others might then justify “forced” therapy in these cases. One might also argue, however, that since success rates in treatment are often so low, the best way to protect others is to imprison people with these disorders when their behavior harms others in an illegal manner. What do students think about these issues?
SUPPLEMENTAL LECTURE MATERIAL

The Role of Critical Thinking in Emotional Problems

Cognitive therapists feel that certain emotional disorders, like anxiety and depression, can be traced to irrational and illogical ways of thinking. Let us look at some of the fallacies that cognitive psychologists have noted in the thought processes of some people with emotional disorders.

Faulty generalization. This is the tendency to use a particular event or item of information as the basis for a general conclusion. The man whose wife leaves him concludes that no one could ever love him. The student who fails a test concludes that she is a failure. The woman who gets an occasional headache concludes that she is an unhealthy person.

Polarized thinking. This is the tendency to classify people, events, behavior, and thoughts rigidly as polar opposites: right or wrong, good or bad. This is also called dualistic thinking, black-and-white thinking, and bifurcation. This tendency is often described as an effort to oversimplify reality. A woman feels that if a person does not give clear evidence of liking her, then the person must dislike her. An adolescent feels that thinking about anything related to sex is bad and tries unsuccessfully to have only pure thoughts.

Incorrect assumptions about what is safe and what is threatening. The maladjusted person may feel that it is threatening to express his views or to show her anger. Taking the initiative to talk with a person of the opposite sex may be perceived as threatening. The person could just walk away, or could say something hurtful.

Maladaptive attitudes toward pleasure and pain. These are the attitudes that say if an activity is pleasant, it must be sinful, and if it is unpleasant, it means you have done the right thing. This is analogous to thinking that a medicine is no good unless it is painful to apply or tastes bad. This type of thinking may result from selectively remembering pleasurable behaviors that were punished and unpleasant activities that were rewarded. Erikson, who was a psychodynamic psychologist, suggested that while the superego, or conscience, can be very powerful, it also has a tendency to be juvenile, simply because it was established in childhood. He thought that some people could suffer terrible guilt because of this juvenile superego’s conviction that pleasurable things are “bad.”

Tyranny of “shoulds.” This is the tendency to dedicate one’s life to self-imposed obligations and responsibilities, and to feel anxious, depressed, or guilty if a “should” is left undone. “I should go to that meeting,” “I should write to Aunt Hattie,” “I should change the sheets on my bed.” It is conceivable that a person could have more “shoulds” than there are hours in the day to execute them. Psychodynamic psychologists would attribute this situation to a domineering superego.

Biased attributions. Attributions are an attempt to understand events by proposing a cause for them. In the case of the maladjusted person, the primary problem is the causes proposed to explain personal behavior or events that involve the self. The bias may be in the direction of protecting the self, in which case the maladjusted person attributes successes and positive events to other people or environmental circumstances, and failures and negative events to his or her own efforts or abilities. A psychodynamic psychologist might describe this as overuse of defense mechanisms, like rationalization and projection. What does a well-adjusted individual do? He or she internalizes, or takes credit for success, and externalizes experiences of failure. Maladjusted individuals must do the opposite; he or she may go to the opposite extreme, attributing successes and positive events to others or environmental factors.
and failure and negative events to his or her own lack of initiative or ability. In one case, the maladjusted person is protecting a fragile self-esteem, and in the other, the person is confirming low self-esteem.

*Personalization of events.* This is a mild form of delusions of reference, a condition in which there is a tendency to see personal significance in the behavior of others. A person goes to a party at which the host serves Mexican food. The person does not like Mexican food and thinks that the host served it to spite him or her. The professor scolds the class for poor performance on a test. A student feels that the message is intended for him or her personally.

You may have noticed that the types of faulty thinking described by cognitive psychologists as roots of emotional disorders are similar to uncritical, rigid thinking in general. Faulty thinking can distort our interpretation of events, and it can cause us to make unfortunate decisions.

### Why Does Therapy Sometimes Fail?

*Putting the blame on science.*

We do not know the causal agent for most mental disorders because mental disorders, unlike most physical illnesses, have no easily identifiable germ, bacteria, virus, organic damage, or psychosocial factor that has been associated with the majority of cases. The medical model contends that we will eventually identify biological causes for mental disorders. The psychosocial model points to life experiences, stress, and sociocultural forces as causes. Currently, a synthesis of these two theories prevails; biological and psychosocial forces interact as causal agents. Mental disorders seem to be like headaches in that they may result from any of many causes. Therapists of different theoretical orientations have their own explanations for mental disorders.

Diagnosis of most mental disorders must be made based on signs and symptoms, what the mental health professional observes in the patient’s behavior, and the patient’s description of his complaint. Symptom patterns are usually not clear-cut or easily associated with a particular diagnostic category, and mental health professionals do not get diagnostic help from analysis of blood or urine or X-rays.

*Putting the blame on the therapists.*

Research suggests that the personality, experience, and talent of the therapist are more important in determining the success of therapy than the type of therapy utilized. In other words, the person-therapist is more important than whether the therapy is psychoanalytic, humanistic, behavioral, or eclectic.

It is more difficult for therapists to be objective than it is for medical practitioners to be so, because the therapist cannot entirely avoid intrusions of his or her own values and preferences into the perception and interpretation of the patient’s behavior and disclosures. This problem is accentuated when the therapist and the patient have divergent socioeconomic, cultural, or ethnic backgrounds, or perhaps are of different genders.

Carl Rogers said that to be effective a therapist must be empathic, able to feel with the client; warm and accepting; and genuine. Empathy and warmth cannot be merely a professional facade. Yet, the important criteria for admission to most graduate and professional schools are intellectual ability and academic achievement, rather than warmth and genuineness. There may well be a gift or a talent that is an important ingredient in therapy that many therapists do not possess—or that was selected out of postgraduate admissions.
Putting the blame on the patients.

For convenience, we can put people who undergo psychotherapy into one of two categories. First, there are those who are in therapy because they were coerced or forced by family, authority figures, or the courts. Second, there are those who voluntarily seek therapy because their abnormal behavior is causing them pain or problems. It is not difficult to understand why therapy often fails when patients are coerced or forced, but why does it fail to help those who actively seek help with the intention of cooperating and doing their share in the therapeutic process?

Freud thought that neuroses served a purpose for the patient. The ego uses abnormal thinking and behavior as a means of protecting itself from impulses of the id and unconscious conflicts. Behaviorists admit that mental disorders can have advantages. They can make it possible for people to avoid unwanted responsibilities, to excuse failure, and to manipulate others. Therefore, the willing patient may have a conflict. In order to be relieved of the pain and misery associated with the disorder, the advantages gained from it must be sacrificed. Take the addict as an example. The addiction causes problems, and even physical pain, yet the person may feel that life would be unbearable without the addictive substance. In the case of anxiety disorders, the conflict is not so clearly perceived by the patient, who would generally deny getting any rewards (secondary gains) from holding on to the disorder.

Many disorders develop over a period of years, sometimes beginning in childhood. Patterns of abnormal or maladaptive thoughts and behaviors become an integral part of the personality, affecting the person’s view of reality and all his or her patterns of thought and behavior. Freud believed that restructuring of the personality was a necessity in successful therapy. This idea was that once the offending conflict or problem was identified, the person would need to rethink and reconstruct other aspects of the self that developed, in order to accommodate the abnormal patterns of thought and behavior. Most current therapies do not aim at reconstruction of the personality, but perhaps they should be more mindful of the possibility that you cannot excise an abnormality without affecting the personality structure from which it is removed.

Consider the example of a hypochondriac who has spent a good part of his life monitoring his body and looking for pathology to explain every irregularity of function or unfamiliar twitch. His illnesses have brought him sympathy and attention, and he has used his poor health to explain to himself and others why he has not “climbed the ladder of success.” After his life is endangered by an unnecessary surgery, he goes to a psychotherapist for help. The issue is, will he be able to give up his hypochondria and its benefits? Can he change his perception to see himself as a normal, healthy person living in a world in which illnesses and the danger of infection can play a relatively minor role?

It is not easy for people to give up their maladaptive behavior, just as it is not easy for any of us to break bad habits or improve aspects of our personalities. The therapist is in the position of trying to teach old dogs new-or better-tricks.

Prefrontal Lobotomies

The doctor who developed the prefrontal lobotomy was given the Nobel Prize in Medicine. Ask students if they have seen movies such as “One Flew Over the Cuckoo’s Nest” and what their perception is of the procedure. Do they consider it barbaric, without any possible redeeming value? If the answer to that question is “yes,” then you can play devil’s advocate by presenting the following scenario.

Imagine that you are a doctor on staff in a mental hospital in the late 1940s. Your mental hospital, constructed to hold 700 patients, now has over 1,300. Many of these are violent and need to be tied to their beds or kept in locked cells. Antipsychotic drugs will not be invented for another five
to ten years. Patients regularly attack one another, as well as the attendants. Other patients run through the hallways, screaming and yelling. You have one patient who has been in the hospital for 25 years and has essentially been kept in confinement. You hold no hope of recovery. However, you know that there is a therapeutic technique that will take only a half-hour, and if successful, will result in a significant decrease in episodes of violent behavior in this patient. Again, if the procedure is successful, the patient will appear to be much happier and more content with life. You also know that for most patients receiving this procedure there will be little difference in measurable IQ. You know of no behavioral test that routinely shows any mental deficit from the procedure. Would you, as this patient’s doctor, use this procedure?

When put into this context, most students begin to understand why prefrontal lobotomies were used as frequently as they were in the 1940s and 1950s. Most college students find it difficult to imagine a world in which there were no drugs that could be effectively used in place of procedures such as prefrontal lobotomy. Visiting a mental hospital today, it is difficult for most of us to imagine the general level of uproar and violence in the hospitals as recently as the 1940s. The 1948 movie “Snake Pit,” starring Olivia DeHavilland, portrayed the horrors of life as a patient (and staff member) in state mental hospitals during that “pre-chemotherapy” era.

Identifying Therapists

Ask students to compile a list of therapists in your area. They should gather information about the therapists’ professional degrees, fees, areas of specialization, forms of treatment, and other factors. You might divide them into groups and have each group attempt to locate therapists from a particular theoretical orientation (i.e., psychodynamic, etc.). They might call some therapists for such information, consult a local mental health association, check the web pages of professional organizations such as the APA, and consult phone book listings as ways of gathering this information.

Should Psychologists Prescribe Medication?

Since your text contains an excellent review of psychopharmacology, you might want to discuss the issue of whether counseling or clinical psychologists should be able to prescribe medication. Some have argued that it is ludicrous to have family physicians and surgical specialists, who may have no psychological training at all, able to prescribe the entire range of psychoactive drugs for treating mental illnesses, while psychologists, who specialize in treating mental illnesses, cannot prescribe any medications. Although it is true that historically most psychologists did not have the training in pharmacology that physicians were given, in recent years, many graduate programs in psychology have added coursework in physiology and pharmacology to narrow this gap. While most would agree that psychologists probably should not be able to prescribe nonpsychoactive medications, the wisdom of prohibiting them from prescribing any medications seems doubtful. Since psychologists are pressing for legislative changes in some states that would allow psychologists to prescribe some medications in some circumstances, this issue is likely to become more important in the near future. How do students feel about this issue? Do they see any potential dangers if psychologists begin prescribing medicine?
Albert Ellis (b. 1913)
Obtaining his Ph.D. from Columbia University in 1947, Albert Ellis made early contributions to psychoanalytic theory, although he has since become one of its major dissenters. Rebelling against what he perceived to be rigid psychoanalytic dogma, Ellis established Rational Emotive Therapy or RET in 1955. The development of RET is considered by many to represent the informal founding of cognitive therapy, popular in many forms today. Ellis has also influenced the development of sex and marital therapy, and his book *Sex Without Guilt* is recognized as an important cultural impetus to the American sexual revolution of the 1960s.

Frederick “Fritz” Perls (1893-1970)
Fritz Perls was born in Berlin, studied at the University of Freiburg, and obtained his Ph.D. at the University of Berlin. In 1926, he became Kurt Goldstein’s assistant at the Institute for Brain-Injured Soldiers, where he developed the notion of “gestalt,” or integrative wholes. He then studied psychoanalysis, being analyzed by such luminaries as Wilhelm Reich, Karen Horney, and Otto Fenichel. Perls left Germany in 1933, shortly after Hitler’s rise to power, spent the next decade in Holland and, in 1946, came to the United States, where he established the New York Institute for Gestalt Therapy. Although accepting the importance of unconscious conflicts, Perls believed it was necessary to deal with the present, rather than dwelling exclusively on the past. The basic philosophy and practice of Gestalt therapy is described in his book *Gestalt Therapy Verbatim* (1969).

Joseph Wolpe (b. 1915)
Joseph Wolpe was born in South Africa. He developed interests in chemistry as a teen, and would channel this passion into medical school training, earning his M.D. in 1948 at the University of Witwatersand. He worked as a lecturer in psychiatry for the next ten years. After becoming increasingly dissatisfied with Freudian psychoanalysis, Wolpe turned to the empirical works of Ivan Pavlov, with which he had become familiar as a medical student. During the late 1940s, influenced by the theories and research of Clark Hull, Wolpe conducted experiments on “reciprocal inhibition,” in which cats were “cured” of experimentally induced neuroses. Based on these findings, Wolpe developed a therapeutic practice, resulting in the publication of the classic book *Psychotherapy by Reciprocal Inhibition* (1958). In 1960, he came to the United States, establishing himself as the foremost proponent of behavior therapy.
**SUGGESTIONS FOR FURTHER READINGS**


Maxmen, J. S. & Ward, N. G. (1995). *Essential Psychopathology and Its Treatment, 2nd Ed.* Revised for DSM-IV. Not only does this volume orient readers in terms of DSM-IV; it also provides much needed information on childhood disorders and sleep disorders.


Shapiro, F., & Forrest, M. (1997). *EMDR: The Breakthrough Therapy for Overcoming Anxiety, Stress, and Trauma.* New York: Basic Books. EMDR (Eye Movement Desensitization and Reprocessing) is the innovative clinical treatment that has helped individuals who have survived trauma—including sexual abuse, domestic violence, drive-by shooting, combat, and crime.


Wolpe, J. (1990). The Practice of Behavior Therapy, 4th Ed. New York: Pergamon. Deals with the history and research foundations of behavior therapy, as well as the practice of behavior analysis, specific techniques, case studies, and methods of evaluating the effectiveness of behavior therapy.

**DISCOVERING PSYCHOLOGY**

**PROGRAM 22: PSYCHOTHERAPY**

**Overview**

The relationship among theory, research, and practice, and how treatment of psychological disorders has been influenced by historical, cultural, and social forces.

**Key Issues**

Psychosurgery, electroconvulsive therapy, drug therapy, genetic counseling, psychodynamic therapy, rational emotive therapy, behavioral modification therapy, humanistic therapy.

**Archival Demonstrations**

A therapist uses fear reduction strategy to help a young boy overcome his fear of dentists.

Another therapist trains a young girl to control her epileptic seizures.

Actual therapy session with a girl who fears dating.

**Interviews**

Hans Strupp explains the kinds of patients most suited for psychodynamic therapy.

Enrico Jones explains his problems in selecting the most effective therapy for various people and their various disorders.

Cognitive therapist Albert Ellis explains how to treat patients’ irrational attributes, false beliefs, and expectations of failure through rational emotive therapy.

Humanistic therapist Rollo May discusses therapy for “normal” people seeking greater fulfillment.
FILMS AND VIDEOS

Abnormal Psychology: The Psychoses (1980). HARR, 22 minutes
This film is a tour of a ward in a mental institution in which the patients are interviewed. It is an introduction to the etiology of psychosis, treatment, and prognosis.

Anyplace But Here, Parts 1 and 2 (1978). IU (CARSL), 50 minutes
Examines the problems that result when mental patients are released into communities unprepared to treat and accept them and lacking facilities to help them return to useful lives. A look at life inside Creedmore Psychiatric Center in Queens, New York. Reveals the dissatisfaction of patients, staff, and relatives with myriad problems of budgets, paperwork, and bureaucracy.

This program reviews treatment procedures from both the patient’s and the therapist’s perspectives. It describes the rationale for the self-regulation process, presenting cases involving self-regulation training for hypertension, migraine, chronic back pain, anxiety, and post-traumatic rehabilitation.

Carl Rogers Conducts an Encounter Group (1975). JEMC UCI, 70 minutes
Rogers is shown interacting with a group and its individual members. He also discusses factors that he considers important in facilitating a group. “Words from the Master.”

Childhood Aggression: A Social Learning Approach to Family Therapy (1974). JREPR, 30 minutes
Gerald Patterson’s approach to behavioral intervention in family therapy is demonstrated—an older film, but still worthwhile.

The Class That Went to War (1997). CRM, 35 minutes
An estimated 40 percent of Vietnam War veterans have had problems adjusting to civilian life. Close to a quarter million are unemployed and thousands have become the forgotten wounded, the ones nobody wants to talk about. Through the microcosm of one New Jersey high school class, this film focuses on the war and its legacy. Useful film to introduce the concept of post-traumatic stress disorder.

Depression: Beating the Blues (1983). NCIU (FML), 28 minutes
Examines how clinical depression differs from the normal day-to-day feelings of being blue. Focuses on old and new techniques for treating clinical depression. Uses interviews with several depression sufferers to show reactions to different kinds of therapy: drug, electroshock, cognitive, and psychiatric. Discusses the contribution of modern life to the psychological basis of depression, and encourages sufferers to seek help. An interesting look at the “pre-Prozac” days.

Frontline: Mind of a Murderer (1985). PBS, 120 minutes
This show is long, but it also is an Emmy Award Winner for 1985. It describes how Kenneth Bianchi, the Hillside Strangler who terrorized the Los Angeles area in the late 1970s, almost did not stand trial due to the fact that he was not mentally competent. The controversy revolved around his claim to multiple personalities. The videotape includes segments revealing Bianchi’s interactions with a team of psychologists and psychiatrists.
Gheel, a Flemish town, is the oldest center of home care of the mentally ill. The problems and advantages of this form of treatment are examined.

Harry: Behavioral Treatment of Self-Abuse (1980). REPR, 38 minutes
This is an account of the implementation of a behavioral treatment program for a young man who engaged in chronic self-abuse.

Peer-Conducted Behavior Modification (1976). VCIREPR, 24 minutes
Paul Clement discusses the role of peers in shaping deviant behavior, as well as the value of peers as positive modifiers in a therapy program.

Portrait of Manic Depression (1988). FANIJI, 60 minutes
Profiles four individuals who struggle to control the extreme mood swings caused by bipolar depression—an illness that affects nearly three million Americans. Current treatments are reviewed.

Laing presents his critical views as an “anti-psychiatrist” on what creates abnormal behavior and how it should be treated.

Romance to Recovery (1979). FMS, 36 minutes
Dr. Joseph Pursch describes how alcoholism adversely affects the normal relationships of the family and turns other family members into co-alcoholics who operate to reinforce the alcoholism of one member. Follows an alcoholic/co-alcoholic family through cover-up, manipulation, medical complications, child abuse, remorse, separation, revenge, and reunion. Emphasizes that all family members need treatment and that solutions are available, and talks about how to find them. This is a good depiction of family therapy, and it focuses on a problem that personally affects 10% of the American population.
CHAPTER 17
Social Processes and Relationships

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Explain how the environment or social factors help determine how individuals think, feel, and behave
2. Discuss the important lessons learned from the Stanford Prison Experiment
3. Describe and discuss the processes of conformity
4. Describe the concepts and processes involved with persuasion and attitude change
5. Explain the concept of the social construction of reality
6. Discuss the importance of attributions and the significance of the fundamental attributional error
7. Describe theories of social expectancy and self-fulfilling prophecy
8. Demonstrate a thorough knowledge and understanding of cognitive dissonance
9. Explain how interpersonal attraction relates to prejudice

CHAPTER OUTLINE

I. The Power of the Situation

A. Definitions

1. Social psychology is the study of the ways in which thoughts, feelings, perceptions, motives, and behavior are influenced by interactions and transactions between people
2. Social context includes the real, imagined, or symbolic presence of other people; the activities and interactions that take place between people; the features of the settings in which behavior occurs; and the expectations and norms that govern behavior in a given setting

B. Roles and Rules

1. A social role is a socially defined pattern of behavior that is expected of a person when functioning in a given setting or group
2. Rules are behavioral guidelines for specific settings
   a) Explicit rules are specifically stated or taught to children
   b) Implicit rules are learned through transactions with others in particular settings
3. The Stanford Prison Experiment demonstrated the effects of roles and rules
   a) Roles were designated randomly
(i) “Guards” were put in charge of “prisoners” and behaved aggressively, sometimes even sadistically.

(ii) Prisoners behaved passively, resigned to an unexpected fate.

b) The simulated prison environment created a new social reality

c) Coercive rules included explicit punishments for violations

d) Prisoners could only react to the social structure of the prison like setting created by those in power

C. Social Norms are specific expectations for socially appropriate attitudes and behaviors that are embodied in the stated or implicit rule of a group

1. Adjustment to group norms occurs in two ways:
   a) Observation of uniformities in certain behaviors of all or most members are noted
   b) Observation of negative consequences for norm violation

2. Coercive power of the group can be experienced by implementation of three painful R’s:
   a) Ridicule
   b) Reeducation
   c) Rejection

D. Conformity

1. Conformity is the tendency for people to adopt the behavior and opinions presented by other group members. Two types of forces may lead to conformity:
   a) Informational influence where individuals conform in an effort to be correct and to understand how best to act in a given situation
   b) Normative influence where individuals conform in an effort to be liked, accepted, and approved of by others

2. Informational Influence: Sherif’s autokinetic effect
   a) Norm crystallization is the formation and solidification of norms
   b) Autokinetic effect refers to “a type of apparent motion in which a small, objectively stationary spot of light in an otherwise dark room appears to move about”
   c) Although individual judgments vary widely, stating judgments aloud brought about convergence of opinion

3. Normative Influence: The Asch Effect
a) Asch created circumstances in which participants made judgments under conditions in which physical reality was absolutely clear, but the rest of the group reported that they saw the world differently

b) Procedure
   (i) Both participants and confederates agreed on first three trials
   (ii) On fourth trial, first confederate “matched” two stimuli that were not a true match; all confederates did the same
   (iii) Participants had to determine whether to confirm to the group view or remain independent

c) Results
   (i) Roughly one-fourth of participants remained independent
   (ii) Between 50% and 80% of participants conformed to the false majority estimate at least once
   (iii) Participants yielding to majority were “disoriented” and “doubt ridden,” experiencing “a powerful impulse not to appear different from the majority”
   (iv) Two complementary lessons learned:
      (a) People are not entirely swayed by normative influence. They assert their independence on a majority of occasions
      (b) People will sometimes conform, even in the most unambiguous situations. That potential to conform is an important element of human nature

4. Conformity in Everyday Life: Minority influence and nonconformity
   a) Majority decisions tend to be made without engaging the systematic thought and critical thinking skills of the individuals in the group
   b) Minority groups have little normative influence, but they do have informational influence
   c) The majority tends to be the defender of the status quo

5. Groupthink is the tendency of a decision-making group to filter out undesirable input so that a consensus may be reached, especially if the consensus is in line with the leader’s viewpoint.

E. Situational Power: Candid Camera Revelations
   1. Smart, independent, rational, good people can be led to behave in ways that are foolish, compliant, irrational, and evil
   2. Human nature follows a situational script to the letter
II. Constructing Social Reality

A. Social Reality

1. Two individuals, observing the same event, may interpret it in very different ways. Each constructs social reality in a unique way, bringing his or her personal knowledge and experience to bear in interpreting the situation.

2. There is no objective social reality; there are only the individual’s construction and interpretation of it.

3. Social perception is the process by which people come to understand and categorize the behaviors of others.

B. The Origins of Attribution Theory

1. Attribution theory is a general approach to describe the ways the social perceiver uses information to generate causal explanations.
   
a) Heider suggested people are all intuitive psychologists, attempting to discern what people are like and what causes their behavior.

b) Heider suggested that questions dominating most attributional analyses are whether the cause of the behavior is dispositional (internal) or situational (external).

2. Kelley observed that people most often make causal attributions for events under conditions of uncertainty using the covariation principle.
   
a) Covariation principle: People attribute behavior to a causal factor if that factor was present when the behavior occurred, but was absent whenever the behavior didn’t occur.

b) Covariation is assessed using three dimensions of information:
   
   (i) Distinctiveness refers to whether the behavior is specific to a particular situation.
   
   (ii) Consistency refers to whether the behavior occurs repeatedly in response to this situation.
   
   (iii) Consensus refers to whether other people also produce the same behavior in the same situation.

C. The Fundamental Attribution Error

1. The Fundamental Attribution Error (FAE) represents the dual tendency for people to overestimate dispositional factors and to underestimate situational ones when searching for the cause of some behavior of outcome.
   
a) The FAE may be due in part to cultural sources.

D. Self-serving bias leads people to take credit for their successes while denying responsibility for their failures.

E. Expectations and Self-Fulfilling Prophecies.
1. *Self-fulfilling prophecies* are predictions made about some future behavior or event that modifies interactions to produce what is expected.

2. Expectations are powerful and self-fulfilling prophecies are most likely to occur when the individual has not had an opportunity to develop accurate expectations before judgments must be made.

**F. Behaviors that Confirm Expectations**

1. *Behavioral confirmation* is the process by which someone’s expectations about another person actually influence the second person to behave in ways that confirm the original hypothesis.
   a) Behavior confirmation depends on the availability of accurate information from the environment.
   b) Expectations have their greatest effect when the actual state of the world is uncertain.

**III. Attitudes, Attitude Change, and Action**

**A. Attitudes and Behaviors**

1. An *attitude* is a positive or negative evaluation of people, objects, or ideas.

2. Three types of experiences give rise to attitudes:
   a) Cognitive
   b) Affective
   c) Behavioral

3. One property of attitudes that predicts behavior is *accessibility*, the strength of the association between an attitude object and a person’s evaluation of that object.
   a) Attitudes are more accessible when they are based on direct experience.

4. Attitudes are more predictive of behavior when the attitudes and behaviors are measured at the same level of specificity.

**B. Processes of Persuasion**

1. *Persuasion* refers to deliberate efforts to change attitude.

2. The *Elaboration Likelihood Model* suggests that there are two routes to persuasion:
   a) The *Central Route* represents circumstances in which people think carefully about a persuasive communication so that attitude change depends on the logical strength of the arguments. Central route arguments depend on facts, features, and objective qualities.
b) The Peripheral Route represents circumstances in which people do not focus critically on the message, but respond to superficial cues in the situation. Peripheral route messages depend on sex appeal, image, prestige, and subjective qualities.

3. The route that people take depends on their motivation to process and critically analyze the message

C. Persuasion by Your Own Actions

1. Dissonance Theory

   a) Cognitive dissonance is the state of conflict someone experiences after making a decision, taking an action, or being exposed to information that is contrary to prior beliefs, feelings, or values

      i) Dissonance-reducing activities modify the unpleasant state and achieve consonance among cognitions
      ii) Dissonance has motivational force and impels the individual to act to reduce the unpleasant feeling
      iii) The greater the dissonance, the greater the motivation to reduce it

   b) Under conditions of high dissonance, the individual acts to justify his or her behavior after the fact, engages in self-persuasion, and often becomes a convincing communicator

   c) Recently researchers have begun to question whether dissonance effects generalize to cultures in which individuals have an interdependent conception of self, such as in Japan

2. Self-Perception theory

   a) Given that in Western culture, people are quick to make dispositional attributions about the behavior of others, it should not be surprising that they have the same bias toward themselves

      i) Internal states are inferred by perceiving how one is acting now and recalling how one was active in a given situation in the past
      ii) Self-knowledge allows the individual to reason backward to the most likely causes or determinants of behavior

   b) Self-perception theory lacks the motivational components of dissonance theory

D. Compliance

1. Often people want to change not only your attitudes, but your behavior so that you comply with their requests. Compliance techniques include the following:

2. Reciprocity
a) The Reciprocity Norm states that when someone else does something for you, you should do something for them

b) The Door-in-the-Face Technique works because when people say “no” to a large request, they will often say “yes” to a more moderate request; it arises from the reciprocity norm

3. Commitment
   a) The commitment principle states that if you make a small commitment, you will be more likely to commit to something larger in the future
   b) Use of the commitment strategy in compliance attempts is often called the Foot-in-the-Door Technique

4. Scarcity
   a) The scarcity principle states that people dislike feeling that they can’t have something; thus, people desire the scarce object more
   b) The countdown timer on home shopping networks is a good example of the scarcity principle in action

5. Modeling
   a) People can bring about compliance and behavior change by modeling the desired behavior
   b) This technique draws on the principle of conformity

IV. Social Relationships

A. Liking
   1. People tend to become attracted to people with whom they are in close proximity, by virtue of mere exposure
   2. Physical attractiveness often plays a role in development of friendships.
   3. Similarity: Individuals similar to oneself provide a sense of personal validation, because a similar individual makes one feel that the attitudes one holds dear are the right ones. Conversely, dissimilarity often leads to strong repulsion
   4. Reciprocity: As individuals, we tend to like other individuals who like us.

B. Loving
   1. In most cases, we first liked the person we come to love
   2. The Experience of Love
      a) Conceptualizations of love cluster into three dimensions:
         (i) Passion: sexual passion and desire
         (ii) Intimacy: honesty and understanding
         (iii) Commitment: devotion and sacrifice
b) People’s ability to sustain loving relationships also depends on adult attachment style
   (iii) Secure attachment (55 %)
   (iv) Avoidant attachment (25 %)
   (v) Anxious-ambivalent attachment (20 %)

b) Distinctions between types of love in relationships as they evolve over time:
   (i) Passionate love: a period of great intensity and absorption
   (ii) Compassionate love: a migration toward a state of lesser intensity, but greater intimacy

3. Factors that Allow a Relationship to Last
   a) One theory suggests that having a feeling that the “other” is included in one’s “self” helps relationships last

   b) The Dependence Model suggests that likelihood to remain together is based on a series of judgments:

   (i) The degree to which intimacy, sex, emotional involvement, companionship, and intellectual involvement are important in the individual’s relationship
   (ii) The degree to which each of those needs is satisfied in the relationship
   (iii) For each need, whether there is anyone other than the current partner with whom the individual has an important relationship
   (iv) The degree to which each need is satisfied by the alternative relationship
DISCUSSION QUESTIONS

1. While colleges have historically been thought of as centers of divergent thought and intellectual freedom, many political conservatives feel that in recent years many colleges and universities have become centers of “political correctness” and liberal intellectual rigidity. While these people may be overstating the case somewhat, certainly there are many pressures on college students to conform to certain “norms” that exist on every college campus. These norms may be more social than political, but they still exist. You might explore with your students what pressures they have felt to conform while in college, in terms of political thought, dress norms, social mores, and social attitudes. Depending on where your class is taught, this could turn into a very interesting discussion. (From Koss)

2. In discussing Milgram’s studies with your class, you might want to discuss the sociological implications. Do students believe that people’s willingness to obey an authority figure in Milgram’s studies is linked to why national populations will sometimes willingly follow tyrants like Adolf Hitler? Are the factors that led to Milgram’s results the same ones that lead to phenomena such as groupthink and risky shift? Does the fact that most Americans believe an Adolf Hitler could never do here what he did in Germany actually make us more vulnerable to a Hitler-type if he should ever come along? What are some ways that people might inoculate themselves from these effects?

3. An elderly man suffered a severe viral infection. Manifestations of the infection included large blisters on his back, severe muscle and joint pain, and a concomitant depressive episode. After three months, the man recovered completely. During his final visit to his physician, as he was being given a clean bill of health, the physician remarked that his recovery was “remarkable for a man your age.” The physician went on to say that because of the severity of the virus, “some people just never get over the symptoms.” Before this visit, the man had been free of pain, his depression was lifting, and he was gradually resuming his usual level of activity. Within two weeks, the man slipped back into his sick-role behavior of sitting in his chair all day in front of the television. He began telling everyone he met how ill he was, and became convinced that he would “never get any better.” Discuss with the class the psychological mechanisms at work with this man’s “illness” and the comments made by his physician on that last visit.

4. What would be the consequences of a race of people who were not “social animals,” who were shy and fearful of all people and preferred to be in isolation?

5. Should parents of seventh and eighth graders try to help their children resist the norms of a peer-group drug culture? If so, how? What other adolescent, and adult, behaviors are subject to peer influence? Is this influence harmful or not? 6. What activities would you arrange for your children if you wanted them to be very social, outgoing extroverts, or the opposite, social introverts?

6. Ask the class how they might use the cognitive dissonance principle that “changing behavior changes attitudes” to design programs for:
   - Increasing a person’s low self-esteem
   - Modifying a deprecatory attitude toward student protesters
   - Decreasing a racial prejudice in schoolchildren

Now reverse the process and design new programs using the principle that “changing attitudes changes behaviors” for the same problems. Which principle do you think the class will be more successful using? Why?
Cognitive Dissonance
A high school girl believed the use of drugs to be physically harmful and morally wrong. She was invited to a party given by a group from her class that she admired. Other people at the party were using cocaine and drinking wine and, because she wanted to be accepted by the group, she decided she should do what the others were doing. The next day she was tense and uncomfortable because she had done something that she believed to be wrong. She was suffering from cognitive dissonance.

The theory of cognitive dissonance was proposed in the 1950s by psychologist Leon Festinger. It is a very simple theory, but one applicable to an enormous range of situations. Cognitive dissonance is defined as a state of tension that exists when two (or more) cognitions are psychologically inconsistent, with that inconsistency creating tension. Festinger considered tension motivating because when tension occurs, there is a motive to reduce or eliminate it. “Cognition” is a broad term that includes perception, reasoning, beliefs, values, and attitudes—any form of knowledge or knowing. “Psychologically inconsistent” means that the individual possessing the cognitions perceives them to be incompatible or in conflict. This is the Achilles heel of the theory, because psychological inconsistency is subjective; it cannot be directly observed and measured.

Dissonance sometimes occurs after making a decision that is irrevocable, or that would be very difficult to reverse. Suppose a high school senior has narrowed his choice of colleges to two, both equally attractive. He has to make a decision and choose one of the schools. When he chooses one, he has to give up the things he likes about the other. What are the dissonant cognitions? “I chose school A, therefore I have to give up all things I liked about school B.” What does he do to reduce the dissonance? He accentuates the positive aspects of school A and the negative aspects of school B. He may decide that the things he liked about school B are not really important.

Two students have identical new cars. One student’s car was a gift from her parents while the other student had saved for several years to buy her car, doing without things she would like to have in order to accumulate the money for the car. A well-known automotive magazine assigns the car its “lemon of the year award,” claiming that the car is unsafe and dependable, and that it is poorly engineered and designed. Which student is likely to feel more uncomfortable about the magazine’s negative evaluation of the car? Obviously, the student who had to save money to buy it. What are her dissonant cognitions? “I spent my savings for this car. The car is a lemon.” What can she do to reduce the dissonance? She can discredit the magazine and the database that was used for the evaluation. She can also remind herself of the things she likes about the car.

For most of us, there are things we would like to have that we cannot. When the desire for something is very important to us, we may have dissonant cognitions that make us tense and unhappy. For example, suppose you are in love with a person who does not love you. What are the dissonant cognitions? “I would like to have a serious relationship with Lucy. Lucy doesn’t love me.” What do people do to reduce the dissonance in this type of situation? One method is the “sour grapes” approach. “Lucy isn’t so great after all. She is bowlegged and chews with her mouth open.” The expensive sweater is not practical and the sports car that is so appealing is the type of car driven by people who are too status-conscious. The group that did not ask you to join is composed of snobs that you would not want to associate with anyway.

Jenny and Jack are both in danger of failing a course. The instructor gives a take-home exam that students must sign, declaring that they did not receive help from another person. Both Jenny and Jack have friends who took the course and made good grades, and who could help them, and
both feel that cheating is wrong. Jenny gives in to temptation and gets help from her friend, gets a
good grade on the final, passes the course, but now she suffers from cognitive dissonance. What
are Jenny’s dissonant cognitions? “I think it is wrong to cheat. I cheated.” How will she reduce
the dissonance? She will probably not feel as strongly about cheating. She may also belittle the
amount of help she got from the friend, telling herself that she did most of the work, and that she
would have passed the course without the help of the friend.

Jack did not succumb to the temptation of getting his friend to help him. He made a poor grade
on the final and failed the course. He may have some dissonance, too. What are Jack’s dissonant
cognitions? “If I had cheated I would have passed the course. I didn’t cheat.” What will he do to
reduce his dissonance? Jack is likely to become more strongly opposed to cheating than before.
He may feel badly about failing, but will feel good about his integrity and strength of his
convictions.

These next applications are similar to dissonance due to the investment of time, money, or effort,
but in these cases, the person gets little or nothing in exchange for the investment. If we give
money to a charity, we convince ourselves that it is a worthy cause. If we work for a political
candidate, we convince ourselves that the candidate is a good and competent person. If we paint
our room, we convince ourselves that we have made a big improvement. If we gave money to a
charity we didn’t trust, worked for a candidate who is a scoundrel, or made the room dingy by
painting it, our time, money, or effort would have been wasted, and our self-esteem would suffer
because we did something stupid, so we seek to justify our behavior by convincing ourselves that
our time, money, or effort served a good cause.

In 1978, nine hundred members of the People’s Temple in Guyana fed a poisonous drink to their
children, drank it themselves, and lay down on the ground to die. People were attracted to the
Temple’s charismatic leader, Jun Jones, and were initially drawn to his meetings in San Francisco
by Jones’ emotional message of love and hope. Small demands were made on new members, like
giving one percent of their incomes and giving one night a week to a cause. At this point,
dissonance due to inadequate justification could occur. The dissonant cognitions were, “I’m
giving of my time and money. Why am I doing this?” Was giving time and money justified based
on belief in the cause? As the commitment to the cause increased, Jones began to ask for more
money and more time, until the members had given all they owned to the Temple and were
neglecting family and other responsibilities to serve the Temple.

Once individuals were thoroughly committed to Jones and the People’s Temple, another aspect
of cognitive dissonance was likely to become evident, that due to inconsistency between
commitment and information. Before the People’s Temple moved from San Francisco to an
isolated area in Guyana, criticism of Jones and his group began to appear in the media. Suppose
you were a committed member of his group, and you heard criticism of the group or its leader.
You may have had the dissonant cognitions: “I have given all I have to the Temple. The media
claim that our leader is an insincere, evil person.” The first cognition is irrevocable, and leaving
the group would be economically and psychologically difficult. The easiest way to reduce the
dissonance would be to deny the adverse information and to denigrate the source. Little by little
the people of the People’s Temple were firmly entrapped.

The account of the recruitment, commitment, and death of the followers of the People’s Temple
provides a powerful example of some of the concepts of social psychology, such as persuasion,
conformity, and obedience, as well as cognitive dissonance. The account could also be analyzed
in terms of the failure in critical thinking made by the people whose faulty reasoning paved the
way for their death in the jungles of Guyana.
Establishing Trust

One of the essential elements in a long-term relationship is the development of a sense of trust between partners. This confident belief in the integrity and reliability of the other person is often achieved through a process of reciprocal self-disclosure of personal information. At the beginning of any relationship, there is little self-revelation and, thus, no basis for trust. The term social penetration refers to “overt interpersonal behaviors that occur in social interaction, as well as internal subjective processes that precede, accompany, and follow overt exchange” (Shaw & Costanzo, 1982, p. 153). Social penetration theory consists of three basic divisions of analysis.

- Altman and Taylor (1973) outlined their assumptions about the structure of personality, deeming it necessary to describe their assumptions because the process of social penetration involves an overlap in exploration of the personalities involved in social relationships. This overlap is the beginning of trust.
- The second category of the theory details how costs and rewards influence the process of social penetration, and specifies the forces that underlie the growth of interpersonal relationships.
- The last category describes the particular aspects of the social penetration process. This may be the most significant part of the theory, as it deals with such factors as movement into the intimate regions of a relationship, involving the blending of interactions in both established and new areas of exploration.

The theory of social penetration proposes that trust begins when one person initiates self-disclosure. If the other person responds in kind, it indicates that trust has been accepted, and the basis for a closer relationship has been established. The partners continue to trade self-disclosures, gradually moving through deeper levels of intimacy, so long as each level is mutually satisfying. The final level of intimacy that is achieved will depend on the needs and interpersonal skills of the two people involved. In some cases, the relationship will stop at a more superficial level. In others, it will continue to grow and deepen.

According to Jourard (1964), there is an optimal level of self-disclosure for any healthy, well-adjusted individual. A person who never discloses will not be able to have close, meaningful relationships with other individuals. Conversely, a person who goes too far by disclosing everything to anyone who will listen is viewed as maladjusted and excessively self-centered. Ideally (according to Jourard), one should disclose a moderate amount of personal information to most acquaintances and reveal a lot about oneself to a very few close friends.

Trust, as displayed through disclosure, is a major dimension in human fears of rejection, ridicule, and betrayal that haunt relationships. Trust washes away the fears of rejection, ridicule, and betrayal that haunt the existence of many. Trust paves the road to friendship and intimacy; it is at the core of love for another person and the acceptance of oneself.

A climate of trust can be established by doing the following:

- Make it acceptable for other people to talk openly about themselves.
- Reciprocate with your own openness.
- Express support and unconditional acceptance of your loved ones, although you may disapprove of some of their specific behaviors (make them aware of this difference).
- Be consistent but not rigid in your standards, values, and behavior.
- Be available to listen, express warmth, and empathize, even when you do not have an answer or a solution.
- Do not make promises you do not intend to keep or cannot deliver.
You Only Get One Chance to Make a First Impression

First impressions can have a lasting effect on how we see others and on how they see us. Some researchers claim that first impressions are typically formed within the first 8 to 10 seconds of first seeing someone, often before they ever actually speak to us or shake our hand. In those first few seconds, we appear to “size up” the person according to their physical appearance, their eye contact, their facial expressions, their manner of dress, their body language, and their overall demeanor. Then we compare our perceptions of the person to our previous experiences with others of similar demeanor, etc., and develop a “thumbnail sketch” of what type of person we believe this person is. Much of this is done unconsciously and automatically. But once formed, it can be difficult to change. Because of our tendency to selectively perceive only the aspects of the person’s behavior that fit our first impression, the person will have to behave in a manner that is pervasively and endurably inconsistent with our impression before we will change it. Additionally, since the way we behave toward the person can affect the way he or she behaves toward us, our first impression may cause us to behave in ways that almost guarantee a response that fits our first impression. This results in a “self-fulfilling prophecy” which makes it unlikely that we will ever significantly change our impression of the person.

It is for these reasons that making a good first impression, or at least a neutral first impression, can be so important. In a situation such as a job interview, in which you may have only 20 or 30 minutes to interact with the interviewer, there is usually not enough time to overcome a negative first impression. Recruiters have told me that something as simple as the way an interviewee shakes his or her hands can sometimes leave a lasting impression that positively or negatively affects the remainder of the interview.

After reviewing the power of first impressions, you might want to have students generate ways they can pursue self-enhancement and other-enhancement strategies in order to try and create as positive a first impression as possible.

BIOGRAPHICAL PROFILES

Solomon Asch (1907 —1996)

Solomon Asch obtained his Ph.D. at Columbia University in 1932. He subsequently taught at the New School for Social Research in New York City and at Rutgers University. Asch’s research and conceptual orientation in social psychology were influenced strongly by the Gestalt school, particularly as represented in the writings of his close friend, Max Wertheimer. Asch is best known for his pioneering research on conformity and the effects of group pressure on the behavior of the individual. Among his major works is the classic text *Social Psychology*, published in 1952.

Leon Festinger (b. 1919)

Born in New York City, Festinger obtained both his M.A. and Ph.D. at the State University of Iowa. He taught at various schools, including Iowa, Rochester, MIT, the University of Minnesota, and Stanford University. In 1968, he joined the New School for Social Research in New York City.

Believing that humans are thinking animals desiring to bring order to life, Festinger argued that people often make special efforts to reduce cognitive inconsistencies. His theory of cognitive dissonance, proposed in 1957, was of immense influence in social psychology, inspiring volumes of research during the 1950s and 1960s.
Kurt Lewin (1890—1947)

Kurt Lewin grew up in prewar Germany in an era that produced a number of prominent and revolutionary psychologists. Best known for his field theory of psychology, which attempts to explain human behavior in terms of the interrelations of environmental and psychological elements acting on the individual, Lewin has contributed a body of thought that has had a great impact on such disciplines as social psychology, industrial psychology, and personality theory.

Lewin was born in a small village in the Prussian province of Posen in 1890. His father owned a large general store there and maintained his family in relative comfort. In order to expand his business, Herr Lewin moved his wife and four children to Berlin in 1905, where Kurt completed his secondary education. Lewin entered the University of Freiburg, intent on studying medicine, but, within a short time, he discovered that the field held little interest for him. He underwent a period of vacillation, during which he struggled to decide the direction in which he should channel his considerable energies. His search led him first to transfer to the University of Munich and then back to Berlin, where he eventually took his basic degree in psychology and embarked on a course of graduate study in that discipline. At this time, Lewin came under the tutelage of Professor Carl Stumpf, a prominent experimental psychologist, who advised and encouraged him in his research.

Just as he completed his requirements for a Ph.D. in 1914, Lewin was conscripted into the German army as an infantryman. He served in the military for the next four years, so distinguishing himself that he rose from private to lieutenant in a short time. At the close of the war, Lewin returned to the University of Berlin as both instructor and research assistant in the Psychological Institute. He rapidly gained a reputation as a superb lecturer in the classroom and an excellent supervisor in the laboratory.

Of particular importance to the development of Lewin’s thought at this time was the alliance he formed with two of his colleagues at the university, Max Wertheimer and Wolfgang Kohler. These two had participated in the founding of Gestalt psychology and, while Lewin never became a Gestalt psychologist, the connection between that approach and Lewin’s field theory approach is immediately apparent. Eventually Lewin was appointed full professor at the university, where he and his graduate students generated numerous insightful research papers.

As Lewin’s prominence in the German academic world continued to grow, so too did the power of the Nazi Party. Lewin was spending a year as visiting professor at Stanford University when it became apparent that Hitler’s control of Germany was inevitable. He hurriedly returned to Germany to settle his affairs and then reentered the United States, where he lived until his death.

His career in America was varied and productive. He taught child psychology at Cornell University from 1933 to 1935, then accepted an appointment to the State University of Iowa as professor of psychology in the Child Welfare Station. Lewin’s last academic position was as professor and director of the Research Center for Group Dynamics at the Massachusetts Institute of Technology. Concurrently, he acted as director of the Commission of Interrelations of the American Jewish Congress, which engaged in research on community problems. While the influence of Lewin’s work has spread widely over the last three decades, the work in group dynamics carried on by the Research Center for Group Dynamics at the University of Michigan most closely follows the theories Lewin proposed.
# TIMELINE

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1908</td>
<td>William McDougall published <em>An Introduction to Social Psychology</em>, one of the earliest books on the subject.</td>
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<tr>
<td>1914-1918</td>
<td>World War I was fought.</td>
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<tr>
<td>1924</td>
<td>Floyd Allport published <em>Social Psychology</em>, the first college text for this area of psychology.</td>
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<td>1929</td>
<td>The Great Depression began in America.</td>
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<td>1936</td>
<td>Muzafer Sherif conducted his important autokinetic studies involving social influence.</td>
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<tr>
<td>1939-1945</td>
<td>World War II was fought.</td>
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<td>1944</td>
<td>Kurt Lewin established the Research Center for Group Dynamics at MIT.</td>
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<tr>
<td>1950-1953</td>
<td>The Korean War was fought.</td>
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<td>1957</td>
<td>Leon Festinger published the theory of cognitive dissonance.</td>
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<td>1964</td>
<td>The stabbing of Kitty Genovese in Queens, New York, resulted in public outrage at the perceived apathy of the bystanders.</td>
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<td>1967</td>
<td>Harold Kelley’s analysis started researchers working on attributional analyses of social behavior.</td>
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<td>1968</td>
<td>Bibb Latane and John Darley published their research on the bystander effect.</td>
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<td>1969</td>
<td>The first human landing on the moon occurred.</td>
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<td>1971</td>
<td>Philip Zimbardo, Craig Haney, and Curt Banks conducted the Stanford prison study, in which college students were randomly assigned to play the roles of prisoners and guards in a mock prison.</td>
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<tr>
<td>1974</td>
<td>Stanley Milgram published <em>Obedience to Authority</em>, outlining the methods, findings, and significance of his obedience research.</td>
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SUGGESTIONS FOR FURTHER READING


Carkenord, D. M. & Bullington, J. (1993). *Bringing Cognitive Dissonance to the Classroom. Teaching of Psychology, 20*(1), 41-43. Provides a sample handout for use during lectures on cognitive dissonance; the handout enables students to see the areas of dissonance in their own lives.


Festinger, L. (1957). *A Theory of Cognitive Dissonance.* Evanston, IL: Row, Peterson. A classic text in social psychology. Explores the relationship between thoughts, feelings, and behavior, and shows that inconsistent cognitions can lead to changes in attitudes and behavior.


PROGRAM 17: SEX AND GENDER

Overview
The ways in which males and females are similar and different, and how sex roles reflect social values and psychological knowledge.

Key Issues
How sex hormones affect gender behavior in rats, how the environment affects gender roles, reasons for self-segregation by gender among preschool children, artificial limits imposed on female gender roles, relationship between gender roles and depression, and how gender stereotypes in advertisements affect behavior.

Demonstrations
Sex differences in the play behavior of baby rats.
Self-segregation by gender in a preschool.

Archival Demonstrations
Socialization differences in gender appropriate behavior and dress.

Interviews
Developmental neuroscientist Michael Meaney studies why male rats are more apt to engage in rough-and-tumble play, while female rats are consistently less aggressive and less physical.
Eleanor Maccoby examines why children tend to socialize with other children of the same sex.
Jean Block examines the differences in the socialization of male and female children and its effects on their relationships with other children of the same and opposite sex.

PROGRAM 20: CONSTRUCTING SOCIAL REALITY

Overview
The factors that contribute to our interpretation of reality and how understanding the psychological processes that govern our behavior may help us to become more empathetic and independent members of society.

Key Issues
Power of cognitive control, the Pygmalion effect, how teachers’ expectations affect children’s test scores, the development of prejudice in a grammar school classroom, and the principle of compliance as illustrated in television ads.
Demonstrations
The self-fulfilling prophecy study, or the Pygmalion effect.
The principles of compliance illustrated with actual television advertisements.
Jane Elliot’s blue-eyed versus brown-eyed case study.
Students’ enhanced self-esteem and performance due to the jigsaw classroom.

New Interview
Steven Hassan looks at the ways cults use mind control methods to reshape people’s identity and reconstruct the way they perceive reality.

Interviews
Grammar school teacher Jane Elliot divides her classroom into a superior blue-eyed group and an inferior brown-eyed group to study the development and nature of prejudice.
Robert Rosenthal studies how teachers’ expectations can affect children’s test scores.
Elliot Aronson and Alex Gonzalez examine how cooperation rather than competition changes the way students see themselves and their peers.
Robert Cialdini examines the principles of reciprocation, scarcity, authority, commitment, liking, and consensus in marketing and advertising.

FILM AND VIDEOS
Candid Camera Classics for Social Psychology consists of 16 episodes that I selected, with Allen Funt’s assistance, to dramatize many key social psychology topics, such as compliance, conformity, obedience, social influence, authority, power, morality, and bias in field surveys. Each of these creative gems is funny and entertaining, while teaching important messages about human nature. Since they vary in duration from 2 to 6 minutes, a given episode can be used to launch a lecture as a thematic overview, to underscore a conclusion from a body of empirical research, or to provide a source for opening a discussion of the behaviors that the class and the instructor observed together. The Candid Camera Classics come with an instructor’s guide (that I prepared with Allen Funt) that will assist teachers in getting the most mileage from using them. McGraw-Hill distributes this video (VHS) and a laser disk version. For ordering information, call 1-800-338-3987.

Quiet Rage: The Stanford Prison Study is a 50-minute video of the experiment I conducted in 1971 (with Craig Haney and Curt Banks), in which college students were randomly assigned to play the roles of prisoners or guards in a mock prison. This planned 2-week study had to be terminated after only 6 days because of the pathology that emerged from participants chosen precisely because they were the most normal and healthy individuals of the many that had volunteered for the study. The video uses some of the original archival footage filmed secretly during the study, along with film of the surprise arrests of the volunteers by the police. In addition to the daily chronology of events that unfolded in this Pirandellian Prison, the film includes post-experiment interviews with former prisoners and guards, including a powerful testimony by the first student to have a “nervous breakdown” that influenced his entire life. He went on to get a Ph.D. in clinical psychology, do an internship at San Quentin Prison, and become a prison psychologist in the San Francisco County Jail, where he has worked for the past 14 years.
Flashback techniques and an original music score add to the impact of this AV supplement for teaching social psychology. It can be ordered by writing to P.O. Box 2996, Stanford, CA 94305-2996, or by calling (415) 725-2417. If not entirely satisfied, a full refund is guaranteed.
Abilene Paradox (1984). VCFM, 27 minutes
A gently humorous exposition of social psychological concepts such as groupthink and deindividuation. Demonstrates how the cognitive processing of a well-intentioned, cooperating group can go far astray from the individual views of the members.

Captive Minds: Hypnosis and Beyond (1985). JFMU, 55 minutes
Explains how long-term conditioning takes place, such as how the Moonies hold on to their disciples, and how the Marine Corps generates such fierce loyalty. The indoctrination methods of disparate institutions are surprisingly similar. Recruits are isolated in unfamiliar environments, kept busy to the point of exhaustion, confused, frightened, and their sense of identity weakened. Over time, they become vulnerable to suggestion. They then readily submit to a strong authoritarian leader. Reminds us that we are all vulnerable to psychological manipulations, some of which have social and political consequences.

Conformity (1989). Insight Media, 30 minutes
This program examines the pros and cons of conforming behavior, looking at its dangers as well as its utility in group decision making, classroom activities, and military regimentation. It introduces reasons for conformity and investigates some of the variables that predict who is likely to conform.

Conformity and Independence (1975). ITJ (MTI), 23 minutes
Uses field and laboratory settings to look at social psychology’s main findings and principles in the area of conformity and independence. Includes Sherif’s experiments on norm formation; Asch’s experiments on group pressure, and Crutchfield’s variation; Milgram’s experiment on action conformity; Kelman’s three processes of compliance; and Moscovici’s theoretical views.

Prejudice: Causes, Consequences, Cures (1974). CFM, 23 minutes
Explores several forms of prejudice: racial, sexual, educational, and economic. Offers examples of the problems of double standards, overgeneralized observations, territorial and economic group conflicts, severe and punitive upbringing, conformity, and socialization.

Prejudice (1989). Insight Media, 30 minutes
Showing four scenarios of prejudiced behavior, this program explores stereotypes and emotions underlying prejudice. It discusses possible methods for reducing discrimination.

Productivity and the Self-fulfilling Prophecy: The Pygmalion Effect (1976). MCGFY, 28 minutes
This film illustrates self-fulfilling prophecies in several settings, including social science and industrial management experiments. Illustrations include placebo effects and bank runs during the depression.

Reflections on 100 Years of Social Psychology. (Available from California State University, Fresno, Department of Psychology, 5310 N. Campus Drive, Fresno, CA 93740-0011.)
An edited video of presentations by Elliot Aronson, Leonard Berkowitz, Morton Deutsch, Harold Gerard, Harold Kelley, Albert Pepitone, Bertram Raven, Robert Zajonc, and Philip Zimbardo to accompany a text commemorating 100 years of experimental social psychology.

Social Psychology (1990). Insight Media, 30 minutes
Social psychology attempts to understand the myriad of social forces that influence our attitudes and actions. This program discusses several research studies and findings on stereotyping and
prejudice, attribution theory, and the power of social roles. Philip G. Zimbardo’s prison experiments are described and analyzed.
War and Violence (1986). FFHS, 52 minutes

Demonstrates that poverty and violence go hand in hand. Depicts inner-city Boston and a lesson on walking away from a fight. Includes an interview with a young Hispanic in Oakland who talks about the machismo that underlies gang violence. Explains that around the world violence is fueled by religion, nationalism, or race and made worse by politicians’ rhetoric. Looks at the possibility of warfare today and the repercussion it has on the whole human race. From the Human Animal Series, hosted by Phil Donahue.

The Wave (1981). 44 minutes

Oberves as teacher Burt Ross reenacts a 1967 social experiment in which a movement similar in philosophy to that of the Nazi Third Reich is created. Shows how the ideas of power, discipline, and superiority were drilled into his students and how willingly most of them adopted these ideas.

Illustrates the attitudes that allow people to deny responsibility for-and even knowledge of-the injustices occurring around them.
CHAPTER 18
Social Psychology, Society, and Culture

LEARNING OBJECTIVES
On completion of this chapter, students should be able to:

1. Display knowledge of the social determinants of behavior
2. Describe Milgram’s obedience to authority experiments and comment on their significance
3. Explain the significance of Sherif’s Robber’s Cave experiment in terms of competition, group dynamics, and motives for prosocial behavior
4. Identify the significance of social psychological work on group dynamics and leadership
5. Describe “the bystander effect” and suggest some ways to counteract it
6. Discuss how interpersonal attraction relates to prejudice
7. Demonstrate knowledge of the tenets of environmental psychology
8. Discuss the concept of “stereotype threat” and explain how it relates to both prejudice and performance by minority group members
9. Suggest several measures that could be implemented to reduce prejudice

CHAPTER OUTLINE
I. Altruism and Prosocial Behavior
   A. The Roots of Altruism
      1. Prosocial behaviors are behaviors that are carried out with the goal of helping other people
      2. Altruism: refers to the prosocial behaviors a person carries out without considering his or her own safety or interests
      3. Reciprocal altruism suggests that people perform altruistic behaviors because they, in some sense, expect that others will perform altruistic behaviors for them
   B. Motives for Prosocial Behavior
      1. Research suggests that there are four forces that prompt people to act for the public good:
         a) Altruism: Acting in response to a motive to benefit others, as in the case of the driver who saved another person’s life
         b) Egoism: Performing prosocial behaviors ultimately in one’s own self-interest; someone might perform a helping behavior to receive a similar favor in return or a reward
c) **Collectivism:** Performing prosocial behaviors to benefit a particular group; people might perform helping behaviors to improve circumstances for their families, fraternities, political parties, and so on.

d) **Principlism:** Performing prosocial behaviors to uphold moral principles; someone might act in a prosocial manner because of a religious or civic principle.

2. The principle of **justice** suggests that each person should have an equal probability of getting the positive or negative outcome.

3. The **empathy-altruism hypothesis** suggests that when one feels empathy toward another individual, those feelings evoke an altruistic motive to provide help.

**C. The Effects of the Situation on Prosocial Behavior**

1. Bystander Intervention, people’s willingness to help strangers in distress, is sensitive to characteristics of the situation.
   
a) Latané and Darley’s research indicates likelihood of intervention is dependent on number of bystanders the participant thought were present.

2. **Diffusion of responsibility** occurs when more than one person who could help is present. Others assume that someone else will or should help.

2. Facets of emergency situations:
   
a) Bystanders must notice the emergency.

b) Bystanders must label events as an emergency.

c) Bystanders must feel responsibility.

**II. Aggression**

**A. Evolutionary Perspectives**

1. **Aggression** is behavior that causes psychological or physical harm to another individual.

2. Animals may commit aggressive behaviors to ensure themselves access to desired mates and to protect the resources that allow themselves and their offspring to survive.

3. Lorenz argued that, unlike most other species, humans did not have appropriately evolved mechanisms to inhibit their aggressive impulses. Because of this, Lorenz declared humans to be at the pinnacle of aggression.

4. Research has contradicted Lorenz’s contention in two ways:
   
a) Field research with a variety of animal species suggests that many other species commit the same range of aggressive acts as do humans.

b) Humans have more inhibitory control over their use of...
aggression than Lorenz suggested

5. Although Lorenz’s idea may be flawed, the general idea that aggressive responses are part of human’s genetic endowment is on firm ground

B. Individual Differences

1. Research has focused on brain and hormonal differences that may mark a predisposition toward aggressive behavior
2. High levels of serotonin may impair the brain’s ability to regulate negative emotions and impulsive behavior
3. Studies also suggest that some individual differences in aggression may reflect muted stress responses

C. Situational Influences

1. The Frustration-Aggression Hypothesis suggests that frustration occurs in situations in which people are prevented from obtaining their goals; a rise in frustration leads to a greater probability of aggression
2. Research suggests that there is a positive relationship between temperature and aggression
3. If you believe that someone did something intentionally to anger or upset you, you are more likely to respond with aggression
4. Some aggression is instrumental in that it is performed in order to achieve an end

D. Cultural Constraints

1. Whether an individual will display aggression is highly constrained by cultural values and norms
2. Construal of self plays a role in aggressive behavior
   a) Individuals in cultures that value interdependence are less likely to respond aggressively
   b) A culture of honor guides behavior in southern states because even small disputes become contests for reputation and social status
3. Norms of Aggressive Behavior
   a) The availability of aggressive models in the environment, such as that shown on television, influence aggressive behavior, especially of children
   b) Exposure to violence at home and in the community is also a factor in aggression

III. Prejudice

A. Definition

1. No human weakness is more destructive of the dignity of the individual and the social bonds of humanity than prejudice
2. *Prejudice* is a learned attitude toward a target object, involving negative feelings (dislike or fear), negative beliefs (stereotypes) that justify that attitude, and a behavioral intention to avoid, control, dominate, or eliminate those in the target group

3. A false belief qualifies as prejudice when it resists change even in the face of appropriate evidence of its falseness

**B. Origins of Prejudice**

1. *Social categorization* is the process by which people organize their social environment by categorizing themselves and others into groups

2. People divide the world into *in-groups*, the groups with which they identify as members, and *out-groups*, the groups with which they do not identify

   a) *In-group* bias is the evaluation of one’s own group as better than others

   b) People defined as part of the *out-group* almost instantly are candidates for hostile feelings and unfair treatment

   c) Automatic acts of prejudice develop as a function of messages the individual has unknowingly internalized

**C. Effects of Stereotyping**

1. *Stereotypes* are generalizations about a group of people in which the same characteristics are assigned to all members of the group

2. Because stereotypes powerfully encode expectations, they contribute to the social construction of reality. Stereotypes influence judgments about what exists in the environment

3. *Stereotype threat* occurs when people are placed in situations to which negative aspects of stereotypes are relevant

4. Research leads to the conclusion that prejudice is easy to create, but difficult to remove

**D. Reversing Prejudice**

1. Sherif’s Robbers Cave experiment brought two groups of boys together at a summer camp. The experiment found:

   a) Minimal groups can lead to great hostility

   b) Unsuccessful attempts at hostility reduction

      i) Propaganda approach

      ii) Noncompetitive circumstances were effective.

   c) Cooperative action and shared goals was successful in reduction of hostilities
d) The lesson of the Robbers Cave is that the elimination of prejudice takes more than mere contact between groups. A program that effectively combats prejudice must foster personal interaction in the pursuit of shared goals.

2. In a jigsaw classroom, each pupil is given a part of the total material to master and then share with the other group members. Interracial conflict and academic performance improve in classes where the jigsaw technique is applied.

3. Deprovincialization involves people learning more about out-group social norms and customs and becoming less “provincial” about the correctness of the in-group.

### IV. The Psychology of Conflict and Peace

**A. Peace psychology represents an interdisciplinary approach to prevention of nuclear war and the concurrent maintenance of peace**

1. Aims of peace psychology include understanding of forces that give rise to false beliefs, misperceptions, and erroneous attributions on issues germane to nuclear arms, military strength, national security, and an understanding of how nations negotiate and make judgments in crisis situations.

**B. Obedience to Authority—Milgram’s obedience to authority**

1. The Obedience Paradigm
   
   a) Participants delivered what they believed to be electric shocks to another individual
      
      (i) Participants’ social role was that of teacher, with teacher punishing errors made by the learner
      (ii) Teachers followed rule of increasing level of shock after each error, until learning was errorless
      (iii) Experimenter was the legitimate authority, presented rules and assigned roles
      (iv) Dependent variable was final level of shock that a teacher gave before refusing to continue obeying authority

2. The Test Situation
   
   a) Experiment staged to convince teachers (participants) they were causing pain and suffering, perhaps even death to another person. In fact, no electric shock was given
   
   b) Learner (confederate) was to memorize word pairs and make prearranged errors
   
   c) Teachers were to shock learner following each error, increasing shock level with each error
   
   d) Learner “protested” as shock level increased until teacher hesitated or protested delivery of the next shock
   
   e) Experimenter told teacher to continue
(i) Most participants complained or protested more, saying they could not continue
(ii) Female participants were often in tears
f) Experimental situation produced great conflict in participants

3. Results
   a) Psychiatrists had predicted participants would not “shock” above 150 volts, presuming that only abnormal individuals would blindly obey orders to harm another person
   b) Psychiatrists based their evaluations on the presumed dispositional qualities of participants, overlooking the power of the situation
   c) The majority of participants obeyed the authority fully. They may have dissented, but they did not disobey
   d) Alternative explanations of results
      (i) Participants may not have believed they were actually shocking the confederate
      (ii) Participant’s obedience may have been a function of demand characteristics of the situation

4. Why do people obey authority?
   a) Power of the situation
      (i) Obedience is due to situational, rather than personality variables
      (ii) Obedience is high when obedience is first modeled by a peer or when a participant acts as an intermediary bystander
   b) Data indicate situational control of behavior, rather than individual differences in participants
   c) Other reasons include normative and informational sources of influence—people want to be liked and correct
   d) In ambiguous situations, people rely on others for cues for appropriate behavior
   e) Participants were probably be confused about how to disobey
   f) Obedience to authority is ingrained in childhood—obey authority without question

5. The Milgram experiments and You
   a) Resisting situational forces requires both awareness and acceptance of the fact that those forces can be powerful enough to affect almost anyone
   b) Even normal, well-meaning individuals are subject to potential frailty in the presence of strong situational and social forces
C. The Psychology of Genocide and War

1. Ervin Staub suggests that this set of cultural and psychological forces makes campaigns of terror possible:
   a) The starting point is often severely difficult life conditions, such as depression and political upheaval
   b) Under conditions of difficulty, people intensify the ordinary impulse to define in-groups and out-groups, creating scapegoats
   c) Because the scapegoat group is blamed for society’s ills, it becomes easy to justify violence against them
   d) The violence against the scapegoat group begins to justify itself—stopping the violence would mean admitting that the violence had been wrong to begin with

2. Concepts and Images of the Enemy
   a) When scapegoating does not lead to genocide, it may still lead to the creation of enemies
   b) Dehumanization, casting out-groups as animals, also helps create images of the enemy
   c) Why Will People Go to War?
      (i) In modern times, countries rarely go to war with the goal of domination or conquest. Rather, they come to believe that they are protecting interests that are important to their survival and identity

D. Peace Psychology

1. The Peace Psychology Division of the American Psychological Association works to promote peace in the world

2. Forms of Leadership and Government
   a) Early psychologists focused on understanding the nature of the authoritarian personality behind the fascist mentality, the effects of propaganda and persuasive communication, and the impact of group atmosphere and leadership styles on group members that developed during WW II
   b) Leaders and authorities exert considerable power on group behavior and on other people
   c) Kurt Lewin investigated group dynamics, the ways in which leaders directly influenced their followers and the ways in which group processes changed the behavior of individuals
      (i) Leadership styles
         (a) Autocratic leaders: made all decisions and work assignments, but did not participate in group activities
         (b) Democratic leaders: encouraged and assisted group decision-making and planning
(c) Laissez-faire leaders: allowed complete freedom, with little leader participation

(ii) Results

(a) Autocratic leaders group members were characterized by high levels of aggression and greater hostility, were more demanding of attention, were more likely to destroy their own property, and displayed more scapegoating behavior.

(b) Democratic leaders group members worked the most steadily and were most efficient, showed highest levels of interest, motivation, and originality; discontent was likely to be expressed openly; and group loyalty increased.

(c) Laissez-faire leaders group members were the least efficient, did the least amount of work of poorest quality, and goofed off.

3. Fostering Contact to Facilitate Conflict Resolution

a) The main approach of resolving conflict is the same one described for healing other types of prejudices. People must be brought together in cooperative settings that can foster mutual trust and shared goals.

b) Interactive problem solving promises privacy and confidentiality, as well as open analytic discussions. It also encourages appropriate expectations.
DISCUSSION QUESTIONS

1. Ask your class how they think that they would have behaved if they were participants in the Milgram studies. Most students will respond that there is no way that they would have shocked the helpless learner. Explain to them that if they persist in believing this, they have missed a crucial lesson of social psychology: that “good” people are often no different from “bad” people. The people are the same; it is the situation that is different. Destructive behavior often results when normal people find themselves in powerful situations. The situation causes behavior, not the internal characteristics of the individual. The good members of your class cannot realistically expect that they would behave differently in bad situations.

2. Have members of your class give examples of situations in which they felt pressure to behave in ways that they felt inappropriate. How did they resolve the situation? What can be done to make nonconformity and disobedience a viable behavioral option? Are answers to this question likely to involve situational or dispositional changes? Why?

3. Discuss how aggression on television, in movies, and in other media influences aggression in real life. What should, or could, be done about this well-established relationship? Is censorship a viable response? Why or why not? What about self-censorship? Discuss how students can use this knowledge to reduce the likelihood that they themselves will be aggressive.

4. Discuss manipulation that might lead to increased altruism in society as a whole. Simply, what could be done to make our world more helpful? Are dispositional or situational manipulates likely to produce more significant change? Why? Which type of manipulation would be easier to implement?

5. Discuss the promise that social psychology and psychology in general hold for improving our world. One tremendous contribution of social psychology has been to demonstrate that we do not need to change every single individual person. Situational changes can be made that affect all of the people that enter them. This offers society a cost-effective tool for addressing social problems. To what problems does the class feel that social psychology has the most to offer? Why?

6. You might ask students to voluntarily discuss if they have ever been discriminated against or treated in some other prejudiced manner. Often, those who engage in discrimination do not care to think through the effects their behaviors have on the individuals against whom they are discriminating. By having students talk about their first-hand experiences of receiving such treatment, it can often help sensitize other students to the impact of prejudice and discrimination. Racial, ethnic, and sexual discrimination all take a heavy toll on their victims. As part of this discussion, you might ask those who are sharing their experiences to discuss the emotional impact and the effects on their self-image that resulted from their experiences.
Prejudice

Prejudice between people is often one consequence of normative processes occurring within groups. Many groups exhibit an ethnocentric attitude that postulates: “My group, right or wrong; your group, rarely right and probably wrong until proven otherwise.” Group membership gives us security, status, a basis for reality testing, and much more that we need for both survival and the flowering of the human spirit. Alternatively, being identified as a member of a certain group can also bring us insecurity, loss of self-esteem, and a precarious existence if others with power choose to label our group as inferior. The consequences of prejudice take many forms, but common to all of them is a less humane reaction to other people and a diversion of psychological energy from creative to destructive directions.

Prejudice may be defined as a cluster of learned beliefs, attitudes, and values held by one person about others that:

• Is formed on the basis of incomplete information
• Is relatively immune to contradictory information
• Makes a categorical assignment of individuals to certain classes or groups that are (typically) negatively valued

Prejudice is the internal state or psychological set to react in a biased way toward members of certain groups. Discrimination is the constellation of behaviors that prejudice may give rise to.

Competency knowledge comes from observing the consequences of your actions, what you achieve, and how your abilities, skills, and talents are realized. Legitimacy knowledge comes from a variety of cultural sources by which your important group memberships-religious, racial, ethnic, sexual, age group, and others-are recognized as acceptable and worthwhile. Denial of the legitimacy of one’s significant group identification can isolate the individual from those who control desired social and material reinforcers within a culture. In addition, the reasons given to justify rejection of the group and the personal feelings of helplessness that result from arbitrary discrimination can have a negative impact on performance, lowering even competency-based esteem.

Our self-image and esteem depend on many variables. These inputs can be summarized as coming from two sources:

• The individual’s appraisal of personal worth derived from social and physical feedback about his or her competency
• Cultural feedback about the legitimacy of the person’s primary reference groups

To the extent one accepts and is dependent on the values of the reward structure of a cultural group that denies the legitimacy of one’s own subgroup, one’s self-esteem is likely to suffer. Legitimacy is often denied not through hostile, obvious acts of discrimination, but in subtle patterns of prejudice that simply ignore one’s existence.

Once you adopt the derogatory stereotype about yourself as a valid indicator of your lack of worth, you may want to dissociate yourself from the despised group, to “pass” on your own via a name change, nose job, hair straightening, or other alteration of your appearance, as well as by changing your friends and maybe even rejecting your family. Such a prejudice-induced reaction is one of the most insidious effects of prejudice. It turns the individual not only against his or her own group, but against the “self” as well.
Categorical rejection of the individual because of perceived membership in some unaccepted group is a general phenomenon of prejudice. When you were a child, did friends of your parents or even relatives ignore your presence after they said the usual, “My, how you have grown”? As an adult, have you ever done likewise to aged people, ignored them as persons because they are members of an out-group? Have you ever treated a person who was performing a service for you as if he or she was nothing more than a machine?

A Demonstration of Prejudice

One of the most effective demonstrations of how easily prejudiced attitudes may be formed, and how arbitrary and illogical they can be, came from a third-grade class in Riceville, Iowa. The teacher, Jane Elliott, wanted to provide her students from this all-white, rural community with the experience of prejudice and discrimination in order to draw from it the implications of its seductive appeal and devastating consequences. She devised a remarkable experiment, more compelling than many done by professional psychologists.

One day, blue-eyed Ms. Elliott announced to her class of 9-year-olds that brown-eyed people were more intelligent and better people than those with blue eyes. The blue-eyed children, although the majority, were simply told that they were inferior and that the brown-eyed children should therefore be the “ruling class.” Guidelines were laid down so the inferior group would “keep their place” in the new social order. They were to sit at the back of the room, stay at the end of the line, use paper cups (instead of the drinking fountains), and so on. The “superior” students received extra privileges, such as extra recess time for work well done.

Within minutes the blue-eyed children began to do more poorly on their lessons and became depressed, sullen, and angry. They described themselves as “sad,” “bad,” “stupid,” “dull,” “awful,” “hard,” “mean.” One boy said he felt like a “vegetable.” Of the brown-eyed superiors, the teacher reported, “What had been marvelously cooperative, thoughtful children became nasty, vicious, discriminating little third-graders . . . it was ghastly.”

To show how arbitrary and irrational prejudice and its rationalizations are, on the next school day the teacher told the class that she had erred, that it was really the blue-eyed children who were superior and the brown-eyed ones who were inferior. The brown-eyed children now switched from their previously “happy,” “good,” “sweet,” “nice” self-labels to derogatory ones similar to those used the day before by the blue-eyed. Their academic performance deteriorated, while that of the new ruling class improved. Old friendship patterns between children dissolved and were replaced with hostility. The children reacted with relief and delight at the end, when they were “debriefed” and learned that none of them was “inferior” to others (Elliott, 1977).

This experiment, recorded in the film Eye of the Storm, has been repeated with other classes and even adult groups with the same results. In each case the assumption of power by one group over another based on supposed superiority has led to discriminatory behavior, disruption in the social structure, loss of self-esteem, change in performance by the “inferior” members in accordance with their ascribed status, and justification by the superiors for the pattern of discrimination sanctioned by the “system.”
Suggestions for Reducing Racism

The difference between prejudice and racism (broadly defined) is a difference between individuals and systems. While prejudice is carried in the minds and actions of individuals, racism is perpetuated across generations by laws and treaties, group norms, and customs. It is carried by newspapers, textbooks, and other communication media.

A prevailing racist ideology in a culture constantly provides the “informational” support and social endorsement for discrimination despite personal evidence of its invalidity and injustice. Such ideas become unquestioned assumptions that are seen not as biased opinions of distorted values but as self-evident truths. They are a major contributor to racial differences in the quality of employment, housing, schooling, health care, and nutrition. They also contribute to crime and violence and, in other cultures and other times, have led to “holy wars.”

Overt Racism

Under the banner of the “white man’s burden,” colonialists exploited the resources of black Africa. Native Americans were deprived of their land, liberty, and ecological niche in the United States by newly arrived European immigrants whose desires for wealth, homesteads, and new frontiers were in conflict with the “menace of the red savages.” The “yellow peril” was another journalistic fiction, used to set people’s thinking against Americans of Asian ancestry. After their usefulness was over as laborers on the railroads, in the mines, and other manual jobs, the press and labor groups mounted campaigns to deport the Chinese, and to deprive both Chinese and Japanese immigrants of the rights and privileges of American citizenship. Over 100,000 Japanese Americans were put into concentration camps in the Western states during World War II. Their property was sold at small return, and millions of dollars were held by the government and used by American bankers for 30 years without interest. Nothing comparable was done to those of German or Italian ancestry, America’s other two enemies during that same war.

When a group becomes the target of prejudice and discrimination, it is socially segregated, preventing normal interchange and blocking or destroying channels of communication. This isolation, in turn, allows rumors and stereotypes to go unchecked, fantasies to surface and grow, and the “strangeness” of the group, real and fancied, to increase over time. The isolation of Native Americans on reservations and the racially segregated housing patterns in our cities increase the alienation between groups and prevent both reality checks and causal interaction.

Covert Racism

The public opinion poll is one way of assessing the extent of racism in a society. If you can believe what people say, there is a decreasing amount of negative stereotyping and adverse attitudes of whites toward African Americans in the United States. Americans seem to be changing their attitudes about racial integration.

Are overt expressions of prejudice diminishing or merely being suppressed? Measures of covert racial prejudice use content analysis of public media to discern if the same old attitudes are still there, but under wraps. One study deserves to be highlighted for the subtle form of covert racism it reveals, so subtle that you have probably been exposed to it and never realized its impact on your thinking.

A blind psychology professor, Raymond Rainville, found that while listening to live broadcasts of professional football games he was able to identify the race of the players although it was never mentioned. Rainville reasoned that the white announcers were communicating messages
about basic racial differences, perhaps at an unconscious level. Transcripts of the televised commentaries of sixteen NFL games were analyzed according to a variety of content categories. The researchers compared descriptions of an African American and a white player of the same position who had comparable performance statistics, such as running backs O. J. Simpson and Larry Csonka. Players were designated as “Smith” or “Jones,” and names of teams, teammates, and cities were disguised. Three independent raters were able to identify each player correctly as African American or white on 1 of 25 rating categories.

All differences found were favorable to whites and unfavorable to African Americans. Whites were significantly more often:

- Recipients of sympathy, positive focus, and play-related praise
- Described as executors of aggression
- Credited with positive cognitive and physical attributes.

African Americans were more often described as:

- Being the recipients of aggression
- Having a negative, nonprofessional record, such as problems in college or with the police (Rainville & McCormick, 1977)

All of these players were exceptional athletes, yet the white players were described as active causal agents on the field and the African American players as passive objects moved by external forces.

**Reducing Racism**

Once established, prejudice and racism are relatively resistant to extinction because of the several needs they may serve for the individuals and the group, and the many conditions that may encourage and maintain existing attitudes. Although progress has been made in reducing prejudice and racism, a tremendous amount of progress remains to be accomplished.

Here are some techniques we can use to reduce racism:

- **Change actions:** Research has shown that contact between antagonistic groups can promote better intergroup relations and lessen existing hostilities. Mere exposure, however, does not help and is more likely to intensify existing attitudes. Changes as a result of contact are most likely to occur when the contact is rewarding rather than thwarting, when a mutual interest or goal is served, when status is equal, and when the participants perceive that the contact was the result of their own choice.

- **Change the rules and the reinforcements:** Although “righteousness cannot be legislated,” a new law or regulation provides a new system of rewards and punishments and can thereby create a new social norm that then becomes a powerful influence on individuals to conform to the new pattern. The same results may be achieved by more informal agreements to change “ground rules.”

- **Change the self-image of victims of prejudice:** Young people who are targets of prejudice may be “inoculated” against its crippling psychological effects and thus be helped to develop and demonstrate their real potentials if they establish a sense of pride in their origins, history, and group identity. The “Black is beautiful” slogan represents an effective instance of this approach, as do “Gray Power” and “Gay Pride.”

- **Change competitive encounters to cooperative ones:** Environments that foster interpersonal competition are often breeding grounds for envy, jealousy, hostility, and self-derogation.
By creating conditions in which students must depend on one another for learning required material, teachers can help overcome some interracial conflicts that exist in traditional classrooms. When every member’s contribution is equally valuable, students feel like partners rather than competitors, and those in desegregated settings can discover the advantages of sharing knowledge and friendship with “equal and interdependent” peers—regardless of race, creed, or sex.

**In-Groups, Out-Groups, and Groupthink**

The groupthink hypothesis proposes that members of small cohesive units have a tendency to maintain esprit de corps through the unconscious development of shared illusions and related norms. These norms subsequently interfere with the group’s critical thinking and reality testing (Janis, 1972). The groupthink phenomenon offers an exemplar of the in-group/out-group, us-against-them scenario. It is an annoying phenomenon at best, and a dangerous one at worst.

Consider the philosophies of a small group, caught up in the illusion of its own invulnerability, its excluding any ideas from outside the group, and controlled by leadership tactics that subtly sanction members who dare to suggest alternative courses of action or raise critical issues. The guiding premise of groupthink is, “If our leader and everyone else in our group decides that it is okay, the plan is bound to succeed. Even if it is quite risky, luck will be on our side.” (Janis, 1972, in Frost, Mitchell, & Nord, 1982, p. 350).

Groupthink is the epitome of the “my-mind-is-made-up, don’t-confuse-me-with-facts” mentality. This mentality is carefully guarded by all members of the group. This collective behavior tends to surface in times of crisis and effectively closes off input from any source outside the group. Reliance of the group on consensual validation replaces critical thinking by any one member; reality testing is shunned. Members of the group share an illusion of unanimity, with the blanket assumption that all members concur in the position of the group’s leader(s), creating an atmosphere of assumed consensus of thought.

Janis (1972) offered eight characteristics of the groupthink mentality.

1. **Illusion of invulnerability**: Overemphasis of group strengths, and exaggeration of the capacity to complete a risky course of action.
2. **Rationalization of negative information**: Collective discounting and rationalization of warnings of imminent danger resulting from pursuit of a specific course of action.
3. **Stereotyping of out-group**: Sharing of distorted perceptions of rivals as being:
   - Too weak or stupid to pose a viable threat
   - Too stupid to negotiate with
4. **Assumption of morality**: A belief that the inherent morality of the group and its objectives preclude any requirement to question the morality of methods employed to attain goals.
5. **Self-censorship**: Individual members’ doubts and misgivings are not expressed.
6. **Illusion of unanimity**: Lack of dissent is interpreted by the group as concurrence in philosophies.
7. **Mindguarding**: Certain members of the group protect the group from negative information by suppressing the information completely.
8. **Direct social pressure**: Members apply social pressure to discourage expressions of doubts or criticism of the group’s illusions, stereotypes, or judgments.
Cults
In expanding the text’s discussion of cults, you might review the types of people who are most commonly recruited by cults. They are often adolescents and young adults who are somewhat idealistic, so that they are more susceptible to the cult’s utopian message. They are likely to be people who are psychologically vulnerable in that they are lonely, depressed, feeling rejected, lost, hopeless, or desperate in some way. They may have had long-term problems or may have suffered a temporary setback in their life, but they are vulnerable at that moment and the cult promises a new direction or hope that will make them feel loved, appreciated, and special again. They may be searching for some sense of direction in their lives or someone to blame for their problems, and often cults seemingly provide them with both. No matter what the specific circumstances, as the text points out, once someone is under the control of a cult, the techniques they use to manipulate the person’s attitudes and behaviors can be extremely powerful. Which is why it is so important for students to be aware of how cults operate before they are ever tempted to join one.

**BIOLOGHAPHICAL PROFILES**

**Solomon Asch (1907—1996)**
Solomon Asch obtained his Ph.D. at Columbia University in 1932. He subsequently taught at the New School for Social Research in New York City and at Rutgers University. Asch’s research and conceptual orientation in social psychology were influenced strongly by the Gestalt school, particularly as represented in the writings of his close friend, Max Wertheimer. Asch is best known for his pioneering research on conformity and the effects of group pressure on the behavior of the individual. Among his major works is the classic text *Social Psychology*, published in 1952.

**Stanley Milgram (1933—1984)**
Stanley Milgram was born in New York City, received his Ph.D. from Harvard in 1960, and taught briefly at Yale, before returning to Harvard in 1963 as the Executive Director of the Comparative International Program in the Department of Social Relations. Milgram is well known for his series of experiments on obedience to authority, which he conducted during the early 1960s. This controversial research brought him both vehement criticism and praise, including the American Association for the Advancement of Science’s Socio-Psychology Prize in 1965. He became distinguished professor at City University of New York in 1980. His works include *Obedience to Authority* (1974) and the award-winning short film, *The City and the Self* (1974).

**Muzafer Sherif (1906—1988)**
Muzafer Sherif obtained his masters degree at Istanbul University, Turkey. After winning a fellowship abroad, he traveled to Harvard to study, primarily because of William James’ legacy. He obtained a second master’s degree at Harvard, then went to Columbia University, where he conducted his dissertation, classic research on the autokinetic effect. While at the University of Oklahoma from 1949 to 1965, he investigated the effects of competition on the emergence of stereotypes and intergroup hostility, and the ameliorative effects of intergroup cooperation. With his wife, Carolyn, Sherif examined social judgments and attitudes, and the natural behavior of adolescents in groups. From 1965 to 1972, he taught at Penn State University.
SUGGESTIONS FOR FURTHER READING


Steele, C. (1997). A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance. American Psychologist, 52(6), 613-629. Introduces “stereotype threat’ and discusses its influence on the performance of stereotyped individuals. Stereotype threat is a phenomenon in which the fear of confirming a stereotype leads to anxiety that actually causes the fulfillment of the stereotype. It is used to explain lower academic performance by stereotyped group compared to nonstereotyped groups.

DISCOVERING PSYCHOLOGY

PROGRAM 17: SEX AND GENDER

Overview
The ways in which males and females are similar and different, and how sex roles reflect social values and psychological knowledge.

Key Issues
How sex hormones affect gender behavior in rats, how the environment affects gender roles, reasons for self-segregation by gender among preschool children, artificial limits imposed on female gender roles, relationship between gender roles and depression, and how gender stereotypes in advertisements affect behavior.

Demonstrations
Sex differences in the play behavior of baby rats.
Self-segregation by gender in a preschool.
Socialization differences in gender-appropriate behavior and dress.

Interviews
Developmental neuroscientist Michael Meaney studies why male rats are more apt to engage in rough-and-tumble play, while female rats are consistently less aggressive and less physical.
Eleanor Maccoby examines why children tend to socialize with other children of the same sex.
Jean Block examines the differences in the socialization of male and female children and the effects on their relationships with other children of the same and opposite sex.

PROGRAM 20: CONSTRUCTING SOCIAL REALITY

Overview
The factors that contribute to our interpretation of reality and how understanding the psychological processes that govern our behavior may help us to become more empathetic and independent members of society.

Key Issues
Power of cognitive control, the Pygmalion effect, how teachers’ expectations affect children’s test scores, the development of prejudice in a grammar school classroom, and the principle of compliance as illustrated in television ads.
Demonstrations

The self-fulfilling prophecy study, or the Pygmalion effect.

The principles of compliance illustrated with actual television advertisements.

Jane Elliot’s blue-eyed versus brown-eyed case study.

Students’ enhanced self-esteem and performance due to the jigsaw classroom.

New Interview

Steven Hassan looks at the ways cults use mind control methods to reshape people’s identity and reconstruct the way they perceive reality.

Interviews

Grammar school teacher Jane Elliot divides her classroom into a superior blue-eyed group and an inferior brown-eyed group to study the development and nature of prejudice.

Robert Rosenthal studies how teachers’ expectations can affect children’s test scores.

Elliot Aronson and Alex Gonzalez examine how cooperation rather than competition changes the way students see themselves and their peers.

Robert Cialdini examines the principles of reciprocation, scarcity, authority, commitment, liking, and consensus in marketing and advertising.

FILMS AND VIDEOS

The Candid Camera Classics for Social Psychology consists of 16 episodes that I selected, with Allen Funt’s assistance, to dramatize many key social psychology topics, such as compliance, conformity, obedience, social influence, authority, power, morality, and bias in field surveys. Each of these creative gems is funny and entertaining, while teaching important messages about human nature. Since they vary in duration from 2 to 6 minutes, a given episode can be used to launch a lecture as a thematic overview, to underscore a conclusion from a body of empirical research, or to provide a source for opening a discussion of the behaviors that the class and the instructor observed together. The Candid Camera Classics come with an instructor’s guide (that I prepared with Allen Funt) that will assist teachers in getting the most mileage from using them, McGraw-Hill distributes this video (VHS) and a laser disk version. For ordering information, call 1-800-338-3987.

Abilene Paradox (1984). VCFM, 27 minutes

A gently humorous exposition of social psychological concepts such as groupthink and deindividuation. Demonstrates how the cognitive processing of a well-intentioned, cooperating group can go far astray from the individual views of the members.

Captive Minds: Hypnosis and Beyond (1985). JFMU, 55 minutes

Explains how long-term conditioning takes place, such as how the Moonies hold on to their disciples, and how the Marine Corps generates such fierce loyalty. The indoctrination methods of disparate institutions are surprisingly similar. Recruits are isolated in unfamiliar environments, kept busy to the point of exhaustion, confused, frightened, and their sense of identity weakened. Over time, they become vulnerable to suggestion. They then readily submit to a strong authoritarian leader. Reminds us that we are all vulnerable to psychological manipulations, some of which have social and political consequences.
Conformity (1989). Insight Media, 30 minutes

This program examines the pros and cons of conforming behavior, looking at its dangers as well as its utility in group decision making, classroom activities, and military regimentation. It introduces reasons for conformity and investigates some of the variables that predict who is likely to conform.
Conformity and Independence (1975). IU (MTI), 23 minutes

Uses field and laboratory settings to look at social psychology’s main findings and principles in the area of conformity and independence. Includes Sherif’s experiments on norm formation; Asch’s experiments on group pressure, and Crutchfield’s variation; Milgram’s experiment on action conformity; Kelman’s three processes of compliance; and Moscovici’s theoretical views.

Prejudice (1989). Insight Media, 30 minutes

Showing four scenarios of prejudiced behavior, this program explores stereotypes and emotions underlying prejudice. It discusses possible methods for reducing discrimination.

Productivity and the Self-Fulfilling Prophecy: The Pygmalion Effect (1976). (CRM) MCGFY, 28 minutes

This film illustrates self-fulfilling prophecies in several settings, including social science and industrial management experiments. Illustrations include placebo effects and bank runs during the depression.

Reflections on 100 Years of Social Psychology. (Available from California State University, Fresno, Department of Psychology, 5310 N. Campus Drive, Fresno, CA 93740-0011.)

An edited video of presentations by Elliot Aronson, Leonard Berkowitz, Morton Deutsch, Harold Gerard, Harold Kelley, Albert Pepitone, Bertram Raven, Robert Zajonc, and Philip Zimbardo to accompany a text commemorating 100 years of experimental social psychology.

Social Psychology (1990). Insight Media, 30 minutes

Social psychology attempts to understand the myriad of social forces that influence our attitudes and actions. This program discusses several research studies and findings on stereotyping and prejudice, attribution theory, and the power of social roles. Philip G. Zimbardo’s prison experiments are described and analyzed.

War and Violence (1986). (FFHS), 52 minutes

Demonstrates that poverty and violence go hand in hand. Depicts inner-city Boston and a lesson on walking away from a fight. Includes an interview with a young Hispanic in Oakland who talks about the machismo that underlies gang violence. Explains that around the world violence is fueled by religion, nationalism, or race and made worse by politicians’ rhetoric. Looks at the possibility of warfare today and the repercussion it has on the whole human race. From the Human Animal Series, hosted by Phil Donahue.

The Wave (1981). 44 minutes

Observes as teacher Burt Ross re-enacts a 1967 social experiment in which a movement similar in philosophy to that of the Nazi Third Reich is created. Shows how the ideas of power, discipline, and superiority were drilled into his students and how willingly most of them adopted these ideas. Illustrates the attitudes that allow people to deny responsibility for-and even knowledge of-the injustices occurring around them.
EXPERIMENTS AND DEMONSTRATIONS

BY PHILIP G. ZIMBARDO

STRATEGIES FOR DISCUSSION SECTIONS: EXPERIMENTS AND DEMONSTRATIONS

Having students become directly involved in research is one of the best ways to put life into psychology. Toward that goal, we have prepared a set of research projects to be conducted in class. They are designed to sample different areas of psychology, to illustrate various methodological approaches, and to offer a range of activities that can engage the entire class.

Ideally, participating in these demonstration research projects should enable the student to get a feeling for the exciting process of analyzing complex psychological problems, generating quantitative and qualitative data, and drawing conclusions. Indeed, it is precisely by experiencing this process of discovery that the student will come to appreciate the products of psychological investigation that are presented in the text and lectures.

When this experience works as intended, the student’s outlook is transformed from the passive: “What do I need to know?” into the active mode: “How can I find out what I’d like to know?” Such a change in one’s thinking about one’s relation to any body of knowledge fires the student’s intellectual curiosity to go beyond acquiring what is given or required to challenging the given and to seeking the knowledge desired. If this happens, even “ordinary students” may become scholars and scientists who make extraordinary contributions to society.

NOTE TO INSTRUCTORS

The two paragraphs above also appear in the student’s Study Guide for Psychology and Life, as does the highlighted paragraph below. The rest of this introduction and detailed descriptions of each project are given only in this instructor’s manual. It includes all the material necessary for each project. This saves you the time, effort, and expense involved in reproducing them. In addition, it allows you to have better control over how the material will be introduced and developed.

In the lecture that precedes the first demonstration, students should be alerted to the necessity of bringing their Study Guide to class. Nevertheless, not all students will have purchased the Study Guide by then, so you may wish to reproduce some of the materials for that demonstration. It will also be important to make explicit how you will deal with the problem of students who fail to bring the required materials to sections.

NOTE TO STUDENTS

Some introductory psychology courses include a laboratory or discussion section component that supplements the basic lecture class. We have designed a set of research projects that accompany this edition of Psychology and Life for use in those courses. If you are in such a course and your teacher plans to use some or all of our research projects, then you should bring this Study Guide to class meetings. It contains the materials necessary for carrying out the research projects, such as instructions, stimulus materials, tables and charts for tabulating your data, and so forth.

Although any of these projects may be worked into an existing course syllabus for a small class, they were designed to be the core exercises in separate discussion sections led by instructors or teaching assistants. Each of them has been class-tested and refined over a number of years of use in the Introductory Psychology discussion sections at Stanford University and in other colleges as well. They have been evaluated as informative and enjoyable by both teachers and students. We hope you will also find them a valuable
addition to your course.

If possible, a 90-minute class period should be allotted for each discussion section. In our quarter-long course, these six sections are supplemented by one period in which the teacher describes his or her current or recent research interests. In addition, the class chooses the final topic or activity from a set of options provided by the teacher. The options may be other research projects covering different methodologies, such as field observations of seating patterns at a campus event, interpersonal distance in public areas, nonverbal communication, and so on. Alternatively, they may consist of visiting research laboratories in the department or community. Sometimes the class may go to a movie or play that has a psychological theme and discuss it afterward. The point is to expose the class to a meaningful psychological activity or exercise likely to simulate further interest in psychology.

In a semester-length course, the projects here will have to be extended in ways consistent with your course objectives. That may include either adding other research projects or alternating class sessions between research demonstrations and discussions or extensions of text and lecture material.

It is advisable that these sections be coordinated with the basic lecture course, yet maintain an identity of their own. If TAs are conducting the sections, the lecturer should meet with them regularly to plan the research projects, get feedback on how well they worked, encourage trying out variations on the topics chosen, and reinforce effective teaching performance. Sitting in on some sections also offers a first-hand look at how they are functioning.

A good way to get teaching assistants when there is not a sufficient budget for them is to offer a credit course entitled Practicum in Teaching. Thus, advanced students get credit for learning how to teach, and they typically learn the course materials more thoroughly than they did as “students.” This experience makes an excellent addition to their vita. For those who do a good job, the incentive of a letter of recommendation is often potent. We may offer first-time undergraduate TAs the option of team-teaching two sections in order to share the anxiety, preparation load, and classroom activities.

Typically, undergraduates at Stanford have taken sections for one credit beyond the units for the lecture course. When the sections are organized around research projects, the grade is based on general class performance and attendance, not on any exams. We have found that making sections optional, instead of required, decreases the number of unmotivated students who register for them.

### EXPERIMENTS AND DEMONSTRATIONS

<table>
<thead>
<tr>
<th>DOMAIN</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Perception (First class “icebreaker”)</td>
<td>Impression Management and Formation</td>
</tr>
<tr>
<td>Sensory Perception</td>
<td>Coping with Being Temporarily Blind</td>
</tr>
<tr>
<td>Methodology</td>
<td>Reaction Times Can Be Revealing</td>
</tr>
<tr>
<td>Conditioning</td>
<td>Salivating for Pavlov</td>
</tr>
<tr>
<td>Memory and Cognition</td>
<td>Strategies for Enhancing Memory</td>
</tr>
<tr>
<td>Motivation and Assessment</td>
<td>Detecting Guilt and Deception</td>
</tr>
<tr>
<td>Psychopathology</td>
<td>Suicide: Intentions and Acts</td>
</tr>
<tr>
<td>Ethics and Research</td>
<td>Evaluation and Research Ethics</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>Clinical Interventions</td>
</tr>
</tbody>
</table>

Both graduate and undergraduate student TAs report that being able to use this set of materials had many benefits. Among them they noted: lessening of anxiety at the start of their teaching experience, increased confidence in presenting a variety of topics and approaches, and saved preparation time. Use of these materials enabled TAs to perform different functions across a set of activities and generally created a
positive feeling among their students that something worthwhile was happening in the discussion sections.
IMPRESSION MANAGEMENT AND FORMATION

OBJECTIVES
1. To acquaint class members with one another and to provide a first-session “icebreaker” to get students talking.
2. To stimulate discussion about how people form impressions about others and how they manage the impressions others will form about them.
3. To examine how people’s beliefs influence their social judgments.
4. To demonstrate how interesting questions can be studied experimentally and how subjects’ responses can be quantified and analyzed.

OVERVIEW
In the short time that the class has assembled, it is likely that two processes have been going on: impression management and impression formation. Impression management is a complex set of verbal and nonverbal behaviors that a person engages in with the intent to appear in a desired way. Impression formation is the process of making judgments about the attributes of other people. In this section, we will do the following:

1. Begin by going around the room and having the students introduce themselves by answering the question, “Who Am I?” The “Who Am I?” test is an old projective test that repeatedly asks respondents to answer the question “Who are you?” Answering this question gets students to self-disclose quickly. After you have gone completely around the room once, go around the room again, having the students answer the same question. You will find that each time you go around the room, students self-disclose more. This process is very sensitive to your initial remarks, and you can easily direct the tone of students’ replies. Go around the room as many times as practical. This simple activity will pay-off by creating a supportive, friendly, and humane environment that will last for the entire term.

2. As each student speaks, all others will list up to five adjectives that they think are probably characteristic of this person.

3. For three students chosen arbitrarily, list on the chalkboard the adjectives that class members chose as descriptive of each person in question.

4. Ask the people who were selected whether the adjectives that the class members chose are the ones that they intended to generate.

5. Ask students to list the three traits they each think are most characteristic of the course instructor. Pool their impressions to determine the frequency of each trait and where there is consensus or disagreement. Ask students for behavioral or perceptual evidence they used to infer each of the traits they listed. Ask them to use the Impression Formation Tally Forms to outline their impressions.

6. Analyze five different styles of self-presentation.

GENERAL INTRODUCTION
In social encounters, we are selective in what we tell other people about ourselves and in what we look for in them. We engage in impression management by giving others information that will lead them to form certain conclusions about us. We also engage in impression formation by seeking out information about others in ways that may confirm our initial impressions about them. This demonstration examines how people manage their impressions of others by selectively presenting information that is relevant to some goal—in this case, getting a job. It also explores how people recruit information about others as they form impressions about them. In doing this, the demonstration provides a relatively nonthreatening means for
students to become better acquainted.

**SELF-PRESENTATION STYLES**

Robert Arkin (Ohio State University) improved on this demonstration by adding the following unit on individual styles of self-presentation. See the taxonomy chart (from a research article by Jones and Pittman, 1982) in which, for each of four types of self-presentation styles, there are four columns of information: a) the emotion that the actor wants to arouse (the goal of the interaction); b) the attributions the actor seeks to elicit from others about himself or herself; c) the prototypical actions used to achieve those objectives; and d) the risks of negative attributions being made instead of the intended one. Read the chart carefully to get a sense of these styles, strategies, and consequences.

1. Begin by asking the class, “Suppose you wanted to arouse respect in someone for one of your recent accomplishments, what would be the impression you would want to create?” (Refer the students to their charts.)
2. Then, for each of the four styles, mention the emotion to be elicited and have the students infer the appropriate style.
3. Get the students to generate the attribution sought in order to arouse each emotion.
4. Next, have the students give specific actions that would produce the desired emotion (e.g., “Casually mention to your date that, when you were chatting at dinner the other evening at your parents’ home in Monaco, she/he told you that”). This is, naturally, the fun part. The examples can be wacky. At some point, work in the name of the style (in this case, self-promotion). In addition, the fact that one risks making a poor impression (negative attributions risked) can also be fun. In the example above, one could be accused of being a name-dropper or a place-dropper.
5. For a lively discussion, ask if there are any sex differences in the use of these styles. You should, however, be aware of sexist stereotypes and use them to advantage as part of the psychology of false impression formation.

**PITFALLS TO AVOID**

Because this is the first research section, you will have to strike a difficult balance between encouraging students to self-disclose and keeping a lively pace so that there is time to complete the demonstration.

**DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS**

To bring the impression formation idea to life, you can use the following exercise to good effect. First, ask students to guess the basic rules of impression formation. With reference to a job interview, for instance, ask what would be a common and basic rule to use in making a good impression on the interviewer (or anyone else for that matter). Students will almost certainly cite the power of first impressions; i.e., “putting your best foot forward.”

The following experiment illustrates the power of first impressions. Three groups of subjects participated. Each group learned about the performance of an individual taking a test of intellectual achievement (say, a test of analogies or anagrams). All three groups learned of someone who got approximately 15 of 30 fairly difficult items correct.
## Taxonomy of Self-Presentation Styles

<table>
<thead>
<tr>
<th>Style</th>
<th>Emotion to Be Aroused</th>
<th>Positive Attributions Sought</th>
<th>Prototypical Actions</th>
<th>Negative Attributions Risked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingratiation</td>
<td>Affection</td>
<td>Likable</td>
<td>Self-Characterization Opinion Conformity Other Enhancement Favors</td>
<td>Sycophant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Conformist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Obsequious</td>
</tr>
<tr>
<td>Intimidation</td>
<td>Fear</td>
<td>Dangerous</td>
<td>Threats (incipient)</td>
<td>Blusterer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ruthless</td>
<td>Anger (incipient)</td>
<td>Wishy-Washy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volatile</td>
<td>Breakdown</td>
<td>Ineffectual</td>
</tr>
<tr>
<td>Self-Promotion</td>
<td>Respect (Awe)</td>
<td>Competent</td>
<td>Performance Claims</td>
<td>Fraudulent</td>
</tr>
<tr>
<td></td>
<td>Deference</td>
<td>Effective “A Winner”</td>
<td>Performance Accounts</td>
<td>Conceited</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performances</td>
<td>Defensive</td>
</tr>
<tr>
<td>Supplication</td>
<td>Nurturance (Obligation)</td>
<td>Helpless</td>
<td>Self-Deprecation</td>
<td>Stigmatized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Handicapped</td>
<td>Entreaties For Help</td>
<td>Lazy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unfortunate</td>
<td></td>
<td>Demanding</td>
</tr>
</tbody>
</table>

Note: Student Study guide omits terms within each cell so that students can figure them out.

From Jones & Pittman, 1982

But the three groups differed in one crucial way. One group learned of someone (whom they watched on videotape) who did well on the first half of the items (say, about 10 of 15 correct), but then did poorly on the second half (say, only 5 of 15 correct). The second group learned of someone who did about equally well through the test (say, about 7 or 8 of the first 15 items correct and about 7 or 8 of the next 15 correct). Finally, the third group learned about someone who did poorly on the first half of the items (say, about 5 of 15 correct), but then improved considerably on the second half (say, about 10 of 15 correct).

One group judged the performer much brighter than the other groups. Which one?

This demonstration raises a number of questions and issues of social perception, but the main point illustrated is the power of first impressions. The group that judged the performer brightest was the “descending performance” group. That is, those who saw a brilliant performance to begin with and then saw it deteriorate as time went by. Why?

Seemingly, perceivers make snap judgments. They had decided how smart the guy was by the fifth, eighth, or tenth trial. And, even when they saw the guy’s performance deteriorate, they were unwilling to give up their original attribution. “Well, he’s bright, so he must have gotten bored, or stopped trying this silly, easy task, or something…” For the person who began doing poorly, and improved: “He is clearly a bozo. But he must have gotten the message and really started trying. Finally, he caught on. Clearly, he’s slow.”

Again, the perceivers were unwilling to give up their first impression. They were reduced to explaining away the contradictory evidence by coming up with ad hoc motivational explanations to account for the
change in performance.

In short, it seems that all the adages about “putting your best foot forward” are right. Repairing the damages of a first impression gone awry is one tough assignment. (See Jones et al., 1972, and Jellison & Blanche, 1976.)

You might discuss research that shows how people who are randomly assigned to ask tough questions are automatically perceived as more knowledgeable than those randomly assigned to answer them. This research suggests that people fail to discount adequately for the constraints that roles impose on behavior. (See Ross, Amabile & Steinmetz, 1977.)

**ADDITIONAL RESOURCES**


COPING WITH THE ENVIRONMENT WHILE BEING TEMPORARILY BLIND

This is a special out-of-class assignment that may be given for extra credit or used as the basis for class discussion, at the instructor’s discretion.

OBJECTIVES

1. To give students the opportunity of having the unique sensory-perceptual experience of not being sighted for some period of time (several hours to one day).
2. To compare anticipated reactions of students with their actual experiences.
3. To demonstrate the value of experiential learning.

OVERVIEW

We all wonder from time to time what life would be like or how we might be different if some sensory attribute we value and rely on were suddenly changed: such as our hearing; sense of smell, taste, or feel; or vision. Here is a way for students to test the consequences of one such loss—temporary blindness.

GENERAL INTRODUCTION

One of the primary research strategies for studying the operation of psychological and physiological processes involved in well-learned, highly practiced, or apparently inborn behaviors is to disrupt them. Such behaviors, precisely because they usually function so well, are taken for granted and are therefore not subjected to the scientific scrutiny and analysis they may deserve. Investigation of the variables and processes responsible for maintaining normal functioning often proceeds by creating conditions that prevent, block, or modify the occurrence of the behavior pattern, subject it to unusual stress, or cause it to be manifested in a deviant or abnormal form.

Sometimes such “experimental manipulations” are produced by naturally existing conditions—as with genetic mutations, birth defects, accidents, marked environmental changes, or being reared in a situation that is atypical for other members of a given, comparable species or culture. For example, brain functioning was initially studied through observation of what specific behavioral functions were lost (temporarily or permanently) when tumors were removed from the brains of epileptics or when people suffered destruction of brain tissue from poisons, diseases, or physical damage in accidents or warfare. To study the relative effects of heredity and environment on behavior, psychologists originally resorted to intensive analysis of feral children who were found abandoned in the wilderness, allegedly reared by animals.

On a more personal level, you may have become aware of the phenomenon of sleep only when you had insomnia; or you may have become sensitized to the normally effortless process of inhaling oxygen and exhaling carbon dioxide when you had asthma, worked at high altitudes, or lived in a smog-filled city.

While psychologists do study the consequences of natural disturbance of normal functions, they prefer to discover techniques by which such disturbances can be experimentally induced under controlled observational conditions—and then reversed. Thus, the individual’s behavior can be studied before the intervention, while the disruption is occurring, and then again after the original conditions are restored. For example, to study brain functions, physiologists can apply small amounts of electric current to brain sites and record temporary alterations in functions that persist only as long as the stimulation is continued. Similarly, it has been shown, by delaying auditory feedback with special apparatus, how much we depend on receiving immediate auditory feedback for talking in a coherent, integrated fashion.

Perhaps the most important sense you possess is one you take most for granted because of the usually reliable and efficient way in which it operates. For sighted people, vision is not a gift but a given. We are rarely aware of the complex set of visual cues we depend on in virtually every activity we carry out.
Moreover, reliance on visual cues makes us less dependent upon the cues provided by our other senses. Finally, with vision comes a measure of independence—we can get where we want, when we want, without help from others. But suppose you suddenly lost the use of your eyesight? What changes would occur? What things would you become aware of that are normally irrelevant or not consciously attended to? How would you feel about having to depend on others for help in dressing (or selecting your wardrobe), reading, and even just moving about?

**METHOD**

*Subjects:* You will serve as your own subject. Ideally, you should perform this research with a partner from your class or a close friend. It would increase the value of the experience for you to serve both as subject and as guide to another person. You can compare notes as to the similarities in your experiences as well as discover differences.

*Apparatus:* Gauze pads and bandage, an Ace elastic bandage, sunglasses, long stick or cane, and a tape recorder, if possible.

*Procedure:* The research task presented to you is to be blind for a day. Blindfold yourself when you go to sleep so you will awaken without the use of your sight and do not remove the blindfold until the following evening. It is advisable to put gauze pads over your eyes, then gauze bandage or some similar material to hold the pads in place, and perhaps an Ace elastic bandage on top. Sunglasses might help you look less conspicuous. Be sure to make the necessary arrangements in advance for how you will carry out the “normal” day’s activities. Also, do not take any chances in crossing streets or other danger spots without prearranged assistance. The use of a long stick (or cane) will be necessary to detect obstacles in your path.

If you cannot set aside an entire day for this research, it would still be valuable to do so for even part of a day, during your morning or afternoon classes, or in the evening from dinner until bedtime.

**GUIDE TO ANALYSIS**

1. How do you imagine you will react to this experience of perceiving your world without being able to rely on your visual sense? Before you begin, think about those aspects of the situation that will be difficult or easy to adjust to. In what areas of functioning do you anticipate the experience will have its biggest impact on you? Indicate these predictions on the table provided. When you have completed the exercise, compare your actual and anticipated experiences.

2. Keep a mental record of your thoughts and feelings and the reactions of others to your “handicap.” At several times throughout the study, write out your experiences (without removing your blinders), or dictate them to your partner or into a portable tape recorder.

3. While doing your research, also note the following:
   - Do you have any unexpected difficulties in understanding other people or in expressing your thoughts to them?
   - Does your food taste any different?
   - Is it difficult to eat?
   - Do right angles become important to you as navigation signs? Why? Why do curved sidewalks and other curves pose a special problem?
   - How do you utilize and integrate sound, touch, smell, and other sensory feedback to compensate for your visual loss?
   - Are you more or less sensitive to interpersonal relations?
   - What have you learned about yourself that you did not know or fully appreciate before?

4. When it is all over, how does it feel to know you have the power to regain your sight at will? Imagine what it would be like if you could not reverse the effect—if you were blind not merely for a day! Now consider whether the environment you operate in regularly has made any design...
concessions to accommodate students who are blind or handicapped in some other way. Can you identify specific features of environmental design that might be changed to make the life space more livable for those who cannot rely on all their senses or normal motor ability? Would it be possible to introduce your suggestions for such change to the administration of your school or to those in charge of the life-space unit in which you conducted your personal experiments?

5. Compare your reactions to those of other students who have done this exercise. What is the value of experiential learning?

6. What are the psychological differences between being without sight versus being without hearing?
## Comparison of Anticipated & Actual Reactions to Being Blind for a Day

<table>
<thead>
<tr>
<th>Question</th>
<th>Anticipated</th>
<th>After Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anticipated</strong></td>
<td>Date:</td>
<td>Date:</td>
</tr>
<tr>
<td><strong>Time:</strong></td>
<td>Time:</td>
<td>Time:</td>
</tr>
<tr>
<td><strong>Total Blind Time:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Most difficult motor skill or response to make</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sense you will rely on most</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How long it will take to adjust to the situation to function appropriately</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What, if any, will be the major problem or difficulty in:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) dressing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) eating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) attending class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) engaging in a hobby or favorite recreation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) social relations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sources of anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sources of gratification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REACTION TIMES CAN BE REVEALING

OBJECTIVES
1. To sensitize students to the needs for experimental controls that help minimize experimenter bias.
2. To illustrate that without proper controls an experimental procedure can yield false conclusions.
3. To encourage students to design an experiment that answers the question, “Which sex has the faster reaction time?”
4. To generate an operational definition of reaction time without the use of a clock.
5. To have some fun while demonstrating some important principles of research methodology.

OVERVIEW
The “experiment” is the most powerful analytical tool used in science. Cause-effect relationships can be established only using well-controlled experiments. Psychologists employ this tool in the investigation of virtually all aspects of behavior, including perception, learning, memory, cognition, motivation, physiological processes, sensory processes, social behavior, development, and therapeutic procedures. While the specific details of the methodology vary within each of these areas of investigation, the logic of experimentation is essentially the same.

The following classroom demonstration and discussion should help elucidate the need for, and logic of, experimental methods in the study of behavior.

GENERAL INTRODUCTION
You (the instructor) are to role-play as seriously as you can a biased-sexist orientation in the attempt to confirm “what you already believe is true”; namely, that members of your sex are faster reactors than those of the opposite sex. You will violate a series of experimental controls to prove your point. The class has to catch you in the act.

PROCEDURE
Materials
Reaction-time device constructed from light cardboard (see template).

Instructions
1. Propose a hypothesis: “Males react faster than females” (if you are male), or “Females react faster than males” (if you are female). This will usually draw protests from the hypothesized “slower” sex.
2. Define reaction time: the time interval between stimulus presentation and a subject’s reaction. Using our reaction time meter, it is converted into centimeters of distance between the signal “Drop” and the subject’s reaction of stopping the falling reaction time meter.
3. Select a student of the sex hypothesized as slower. Ask the student to come to the front of the room and stand with his or her hand about even with the tip of the meter, with the thumb and forefinger about two inches apart. Then, without explanation or warning, drop the meter between the subject’s fingers. The subject will probably catch it. Record the reading, measuring from the top of the thumb. Reaction time is measured in centimeters here rather than in seconds. Give only one trial. Write the subject’s score on the board.
4. Then, ask for a volunteer of the opposite sex. Have this student come to the front of the room, sit down, relax, and tell you his or her preferred hand. Then define the task: to stop the meter as soon as possible when it is dropped after the signal “Drop” is given. Hold the meter so that the point is
two inches above the student’s fingers (instead of even with them). Give the subject two practice trials and a verbal warning signal of “Ready.” Then give two test trials and record only the fastest one. Then announce that the “obvious” conclusion has been confirmed.

5. At this point, the “losing sex” will protest, pointing out some of the biases you introduced. List them:
   - The first student was selected, while the other volunteered.
   - The first student had to use cognitive processes (since the task wasn’t explained before the trial); the second student used simple reaction time.
   - The first student started with the point at fingertip level; the second started with it two inches above the fingertips (leads to a discussion of accuracy of measurement).
   - The first student had no “ready” signal; the second did.
   - The first student was standing; the second was sitting.
   - The first student had no practice; the second had practice trials.

6. Now pretend to run an unbiased test following the class suggestions. Eliminating all of the previous biases (by essentially following the procedure for the second subject), you can still easily bias the results:
   - By having a fixed foreperiod (warning signal to stimulus onset) for one subject versus a widely variable one for the other.
   - By using different motivating instructions or feedback (“that wasn’t very good now, was it?”).
   - By giving one a motor set (to respond—“get ready to grab it”), which is faster than a sensory set (to observe—“watch for it to drop”).
   - By letting one subject but not the other, see you “prepare” to release the stimulus.

7. Using any of the above (or in combination), your hypothesis will again be “proven”. Have the students list the biases in this test. Repeat, using more subtle differences each time.

DISCUSSION

The discussion should lead to the notion of relevant versus irrelevant variables in an experimental situation. Relevant variables are those likely to affect the dependent measure (reaction time), such as those used to bias this experiment. Irrelevant variables are those unlikely to affect the results, such as, in this case, barometric pressure, hair color, socioeconomic level, etc. This should lead to discussion of the need for experimental control procedures in order to identify and control relevant variables so that both experimental conditions are the same in every regard except the independent variable. Then, any differences in results can be attributed to the independent variable.

ADDITIONAL RESOURCES

SALIVATING FOR PAVLOV

OBJECTIVES
1. To have students personally experience what it means to be conditioned to elicit a classical salivary response.
2. To perform a simple but effective demonstration of Pavlovian conditioning on the entire class.
3. To collect conditioned response data on acquisition and extinction that will provide the impetus for discussing applications and extensions of conditioning principles in everyday life.

OVERVIEW
Many students find the usual discussion of Pavlov’s discovery of the principles of conditioning uninteresting and without any personal relevance. Having them salivate—as did Pavlov’s experimental dogs—may ring a bell for them!

1. Do not begin by stating the principles of conditioning, but request that the students read *Psychology and Life*, chapter 9 before this demonstration.
2. Do assess the students’ knowledge of the meaning of US-UR, CS-CR; acquisition and extinction.
3. Perform the following demonstration, which was developed by Dennis and Rosemary Cogan (Texas Tech University) and described in detail in their article in *Teaching of Psychology, 1984, Vol. 11, pp. 170-171*.

GENERAL INTRODUCTION
Although conditioning represents one of the most important discoveries in psychology, students fail to appreciate its significance. In part, this is due to the description in terms of dogs salivating to bells, hardly of apparent personal relevance to students. By making the students salivate to an arbitrary signal (CS)—the name “Pavlov”—they will be in a better position to appreciate how virtually any neutral stimulus can come to have the power to elicit powerful biological responses.

Following the demonstration, you should be sure that the class understands the significance of the research on conditioning of drug responses—and lethal overdoses—as one “real-world” consequence.

PROCEDURE

**Materials**
- One can of sweetened lemonade powder (such as Minute Maid).
- Small paper cups, one per student, of the kind used for ketchup and mustard in some cafeterias.
- Pour enough of the lemonade powder in each cup so that a student can taste some on each of about 70 conditioning trials. (Try it first yourself to determine the approximate amount.)

**Method**
1. Tell students to moisten the tip of the index finger of their preferred hand and watch for the instructor to signal them to “Dip.”
2. At the visual cue of the instructor pointing down, students dip their moistened fingers in the lemonade powder and put a small amount of it on their tongues.
3. The CS is the spoken name “Pavlov” said between (0.5 and 1.5 seconds) prior to the “Dip” signal.
4. These conditioning trials are spaced at intervals of 10 to 15 seconds.
5. Test trials are given after 8 to 12 conditioning trials. In a test trial, instead of the “Dip” signal, the instructor holds up a card with the word “Experience?” Students are not to taste the lemonade powder (US) but are to experience if they salivated after “Pavlov” and without the US. Get a show of hands of those who did salivate and record it as a percentage of the class giving a conditioned response.

6. The same results are obtained with eyes opened or closed during test trials.

7. After most of the class shows acquisition (80 to 100 percent of the class), start extinction training by withholding the “Dip” lemonade tasting procedure; instead, all trials are test trials “Pavlov” — Experience?

8. Have each student write down how strong the salivary response he or she experienced on the conditioning trials was compared to the lemonade trials. Also, inquire about the taste sensation, physical response (“puckering”), and any cognitive responses (e.g., actively trying not to be conditioned by thinking of something else).

DATA ANALYSIS
1. Plot the acquisition and extinction data.
2. Add water and ice to remaining crystals and pause for refreshment.

ADDITIONAL RESOURCES

STRATEGIES FOR ENHANCING MEMORY

OBJECTIVES
1. To discuss some of the ways in which memory operates in everyday life.
2. To consider how memory can be systematically distorted.
3. To demonstrate some of the ways in which memory can be improved.
4. To perform a within-subject experiment on immediate versus delayed recall as a function of depth of processing.

OVERVIEW
The issue of memory and memory enhancement is inherently interesting. To what extent are differences in test performance between students a function of difference in their memory capacity? To what extent can this capacity be expanded? In this section we will:
1. Begin by going around the room and sharing (a) our earliest memories and (b) the most important thing we have ever forgotten.
2. Discuss how it is that we know those events actually took place. What are validity checks on memory?
3. Determine which students remembered to bring in a previously suggested item (e.g., idea cards, if they are being used). Ask those students who remembered to bring in the item what devices they used to facilitate their recall, and ask those students who forgot the item why they believe their memory failed.
4. Review a variety of strategies for improving memory.
5. Conduct one or both of the demonstrations on memory enhancement.

GENERAL INTRODUCTION
Memory has long been of interest to psychologists and philosophers. William James said the only thing that distinguishes memory from other mental processes (perception, imagination, reasoning, etc.) is the belief that the given event actually occurred in the past. In his novel, 1984, George Orwell described techniques to destroy this set of beliefs by rewriting the past to make it congruent with the present situation. Perhaps the most famous injunction about memory is philosopher George Santayana’s reminder that “Those who forget the past are condemned to repeat it.” It is possible at this point to mention some instances of “social amnesia,” such as the holocaust in Germany, the internment of Japanese American citizens in U.S. concentration camps during World War II, or, more recently, the Jonestown massacre. More typical examples of memory distortion from psychological literature comes from Bartlett’s classic study of “The War of the Ghosts,” Allport and Postman’s study of rumor transmission, and Loftus’ recent demonstrations of the unreliability of eyewitness testimony.

Common to all these examples is the susceptibility of memory to distortion. However, the emphasis in this demonstration will be on ways to improve the accuracy of memory. The earliest known account of memory enhancement comes from the Latin writer Cicero, who tells a story of how Simonides was able to recall the identities of a large number of banquet guests who were accidentally killed and mutilated beyond recognition. He did so by associating each guest with the place, or locus, at which he or she had been sitting. This mnemonic device later became known as the method of loci. Other memory enhancement strategies, many of which have been popularized by Lorayne and Lucas in The Memory Book include:
1. Associating what is to be remembered with what is already known—in some ridiculous way. In using this technique to remember who wrote “The War of the Ghosts,” for example, one might
imagine a ghost munching on a Bartlett apple.

2. Exaggerating the size, number, or some other characteristic of what is to be remembered. For example, one might remember to buy apples at the supermarket by imagining a shopping cart brimming over with apples.

3. Replacing abstract labels with vivid, concrete images whose names sound similar to the original thing to be remembered. The name “Zimbardo” might therefore be remembered as “sitar show,” “limb cargo,” or “Z embargo,” while Joe Smith becomes “Joe’s mitt.”

4. Substituting vivid, similar-sounding images for the original items to be remembered and linking these images together in a coherent story (see American States Demonstration below). This mnemonic technique has been called “narrative chaining”.

Narrative chaining is curious because in one sense it ought not to work; the learner’s task is to recall a given amount of material by putting it in a context that requires first learning a much greater amount of material. The following experiment is designed to test the validity of the assertion that memory can be enhanced through learning with the narrative chaining method.

**PROCEDURE FOR BRIEF “AMERICAN STATES” DEMONSTRATION**

*Subjects*
All students participate as subjects. No maximum or minimum.

*Time required for Research*
10 minutes

*7-time required for discussion*
5-20 minutes

*Method*
1. Ask students to estimate how long it would take them to memorize the first 10 states in alphabetical and reverse alphabetical order. Also, ask how long it would take the entire class to do so. Ask students to raise their hands if they believe the instructor can teach the first 10 states to everyone within 5 minutes (most should raise their hands). Ask how many believe the same can be accomplished in under 60 seconds (most should lower their hands).

2. Read the story contained in Materials, using dramatic emphases wherever possible. (It helps to have practiced this with a stopwatch before class, to ensure that the reading will be less than 60 seconds.)

3. On completion, ask the students to list the states in alphabetical order, turn the page over, and do so in reverse alphabetical order. Three minutes should be sufficient time.

4. Go through the list aloud with the class and have students score how many states they remembered. Summarize the scores by drawing frequency distributions on the chalkboard. Ideally, the majority of students will recall most or all of the items correctly.

*Materials*
“Let’s start the top of our chart with an album (Alabama), and on that album see a bunch of baked Alaskas (Alaska). Now envision this album with all these baked Alaskas floating through an air zone (Arizona), but a voice from the air zone says enough of all these sinful baked Alaskas, there will be rain for forty days and forty nights so next you see yourself sawing an ark (Arkansas). You need animals for your ark, so the first one you call is a fawn (California). You notice it’s a strange fawn, though, because it has colored toes (Colorado). You can’t have that, so you cut them off, but then the fawn can’t walk into the ark, so you connect the cuts (Connecticut). The fawn climbs aboard, and your next animal is a woman. Of course, her
name is Della (Delaware). Della’s wearing flowers (Florida), so she looks very nice for the manimal on the ark–George (Georgia).”

PITFALLS TO AVOID

1. Be sure to have students’ undivided attention before reading.
2. Avoid reading the story in a monotone voice.

PROCEDURE FOR DEPTH-OF-PROCESSING DEMONSTRATION

(Developed by Scott Fraser at the University of Southern California.)

Depth of processing and expanding memory through narrative chaining under varied conditions of rehearsal: This demonstration enables students to compare their ability to recall lists of common words with and without the use of narrative chaining by repeating the words or having a distraction to overcome.

It is obviously important for students to be able to recall accurately materials they have studied. Often, differences among students’ exam grades reflect not how much or hard the students have studied, but rather how good their memory was for what they learned. Are such differences in memory completely determined by inherent differences in native ability or are they in part attributable to the ways in which people learn and store information? If they are built-in abilities, reflecting “brain power,” then either you have a good memory capacity or you do not. If, on the other hand, the condition under which you learn the material to be remembered influenced your recall, then memory can be expanded by control of these situational variables.

Mnemonics is the general name for techniques designed to improve recall by associating the new material with familiar material, by using vivid images evoked by the material, or by abstracting some elements and recombining them into a more easily remembered form. For example:

Question: Can you give the colors of the spectrum in their correct sequence?
Answer: Mr. Roy G. Biv is a mnemonic to remember Red-Orange-Yellow-Green-Blue-Indigo-Violet.

Other Mnemonics You Might Want To Give Your Students

The order of the planets from the sun: “Meek Violet Extraterrestrial Make Just Such Unusual New Pets.” (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)

The most common elements in the human body: “P. COHN’S CaFe” (Phosphorus, Carbon, Oxygen, Hydrogen, Sulfur, Calcium, Iron (Fe))

The order of taxonomic classification of plants and animals: “Kings Prefer Crowns Or Fairly Grand, Similar Vanities.” (Kingdom, Phylum, Class, Order, Family, Genus, Species, Variety)

The best metric system prefixes, in descending order: “Kangaroos Hop, Dancing Despite Coming Motherhood.” (Kilo (thousandfold), Hecto (hundredfold), Deka (tenth part), Centi (hundredth part), Milli (thousandth part))

The order of operations in algebra: “Please Excuse My Dear Aunt Sally.” (Parenthesis, Exponents, Multiplication, Division, Addition, Subtraction)
In this experiment, students will test the validity of the assertion that memory can be enhanced through learning with the narrative chaining mnemonic method supplemented by a procedure that involves greater depth of processing to overcome a distractor. In addition, there will be a delayed recognition test (as in multiple-choice exams) to examine the effects of the independent variables on each of three dependent measures.

1. Word lists are composed of simple nouns high in imagery and concreteness. There are two practice lists and 10 experimental lists, each containing five words.

2. Timing:
   - 10 seconds for presentation of list
   - 15-second wait before writing remembered words—this time is filled with either repetition of words or “distraction” task of saying “Hello.”
   - 15 seconds time to write remembered words
   - 5–10–minute delay between completion of the last immediate recall list and the start of the first delayed recall
   - 5–minute wait for the delayed recall (or less if students raise their hands when they cannot recall any more words); fill time with information about memory processes
   - 2-4 minutes for recognition test.

3. Presentation of word lists ideally should be tape-recorded by the instructor with the appropriate timing sequences of presentation–wait/filler tasks–recall units. In addition to hearing the words read aloud, students should see them as each list of five words (written large in magic marker on a file folder) is held up by the instructor.

4. Wait/filler tasks consist either of mere repetition of the five words in a list recited quietly but publicly or also reciting aloud the word “Hello” for the 15-second wait interval. “Hello” should be a distractor that interferes with rehearsal and leads to poorer performance on immediate recall. However, for delayed recall, the effect may be very different and contrary to the simple prediction that repetition leads to better recall.

5. Depth-of-processing comes into play when, along with the distracting “Hello,” students are asked to integrate the five words on a given list into a story. They are to perform “narrative chaining” of the individual words. For example, flower-queen-army-kiss-street becomes, “The flower queen’s army kissed the street.”

The meaning value of the words is increased by this mnemonic device (the more vivid and bizarre is the story), and the distracting task requires greater effort to think about the story chain and retain its meaning while simultaneously uttering “Hello.” This should result in superior delayed recall relative to rehearsal via repetition. This is the interesting feature of this demonstration. If found, does the effect extend to recognition as well as recall?

**Materials**

1. Instructions.
2. Word lists: 2 practice, 10 experimental. Instructors should tape-record the lists and write each list (5 words each) on file folders; also write REPEAT and HELLO on file folders.
3. Immediate and delayed recall test forms for students, along with recognition test.

5. Data tabulation sheet.

Subjects
Ten or more subjects would be ideal, but the demonstration is possible with as few as six students. Each student can participate as a subject, so the entire class is involved.

Time Required for Research
20 minutes for data collection; 10 minutes for data analysis.

Time Required for Discussion
10–20 minutes.

INSTRUCTIONS
1. In this memory task you will listen and see lists of words that you are to remember. Each list will have five words; there will be two practice trials and 10 test trials.

2. The word lists will be read aloud (on tape) slowly, and I will hold them up for you to see. You will wait 15 seconds until writing down as many as you can remember from each list. You will have to hold those five words in memory for 15 seconds before writing them down on the Recall Test Answer sheets.

3. During the 15-second interval, there will be an experimental variation that takes place, not between subjects but within subjects. Each of you will be his or her own control as we take repeated measures on you across both conditions. In the repeat condition, you are to repeat over and over the 5 words in a soft, but audible, voice and to think of nothing else but the individual words. In the Hello condition, you are to say “Hello” over and over in the same soft, but audible, voice during the 15 seconds. The Hello condition poses a distraction to rehearsal. To give it a little boost so it will not be at a total disadvantage to the Repeat condition, make up a story that links the five words in a list. This is called “narrative chaining,” in which unrelated words are chained to form a narration. Make the story vivid and bizarre if you can. You can form your narrative as soon as the list is presented and/or silently to yourself while you are saying “Hello” aloud.

4. Now let us have two practice trials. I will hold up the condition cue first, then present the five words. After the last word, you repeat the five words aloud. Now start. (Word list read/shown; 15 seconds for rehearsal.) Stop! Write on your Recall Test Answer sheet the words you recall. (Be sure each student is reciting aloud.) Now, the Hello practice trial (as before).

5. We are ready for the test trials. The Repeat and Hello trials will be alternated, with Repeat coming on trials 1, 3, 5, 7, and 9, and Hello on trials 2, 4, 6, 8, and 10. Before each list I will hold up either the Repeat or Hello card and you recite the 5 words or say Hello as often as you can during the 15 seconds before writing down as many words as you can remember on the form in your workbook. Begin.

6. (After the last list, have students turn their tally sheet over while you fill the 5-10 minute delay interval with talk about mnemonics, memory enhancements, or information processing models of memory.)

7. OK, now let us assess your delayed recall. How many of the 50 words on both Repeat and Hello lists do you recall? Use the Delayed Recall sheet in your workbook to write down all the words you recall now, in any order. When you cannot recall any more, raise your hand to signal that you are ready for the next task. (Give 5 minutes maximum for delayed recall.)

8. Please turn that tally sheet over. Now you will take a recognition test of the words to which you
were exposed. In your workbook is a Recognition Test that includes the 50 original words plus 50 others not in the original lists. Circle each one you think was on one of the original lists you heard and saw. Do it as quickly as you can.

9. It's time for you to calculate the results for each of the three measures of memory separately, using the answer keys in your workbook. When you have done so, fill in the Data Tabulation Sheet in your workbook, state your conclusion, and draw the graph requested.

10. The individual data should be tallied for the class on the chalkboard or on an overhead projector. If there is time, a class graph and within-subjects t-test can be computed.

DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS

1. Perform the experiment with some students in the Hello condition not doing the narrative chaining to see the effects of distraction not aided by making the word lists more meaningful. Compare recall for the most vivid and bizarre list-stories with more mundane ones.

2. Vary the type of depth-of-processing instructions, for example, a vivid image of the first word on the list or a rhyme for each word. A yoked-control group might use the story chains that were created by the Hello group to see if generating a personally meaningful integration is necessary for the effect or if performing the task with an arbitrary story chain is as effective.

3. Have students graph the data to investigate serial position effects—by lists rather than by individual words—for each type of memory measure.

4. With brighter students, shorten the exposure time to each list, lengthen the size of the lists, and extend the delay interval.

ADDITIONAL RESOURCES


**WORD LISTS FOR DEPTH-OF-PROCESSING STUDY**

<table>
<thead>
<tr>
<th>Repeat (Practice)</th>
<th>Hello (Practice)</th>
<th>Repeat (1)</th>
<th>Hello (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>apple</td>
<td>flower</td>
<td>river</td>
<td>body</td>
</tr>
<tr>
<td>fire</td>
<td>queen</td>
<td>garden</td>
<td>letter</td>
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<tr>
<td>storm</td>
<td>army</td>
<td>lake</td>
<td>girl</td>
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<td>ship</td>
<td>kiss</td>
<td>sugar</td>
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<td>king</td>
<td>street</td>
<td>bird</td>
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<td>gold</td>
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<td>prison</td>
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<td>A. Practice</td>
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</tbody>
</table>

Do not turn to the next page until you are instructed to do so.
## RECOGNITION TEST ANSWER SHEET

Circle each word if it was on a list that you heard and saw.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>iron</td>
<td>soil</td>
<td>chair</td>
<td>doctor</td>
<td>lake</td>
</tr>
<tr>
<td>2</td>
<td>crane</td>
<td>rain</td>
<td>garden</td>
<td>shoes</td>
<td>star</td>
</tr>
<tr>
<td>3</td>
<td>machine</td>
<td>heap</td>
<td>green</td>
<td>book</td>
<td>button</td>
</tr>
<tr>
<td>4</td>
<td>ketchup</td>
<td>almond</td>
<td>lamp</td>
<td>moat</td>
<td>car</td>
</tr>
<tr>
<td>5</td>
<td>market</td>
<td>party</td>
<td>square</td>
<td>train</td>
<td>roast</td>
</tr>
<tr>
<td>6</td>
<td>house</td>
<td>business</td>
<td>lip</td>
<td>ram</td>
<td>horse</td>
</tr>
<tr>
<td>7</td>
<td>spit</td>
<td>boy</td>
<td>dam</td>
<td>shore</td>
<td>railroad</td>
</tr>
<tr>
<td>8</td>
<td>sea</td>
<td>illness</td>
<td>hall</td>
<td>harness</td>
<td>hand</td>
</tr>
<tr>
<td>9</td>
<td>film</td>
<td>shout</td>
<td>dirt</td>
<td>box</td>
<td>rock</td>
</tr>
<tr>
<td>10</td>
<td>mortar</td>
<td>sprain</td>
<td>loan</td>
<td>sugar</td>
<td>prison</td>
</tr>
<tr>
<td>11</td>
<td>river</td>
<td>door</td>
<td>picture</td>
<td>golf</td>
<td>ball</td>
</tr>
<tr>
<td>12</td>
<td>sip</td>
<td>water</td>
<td>mountain</td>
<td>map</td>
<td>sheet</td>
</tr>
<tr>
<td>13</td>
<td>guest</td>
<td>juice</td>
<td>meat</td>
<td>judge</td>
<td>couch</td>
</tr>
<tr>
<td>14</td>
<td>home</td>
<td>skin</td>
<td>stone</td>
<td>television</td>
<td>village</td>
</tr>
<tr>
<td>15</td>
<td>priest</td>
<td>gold</td>
<td>cat</td>
<td>weapon</td>
<td>kangaroo</td>
</tr>
<tr>
<td>16</td>
<td>wind</td>
<td>cannon</td>
<td>sled</td>
<td>city</td>
<td>valley</td>
</tr>
<tr>
<td>17</td>
<td>spoon</td>
<td>bird</td>
<td>mast</td>
<td>pickax</td>
<td>spell</td>
</tr>
<tr>
<td>18</td>
<td>seat</td>
<td>steeple</td>
<td>letter</td>
<td>sky</td>
<td>corn</td>
</tr>
<tr>
<td>19</td>
<td>vehicle</td>
<td>money</td>
<td>fox</td>
<td>wax</td>
<td>lily</td>
</tr>
<tr>
<td>20</td>
<td>tree</td>
<td>body</td>
<td>game</td>
<td>girl</td>
<td>camp</td>
</tr>
</tbody>
</table>

Do not turn the page until instructed to do so.
ANSWER KEY FOR THE IMMEDIATE RECALL TEST

A. Practice
   apple
   fire
   storm
   ship
   king

   1. river
   2. garden
   3. lip
   4. book
   5. water
   6. hall
   7. cat
   8. sky
   9. iron

B. Practice
   flower
   queen
   army
   kiss
   street
   body
   letter
   girl
   rock
   tree
   shoes
   machine
   boy
   village
   green
   weapon
   home
   skin
   moat
   car
   soil
   city
   mountain
   house
   prison
   picture
   judge
   star
   door
   sea

Totals

Correct R:__________________  Correct H:__________________

Do not turn to the next page until instructed to do so.
## ANSWER KEY FOR THE DELAYED RECALL TEST

<table>
<thead>
<tr>
<th>A. Practice</th>
<th>B. Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>apple</td>
<td>flower</td>
</tr>
<tr>
<td>fire</td>
<td>queen</td>
</tr>
<tr>
<td>storm</td>
<td>army</td>
</tr>
<tr>
<td>ship</td>
<td>kiss</td>
</tr>
<tr>
<td>king</td>
<td>street</td>
</tr>
<tr>
<td>1. river</td>
<td>2. body</td>
</tr>
<tr>
<td>garden</td>
<td>letter</td>
</tr>
<tr>
<td>lake</td>
<td>girl</td>
</tr>
<tr>
<td>sugar</td>
<td>rock</td>
</tr>
<tr>
<td>bird</td>
<td>tree</td>
</tr>
<tr>
<td>3. lip</td>
<td>4. shoes</td>
</tr>
<tr>
<td>book</td>
<td>machine</td>
</tr>
<tr>
<td>seat</td>
<td>boy</td>
</tr>
<tr>
<td>gold</td>
<td>village</td>
</tr>
<tr>
<td>valley</td>
<td>green</td>
</tr>
<tr>
<td>5. water</td>
<td>6. weapon</td>
</tr>
<tr>
<td>hall</td>
<td>home</td>
</tr>
<tr>
<td>market</td>
<td>skin</td>
</tr>
<tr>
<td>camp</td>
<td>moat</td>
</tr>
<tr>
<td>shore</td>
<td>car</td>
</tr>
<tr>
<td>7. cat</td>
<td>8. soil</td>
</tr>
<tr>
<td>sky</td>
<td>city</td>
</tr>
<tr>
<td>horse</td>
<td>mountain</td>
</tr>
<tr>
<td>vehicle</td>
<td>house</td>
</tr>
<tr>
<td>money</td>
<td>prison</td>
</tr>
<tr>
<td>9. iron</td>
<td>10. picture</td>
</tr>
<tr>
<td>party</td>
<td>judge</td>
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<tr>
<td>doctor</td>
<td>star</td>
</tr>
<tr>
<td>railroad</td>
<td>door</td>
</tr>
<tr>
<td>square</td>
<td>sea</td>
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</tbody>
</table>

**Totals**
Correct R: ___________  Correct H: _______________

Do not turn to the next page until instructed to do so.
ANSWER KEY FOR THE RECOGNITION TEST

1. +9 iron +8 soil — +9 doctor +1 lake
2. — — +1 garden +4 shoes +10 star
3. +4 machine — +4 green +3 book —
4. — — — +6 moat +6 car
5. +5 market +9 party +9 square — —
6. +8 house — +3 lip — +7 horse
7. — +4 boy — +5 shore +9 railroad
8. +10 sea — +5 hall — —
9. — — — — +2 rock
10. — — — +1 sugar +8 prison
11. +1 river +10 door +10 picture — —
12. — +5 water +8 mountain — —
13. — — +6 meat +10 judge —
14. +6 home +6 skin — — +4 village
15. — +3 gold +7 cat +6 weapon —
16. — — — +8 city +3 valley
17. — +1 bird — — —
18. +3 seat — +2 letter +7 sky —
19. +7 vehicle +7 money — — —
20. +2 tree +2 body — +2 girl +5 camp

Circled numbers are the list numbers of “Hello” words (even-numbered lists)
Uncircled numbers are the list numbers of “Repeat” words (odd-numbered lists)
— are false positives, words you thought were on a list but were not

Total Correct R: __________
Total Correct H: __________
DATA TABULATION SHEET

Name: ________________________________

Record frequency of scores under each of the following conditions.

<table>
<thead>
<tr>
<th>Memory Measure</th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
<th>Recognition Test</th>
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<tbody>
<tr>
<td>Experimental Condition</td>
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<tr>
<td>Repeat (Repetition)</td>
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<tr>
<td>Hello (Depth-of-processing)</td>
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<td></td>
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<tr>
<td>Totals</td>
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</table>

Conclusions: What is the effect of the experimental conditions on
(a) Immediate recall?
(b) Delayed recall?
(c) Delayed recognition?

Plot these data on a bar graph. Use different shaded bars for the two experimental conditions.

Recall Frequency

Memory Measure
DETECTING GUILT AND DECEPTION

OBJECTIVES
1. To analyze the various behavioral indicators of an individual’s guilt feelings.
2. To collect different kinds of data from the same subjects, both quantitative (reaction time) and qualitative (word associations and expressive reactions).
3. To combine these multiple sources of evidence in order to draw inferences about the guilt or innocence of two (role-playing) suspects.
4. To consider how emotional arousal and unconscious motives may affect behavior.
5. To raise questions about practical issues in jury decision making and the use of lie detectors in courts and business.

OVERVIEW
“Detecting Guilt” is designed to involve the whole class in psychological detective work on a problem with both practical implications and broad conceptual significance. The demonstration casts students in the role of jurors who must decide the guilt or innocence of two criminal suspects. To do so, they must utilize a variety of behavioral indicators of emotional disturbance, including word associations, reaction times, and expressive behavior.

1. Begin by asking students to mention something that made them feel very guilty in the past (in elementary, junior high, or high school).
2. Have them try to come up with a definition of guilt.
3. Ask them what are the negative consequences and positive effects of guilt, analyze the common elements, and list their answers to the questions.
4. Briefly contrast the conscious and unconscious forms that guilt may take (the student examples are likely to be conscious instances).
5. Relate the discussion back to the memory analysis of the previous week (if you did that demonstration) by having students consider the effects of guilt on memory.
6. Ask the students if they were ever in a situation in which they felt guilty over some misdeed but were able to conceal their guilt from the critical appraisal of some “judge.” How did they mask their feelings?
7. Conduct the demonstration in which one subject role-plays feeling guilty about a crime while another subject is an innocent person who is also a criminal suspect; the rest of the class engages in the task of “psychodetection.”

GENERAL INTRODUCTION
Our working definition of guilt is a (1) negative (2) emotional and/or cognitive condition based on the (3) belief that one (4) could have emitted a response that would have led to (5) significantly better consequences for some (6) social agent than the response actually performed.

1. This excludes emotions based on power or revenge.
2. Guilt may be associated with anything from extreme arousal to minimal arousal but is always based on one’s interpretation of a social situation that involves the individual.
3. This excludes most nonhumans from feeling guilt.
4. “Could have” behaviorally as well as physically, which excludes those who tried their best and failed.

5. This excludes cases in which the differences in consequence between two responses are minor and stresses that guilt is based on a personal judgment.

6. This means that if the social agent discovered what was done or withheld, he or she would be distressed.

PUBLIC INTERROGATIONS

In attempting to determine whether a suspect is guilty or innocent, police interrogators often rely on emotional indicators of self-betrayal. One manual, written by Inbau and Reid (1962) and used to train detectives, proposes the following symptoms as signs of guilt:

1. Pulsation of carotid artery in the neck.
2. Excessive activity of the Adam’s apple.
3. Looking at floor or ceiling rather than looking the interrogator “straight in the eye.”
4. Swinging one leg over the other, foot-wiggling, wringing of the hands, tapping with the fingers, picking fingernails, etc.
5. Dryness of the mouth.
6. Swearing to the truthfulness of assertions.
7. Saying “I have a spotless past record” or “I’m a religious man.”
8. Saying “Not that I remember.”

(See Inbau, F. E., & Reid (1962). Criminal Interrogation and Confessions. Baltimore: Williams & Wilkins.)

THE POLYGRAPH

The dynamic role that emotion plays in influencing human behavior is often obvious from changes in the individual’s behavior such as those suggested above, but perhaps the most characteristic indicator of emotion is widespread visceral activity within the person. Several such visceral changes can be monitored; the well-known lie detector (polygraph) takes measures of electrical skin conductance (GSR), heart rate, respiration, and sometimes other changes such as indices of the emotional effects of “neutral” stimuli versus “critical” stimuli associated with the crime. As Inbau and Reid have said, “An offender who is led to believe that his appearance and demeanor are betraying him is thereby placed in a much more vulnerable position. His belief that he is exhibiting symptoms of guilt has the effect of destroying or diminishing his confidence in his ability to deceive and tends to convince him of the futility of further resistance. This attitude, of course, places him much nearer the confession stage” (p. 29).

The polygraph technique assumes that liars are aware of their lying and will experience measurable emotional reactions as a consequence. Polygraph lie detection is a psychological test of questionable psychometric merit.

A laboratory study (comparable to the one you will conduct here) showed polygraph examiners quite fallible. Fifteen students individually participated in a theft of money from an office, while 15 were innocent of this staged “crime.” Six polygraph examiners knew that half the suspects had stolen something and half had not, but they were not able to determine accurately which ones were guilty. The false alarm rate ranged from 18 to 55 percent. That is, even the best interpreter judged 18 percent of the truthful innocent subjects to be lying, guilty suspects! (See Kleinmuctz, B., & Szucko, J. J. (1984). Lie detection in ancient and modern times: A call for contemporary scientific study. American Psychologist, 39, 766776.)

The results of this study (and others mentioned in the article) might be contrasted with the conclusion promoted on the TV program “Lie Detector,” hosted by lawyer F. Lee Bailey (1983-84 season). The promo for the show said it “gets to the truth . . . The path of justice can make a bizarre turn, a path that perhaps can be
straightened out on . . .”
FREUD AND FREE ASSOCIATION: REACTION TIME AND BODY TALK

Long before the polygraph was put into practice, psychologists utilized other techniques for uncovering what a person was trying to conceal. Freud used the technique of free association as a means of discovering ideas that the patient had distorted through transformations of affect or attachment to other ideas or had put out of awareness.

Reaction time has long been used as a measure of decision processes. An assumption of this technique is that the more complex the decision, the longer cognitive processing takes. If the cognitive processing of negation of a truth (lying about one’s known guilty acts) takes longer than affirmation, reaction time should be useful in this detecting guilt task.

Finally, we express much about ourselves through our “body language”, the nonverbal, physical reactions of our movements, gestures, and facial expressions. (See Mehrabian, A. (1972). Nonverbal Communication. Chicago: Aldine-Atherton.)

A wonderful resource that should definitely be read before this demonstration is a theoretical and empirical study by Bella De Paulo, Julie Stone, and G. Daniel Lassiter (1985), “Deceiving and detecting guilt.” In B. R. Schlenker (Ed.), The Self in Social Life. New York: McGraw-Hill. The article deals with the informativeness of verbal and nonverbal cues in the communication of deception, the role of motivation, gender, and actual deception versus perceived deception, and many more fascinating issues for discussion. There is also an ample bibliography of more than 100 references relevant to various aspect of this phenomenon.

In this demonstration, three measures of emotional disturbance will be used: word associations, reaction times, and expressive behavior.

Procedure

Two male students will engage in a role-playing task designed to make one of them feel guilty about having murdered a woman who was blackmailing him. The guilty student destroys the evidence, including her photo, by burning it, and then tries to conceal his guilt from everyone. (Students often feel guilty about the act of burning the letter and photo; some keep the photo, especially if you previously have had it autographed with the name of the person you selected — then they really feel guilty.) The innocent student receives instructions to get a drink of water to relieve the thirst he is supposed to be experiencing.

The class is cast in the role of “psychodetectives” trying to uncover the truth. They might be psychologists hired by the court, experimenters, or jury members. The final decision centers on determining which of the two students is guilty and on what evidence that inference rests. It is interesting to look at “false negatives” — believing the guilty subject to be innocent, and “false positives” — believing the innocent one to be guilty.

Materials

You need to provide a stopwatch, two envelopes, three matches, and a metal pan. You are given two letters, a woman’s photo, a word list, data sheet, Expressive Behavior Encoding Guide and Tally Table, work association norms, reaction time table, and verdict slips.

Having several stopwatches and calculators would be helpful.

Subjects

Three (or four) for pretesting, two to participate; rest of class to be given research tasks.

Time required for Research

25-30 minutes for data collection; 10-20 minutes for analysis and verdict.

Time Required for Discussion

10 minutes before demonstration; 10-30 minutes after. (This section could be extended over two class periods.)

Method

1. Before class, prepare two envelopes. One should contain the instructions designed to introduce
guilt; the other contains innocuous instructions (see letters at the end of this section). The envelopes should be identical. In the guilty letter, you must indicate a safe place where the subject must go in order to perform the guilty act; you must also make the necessary preparations of having at that place: (a) Three matches, (b) a “blood-stained” (red inked) envelope containing the victim’s photo (any photo of a woman will do), (c) a metal pan in which the envelope can be burned. (Find a relatively secluded spot for the guilty suspect to burn the note and picture. One of our section leaders found to his dismay that a janitor had thrown the envelope away shortly before the section meeting; another suspect was interrupted by the sound of the fire alarm, set off by a very sensitive smoke detector. These problems can be avoided by careful planning.)

3. Bring a stopwatch to class.

4. Select two male subjects at the beginning of the class (it is possible to use two women as suspects; you might then want to make some changes in the content of the letter the guilty one gets). Premasure the RTs of three early-arriving students on each of five premeasured words (see Word List). Select the two with most similar Reaction Times (RTs) in order to minimize individual differences in speed of reaction to neutral words. If all three vary considerably, test a fourth and use the two who are most comparable. It is crucial that the suspect try to conceal his guilt; pick students you believe will play the part well and remind them to carefully follow all the directions they will receive. Give one unmarked envelope to each of them and send them out of the room in opposite directions. Do not inform the “suspects” about what will happen when they return to the class; this would give the guilty person time to prepare himself, nor should they talk to each other at any time. They are to knock on the door when ready to return.

5. While the suspects are out of the room, tell the class the circumstances of the crime. Explain their task and the scoring procedure they will use. You will need to assign to students three roles:
   - One or more students to note the suspect’s verbal response.
   - One or more students to note the suspect’s reaction time.
   - Two or more students to note significant signs of expressive behavior accompanying each verbal response (see Expressive Behavior Encoding Guide and tally table). Does the suspect stutter, answer in an especially low or loud voice, clear throat, cough, sigh, etc.? Jot down any such behaviors and code them as “S” for a speech disturbance. Does the suspect shift in his seat, cross his legs, twist, wring his hands or put them in his pockets, fidget with cigarettes, paper clips, etc.? Note these behaviors and code them as “P”, for a physical movement. Finally, focusing on the suspect’s face, does he smile, frown, wet his lips, close his eyes, etc? These behaviors can be noted and coded in a general facial expression category as “F”. Code behaviors not fitting these categories as “O”. If time allows, give students a chance to practice their scoring, using a volunteer “suspect” from the class. Have your reaction-timer write the times on the data sheet.

6. When the first suspect returns and knocks on the door, bring him in and seat him in front of the class with his back to the timekeeper (on a high, backless stool if you have one) and have a student experimenter give him the following instructions: “I will call out a word and you are to reply quickly with the first word that comes to mind. We will repeat this for each of 30 words. That is all there is to it. Is that clear?” (Minimize questions.)

7. If time is a problem, 20 of the 30 words should suffice, but pick half neutral and half critical ones. Have your timekeeper erase the times before the second suspect comes in.

8. If the first subject is allowed to remain in class while the second is being tested, he should sit behind the class so as not to give any telling reactions.

9. An excellent extension of this demonstration, proposed by Mikkel Hansen of Stanford University, is to have students (or associates) film the two suspects completing their tasks. At the end of the class, after votes have been cast, the videos can be played to the section to dramatically reveal who is
innocent and who is guilty.

PITFALLS TO AVOID
Do not get too involved in the initial discussion; this demonstration requires a lot of time, so hold all but the necessary setting of the context for afterward. Pick a safe place for the burning to take place. Do not select subjects who are very expressive—the guilty one might give it all away with the first blush.

DATA ANALYSIS AND INTERPRETATION
1. Half of the stimulus words are neutral, in the sense that they are not associated with any aspect of the crime, whereas half are emotionally loaded, in that they relate to some details of the crime of which you and the “criminal,” but not the innocent suspect, are aware. Have the class discuss which words should be counted as “critical”, based on their knowledge of the crime. To help them with this, you may want to read a description of the crime (the instructions given to the suspect). Then have them calculate mean reaction times separately for both types of words for each suspect.

2. Mention the use of premeasured RTs for neutral words and its function.

3. Was there a difference in the reaction time of the two suspects to the critical words they had in common? Repeat this analysis for the other measures. How would you explain the differences you observed?

4. There may be two complex effects of guilt or emotion on RT: a perseverance effect that carries over to the next word in the sequence, and a heightened variability effect of giving either much faster or slower RTs to the critical words. This would yield a mean comparable to the innocent victim, so different statistical methods might have to be used to assess the significance of this bimodal reaction tendency (should it occur).

5. Ask students to suggest other ways of analyzing the data to detect guilt. Have them discuss which measures seem to be doing the best job of predicting guilt. Using the measures they agree on, have the students predict which of the two suspects is guilty. Each student should make a private verdict and give an estimate of his or her confidence in the verdict. These data should be tallied and presented to the class. (Once the verdicts are in, have the two suspects return to the room for a discussion of the experiment.)

6. Are the three response measures correlated? How might they be combined to improve their predictive efficiency? Can they be refined? Can you think of better measures (for example, asking each suspect to make up a story using the critical words)?

DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS
1. If your section runs for one and one-half hours or so, you might add one or both of the following aspects: (a) a passive accomplice who accompanies the killer but does not talk to him, watches the questionable deed, has access to the relevant information but is neither a blackmailer, a killer, nor a destroyer of evidence; (b) a coincidental, innocent suspect who, by happenstance, does some weird things that involve the same critical words but is not guilty of any crime. For example, your letter to this person might say he is looking for the sign of a skull and cross-bones on a letter which, when he find it in Room____, he is to crush and destroy because he thinks it contains a curse, etc. These additions make lie detection less easy and open discussion about false-positives, personal responsibility, and reliability.

2. Why would it be important for the experimenter and the timekeeper not to know which suspect was guilty?

3. Could you train the guilty person not to betray himself through his emotional arousal? Are there people who have learned to suppress or not experience guilt? How could their guilt be assessed?
4. What role does self-monitoring play in being able to infer internal states from external behavior?

5. What does it mean to be “poker faced” or to have a face “like an open book”?

6. What kinds of external behavior are the best indicators of internal states? How can we train ourselves to monitor and control such sources of channel leakage?

7. What circumstances and variables lead to errors and misinterpretations of the “inner person” from outer appearances? Also consider the conditions under which we judge a nonparticipant as “shy” or “bored,” “unmotivated,” or “aloof, “not prepared” or “reserved.”

8. How can we distinguish between generalized arousal (anxiety from being put into a novel situation or from being tested) and the specific motivation stemming from guilt?

9. Sigmund Freud used word association as a clue to detect secrets the person concealed even from him- or herself. The idea that repressed thoughts will be revealed in overt behavior (slips of the tongue, strange associations, etc.) is basic to Freudian psychodynamic notions of the functioning of personality.

10. Contrast the methodologies of using qualitative content analysis of word associations to that of quantitative reaction time measures to get at the “deeper” structure of functioning. Personality psychologists and lay people more often use the former, while cognitive psychologists tend to use the latter. Beyond the methods of obtaining data, are there differences in how one goes about making inferences from these two sources of data?

11. Jury Decisions. If there is time, an interesting variation is to divide the class into juries with the mandate of coming to a unanimous decision in x-minutes’ time. Ask a spokesperson for each jury to call out its verdict. Be sure to have jury members indicate the confidence level of their personal verdict and the jury’s final decision. Analyze any changes in confidence or personal decisions due to the social influence of other jurors. How are explanations for erroneous inferences handled after the class learns the “truth”? An analysis of the psychology of the jury process would fit here or could be saved for the “social” part of your course. The “Detecting Guilt” demonstration has many interesting implications for discussing the decision-making process of real juries, judges, and police. Section leaders should try to use current examples and events, if available. Local jury trials, college disciplinary hearings, and police investigations can all be used to begin a discussion of the judicial determination of guilt.

12. Free Association. In psychotherapy, free association, recall, and self-revelation all are contingent on the patient’s trust of the therapist. Genuine free association, affective recall, and the ability to reveal oneself indicate that the basic premise of “be on guard” in relation to others and in relation to oneself has been loosened, has less potency as a maxim in living. This represents a momentous advance in the individual’s life (an insight sought as a primary goal of Freudian analysis). (See Singer, E. (1965). Key concepts in psychotherapy.)

13. An interesting variation to get at expectancy effects is to have half the judges be aware of the critical words before the testing begins and half unaware and see if this condition influences their data and conclusions.

ADDITIONAL RESOURCES
The following resources contain much to stimulate discussion of the psychological issues underlying various types of legal evidence, police confessions, eyewitness accounts, lie-detector test, etc.


3. Examples of how psychologists have studied guilt in relation to subsequent compliance:
   - Subjects who failed to win $20 for another person signed up down the hall to donate blood 100 percent of the time, as opposed to 57 percent of the nonguilty subjects.
   - Subjects who thought they broke a stranger’s camera helped a lady who spilled groceries 55 percent of the time, as opposed to 15 percent of the nonguilty subjects.
   - Subjects who knocked over a stack of dissertation references agreed to help on a conservation campaign 80 percent of the time as opposed to 45 percent of the time for nonguilty subjects.

MATERIALS

- Data tally sheet of reactions to each of 30 stimulus words
- Expressive Behavior Encoding Guide and table for summarizing data for each of two subjects.
- Table of word association norms
- Reaction Time summary table
- Verdict slip
- Stopwatch, if you have one
- Letters in unmarked envelopes
- Materials in “crime room”: 3 matches; bloodstained envelope to “Miss Chris” with woman’s photo in it, signed “All my love”; a metal pan.

INSTRUCTIONS TO GUILTY SUSPECT

You have just brutally murdered a woman who has been trying to blackmail you. She wanted you to buy a compromising letter you wrote her. You refused to pay and, during a violent argument as you tried to get away with the letter, you hit her over the head with a bat. The red blood spurting from her crushed skull covered the envelope. Rushing out in fear, you took the letter and threw the blood-streaked envelope into the trash basket.

Nevertheless, at this moment, you realize your fingerprints are on the envelope, and you feel there might be something else inside the letter that might be damaging evidence against you.

You must destroy that evidence or be discovered. You did not really want to kill her, but you did; and now you do not want to spend the rest of your life in jail or be executed. No one must know you are guilty.

Now (really) go to___________________ where you will find the trash basket. In it will be the envelope addressed to Miss Chris and something inside it. After examining the contents of the envelope, burn everything on the spot except this letter. Light the Miss Chris envelope and its contents with one of the three matches available, allowing them to burn in the pan on the floor. Be sure they have burned to ashes.

Put this letter out of sight, quickly return to the classroom, knock on the door to indicate you are back, but wait outside for further instructions. Absolutely no one must know of anything you have done. You know you are guilty, but now you must try to conceal your guilt or you will be in serious trouble. Try to act natural. It is important that you get into this role, to feel like a person who has committed this crime. Also remember you do not want to be found guilty — your life depends on concealing your guilt.

INSTRUCTIONS TO INNOCENT STUDENT

You are to imagine you are very thirsty, so thirsty that you would even buy some water if you had to. Find a water fountain on the third or fourth floor and take some long gulps of water. You are so thirsty that even if
a bat flew overhead you would not stop. Your hands are somewhat dirty and you notice you have left some fingerprints on the water fountain; you erase these fingerprints with a handkerchief or this letter.

You don’t want to miss the next part of the demonstration, so wait about five minutes from the time you left the classroom, put this letter out of sight, return, knock on the door to indicate you are back, but wait for further instructions. Do not talk to anyone or tell anyone about how you spent this time. No one must know what you did!

**WORD LIST**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Music</td>
<td>12.</td>
</tr>
<tr>
<td>3.</td>
<td>Orange</td>
<td>13.</td>
</tr>
<tr>
<td>4.</td>
<td>Black (G)</td>
<td>14.</td>
</tr>
<tr>
<td>5.</td>
<td>Buy (G) (I)</td>
<td>*15.</td>
</tr>
<tr>
<td>7.</td>
<td>Letter (G) (I)</td>
<td>17.</td>
</tr>
<tr>
<td>10.</td>
<td>Bat (G) (I)</td>
<td>20.</td>
</tr>
</tbody>
</table>

Premeasured words (5)
(G) = Critical words for guilty subject
(I) = Critical words for the innocent subject, one of which, water, or thirst, is the central theme of the innocent letter.
<table>
<thead>
<tr>
<th>Stimulus Word</th>
<th>Suspect 1</th>
<th>Suspect 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response Word</td>
<td>Reaction Time</td>
</tr>
<tr>
<td>1. school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. music</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. orange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. buy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. letter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. tree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. bat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. lake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. crushed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. pay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. heaven</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. spot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. miss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. smooth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. finger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. whistle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. light</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. dream</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. three</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. tattoo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. ashes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. trash</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXPRESSIVE BEHAVIOR ENCODING GUIDE

<table>
<thead>
<tr>
<th>Code Letter</th>
<th>Expressive Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Speech-disturbance behavior, such as stuttering, answering in an especially low or loud voice, clearing throat, coughing, sighing, and so forth</td>
</tr>
<tr>
<td>P</td>
<td>Physical movements, such as shifting in one’s seat, crossing and uncrossing one’s legs, twisting, wringing hands, fidgeting with things, and so forth</td>
</tr>
<tr>
<td>F</td>
<td>Facial expressions such as excessive smiling or frowning, wetting of the lips, shifting of eyes, closing of eyes, and so forth</td>
</tr>
<tr>
<td>O</td>
<td>Other unusual behavior you might notice and want to record that doesn’t fall into the other categories</td>
</tr>
</tbody>
</table>

Expressive Behavior. Tally the instances of expressive behavior in the following table.

<table>
<thead>
<tr>
<th></th>
<th>Suspect 1</th>
<th>Suspect 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>Critical Words</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral Words</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is there a difference in frequency of expressive behavior for critical and neutral words for the two suspects?

Verbal Responses: Some word association norms for a selected set of words are given below for comparative purposes. They were collected from a sample of 1000 respondents.¹

<table>
<thead>
<tr>
<th>Word</th>
<th>Associations (by percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dream</td>
<td>sleep (45), night (9), nightmare (5)</td>
</tr>
<tr>
<td>light</td>
<td>dark (65), lamp (8), bright (3)</td>
</tr>
<tr>
<td>boy</td>
<td>girl (77), man (4), scout (4)</td>
</tr>
<tr>
<td>street</td>
<td>avenue (19), road (13), cars (1)</td>
</tr>
<tr>
<td>music</td>
<td>song(s) (18), note(s) (17), sound (12)</td>
</tr>
<tr>
<td>black</td>
<td>white (75), dark (5), cat (3)</td>
</tr>
<tr>
<td>smooth</td>
<td>rough (33), soft (21), hard (14)</td>
</tr>
<tr>
<td>whistle</td>
<td>train (9), noise (7)</td>
</tr>
<tr>
<td>red</td>
<td>white (22), blue (20), black (12), blood (3)</td>
</tr>
</tbody>
</table>

Judged by these norms, how common or unusual and idiosyncratic were the word associations given by the suspects? Is there a difference in the quality of their responses to the critical versus neutral words? Do the

differences give you clues to who is guilty? How?

Conclusion regarding verbal responses:

*Reaction Time*. Compute the mean RTs in the following table.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Suspect 1</th>
<th>Suspect 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premeasured neutral words</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All neutral words</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All critical words</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical words in common</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do the suspects’ mean reaction times give you clues as to which one is guilty? Are there any extreme RTs for individual words? Do you see any differences on particular critical words that might indicate guilt?

Conclusion regarding reaction times: __________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

**Verdict**

I believe the guilty person is_______________________________________________________________

Using a scale from 0—100 where: 0 = no confidence, 5 = moderate confidence, and 10 = complete confidence

**My confidence in this judgment is**______________________________________________________
SUICIDE: INTENTIONS AND ACTS

OBJECTIVES
1. To give students the opportunity to share experiences they or their friends might have had with attempted suicide.
2. To discuss what the criteria are for considering an act suicidal.
3. To review many of the facts and commonly held misconceptions about suicide so that students are better able to detect and react to crises involving suicide.

OVERVIEW
The age group that has recently shown the sharpest increase in attempted suicide is 18- and 24-years-old college-aged people. Suicide now ranks second in leading causes of death for this age group, right behind automobile accidents. Because of the high incidence of suicide among college students, this section typically elicits great interest from many of the students, and sometimes powerful emotions (see Pitfalls to Avoid). In this section, we will:
1. Begin by going around the room and sharing any close brushes students have had with suicide, either personally or with another person who was experiencing difficulties.
2. Discuss definitions students have for suicide and the discrepancies between these definitions and some of the other factors that can complicate judgments of suicide.
3. Take the Suicide Quiz (provided at the end of this section).
4. Read the 10 items and take a “hand count” of how many students believe each item is true or false.
5. Discuss statistics on suicide rates, including differences according to gender, age, race, socioeconomic status, and other variables. At a minimum, this discussion will include the 10 items that comprise the Suicide Quiz.

GENERAL INTRODUCTION
Throughout the ages, people have held very different views of suicide. The early Greeks often considered suicide to be a natural solution to unhappy situations. The Romans took a conditional position; suicide induced by pain, sickness or grief was exempt from punishment, whereas suicide “without cause” was unpardonable, especially when interests of the state were involved. The advent of Christianity signaled a departure from past laws concerning suicide. In the fourth century, St. Augustine placed suicide in a moral framework and condemned it as a grievous sin. Consequently, suicide became rare in the Middle Ages.

The Renaissance brought a reconsideration of suicide as a solution to life’s hardships. Indeed, Shakespeare’s eight tragedies contain fourteen suicides! Gradually suicide became a topic of debate, and in 1777 the philosopher David Hume stated that suicide does not do society any harm—the individual merely ceases to do good. Still, it took until 1961 for England to repeal its law making attempted suicide a crime, and until June 1972 for Canada. The United States inherited its law from England, and to this day it is illegal to attempt suicide in seven states, while in eighteen states, aiding and abetting suicide is a crime.

PROCEDURE
Materials
The Suicide Quiz.
Optional: Calculator for computing percentage of students who get each item correct.
Subjects
Any number, but optimal with 10—25 students.

Time Required for Research
10—20 minutes for initial discussion and 5—10 minutes for first administration of the quiz.

Time Required for Discussion
10—20 minutes for a discussion of quiz material, 5—10 minutes for second administration of the Suicide Quiz, and 5 minutes for a wrap-up to the section.

Method
1. This section begins with students sharing and experiences they have had with suicide, personally or with another person who was having trouble. We strongly recommend excusing any students who feel that the topic of suicide is too emotional for them to discuss. Few students will leave, but it is important that they have that option available.

2. Discuss differing definitions students have for suicide. What are the discrepancies between these definitions? It should become apparent that suicide is more than intentionally taking one’s life. Nero, for example, ordered an attendant to kill him. Seneca was ordered by Nero to kill himself. A more modern example of Seneca’s plight is found in the Jonestown massacre which hundreds of Jim Jones’ devotees were instructed to take their own lives. Seppuku, or hara-kiri, was practically obligatory for Japanese nobility and samurai when their failure caused loss or defeat for their emperor or lord. Are these all cases of suicide? What about borderline cases of self-destruction, such as neglecting medical advice or excessive risk-taking (e.g., driving at high speeds, volunteering for dangerous military missions, or excessive overeating)? Even more complicated than the definition of a committed suicide is the definition of an attempted suicide.

3. Students should take the Suicide Quiz.

4. Next, the instructor should read through the 10 items and take a “hand count” of how many students believe each item is true or false. In actuality, all of the items are false and constitute common myths about suicide.

5. Next, the instructor should review statistics on suicide rates, including differences according to gender, age, race, socioeconomic status, and other variables. Minimally, this discussion must include the 10 items that compose the Suicide Quiz. For example, the instructor might challenge the class to explain why men are more likely to commit suicide than women (Question 2), even though women attempt suicide two or three times more often than men (Question 1). The answer lies in the choice of method (Question 3); men choose guns whereas women choose pills. Alternatively, the instructor might spend time countering the myth that people who periodically mention suicide are not likely to commit it (Question 10). This could prove to be a transition for discussion of what to do if a friend or family member has been talking about suicide.

6. Students should take the Suicide Quiz once more, this time read aloud by the instructor with a show of hands whether each item is true or false. It should then become apparent that all of the items were myths, and the class has learned much about suicide since the beginning of the section.

PITFALLS TO AVOID

1. Suicide is an intensely emotional subject; the greatest pitfall any discussion leader will face is underestimating the impact this topic may have on certain students. It may be appropriate to give students advance warning of the topic and the option to excuse themselves.

2. In order for the opening discussion to work well, a supportive tone must be set so that students feel comfortable sharing personal accounts. The instructor may also want to make clear that this information should not be shared with friends outside of the discussion group.
3. The instructor might mention this topic the week before and invite students who want to discuss any personal experiences regarding suicide among family or friends to meet with him or her.

4. It is important that there is no communication while students take the Suicide Quiz.

DATA ANALYSIS AND INTERPRETATION
If there is substantial disagreement over the correct answers during the initial administration of the Suicide Quiz, it may prove interesting to tabulate the percentage of students for each item who believe the correct answer is true versus the percentage who believe the item is false.

DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS
1. We strongly recommend accompanying the discussion with specific suggestions on how students should respond to friends or family members at high risk of suicide. If the instructor does not feel qualified to lead such a discussion, it might be possible to bring in an outside “expert.”

2. Of all the discussion sections, the one on suicide involved the least amount of direct research—for good reasons. What are some of the problems that face suicide researchers? (Hint for students: The annual American suicide rate is 12 out of every 100,000 people.)

3. If the campus or community operates a crisis telephone line, the instructor might arrange a field trip for interested students to visit the facility or have a worker as a guest for the class.

4. For instructors with some experience in counseling, one interesting variation is to have students role-play callers who are contacting a suicide crisis line. Either the instructor or a student could role-play the telephone counselor, and the class could discuss what and what not to say to a person who is having a crisis. This technique works especially well if, after particularly interesting episodes, the role-played action is “frozen” for detailed discussion.

5. Discuss “copy-cat” suicides, the contagious effect of media on facilitating suicides.

ADDITIONAL RESOURCES


Schneidman, E. (1987, March). *At the point of no return*. *Psychology Today* pp. 54-58
## HOW MUCH DO YOU KNOW ABOUT SUICIDE?

Circle the letter that indicates whether the following statements are true or false.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>F</td>
<td>1. Men attempt suicide more often than women.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>2. Women commit suicide more often than men.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>3. Poisoning, by either pills or gas, is the most common form of suicide.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>4. Minorities commit suicide more often than whites.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>5. The higher the socioeconomic level, the lower the suicide rate.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>6. After about 60 years of age, the suicide rate begins to decline continuously.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>7. Suicide rates for college students reached an all-time peak in the 1960s and have declined somewhat since then.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>8. Suicide rates are lower for people who are terminally ill than for people who have illnesses with no end in sight.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>9. Those people who never mention suicide are more likely to actually commit the act than individuals who occasionally discuss it.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>10. One of the difficulties in predicting suicides is that they are often committed without warning.</td>
</tr>
</tbody>
</table>
EVALUATION AND RESEARCH ETHICS

OBJECTIVES
1. To acquaint students with the ethical issues surrounding research with human subjects.
2. To consider the perspective of prospective investigators and the institutional review boards that are designed to minimize or prevent harmful research procedures.
3. To create a role-playing situation that vividly illustrates the review process for use of subjects in research.

OVERVIEW
The same research procedures that can lead to helpful gains in knowledge may also represent a source of danger to the individuals who serve as subjects. The power of the researcher and of the scientific establishment relative to that of their subjects has been balanced in recent years by the creation of institutional review boards (IRBs). These peer review committees have established evaluation procedures that protect the welfare of human and animal subjects. How does evaluation of the ethics of research operate? What is the process by which an individual investigator submits a research proposal to a university IRB for its evaluation? In this section we will:
1. Begin by discussing instances of research with unacceptable risks and questionable ethics (see Additional Resources).
2. Discuss the essential concepts of “at risk,” “invasion of privacy,” “deception,” “informed consent,” “the gain/loss notion of relative ethics,” and the raising of consciousness about ethical considerations.
3. Briefly describe the review-evaluation procedure now required of prospective researchers in an academic setting.
4. Briefly describe the importance to society of promoting scientific progress and the career of the individual researcher (in order to establish social and personal values that oppose “undesirable” constraints).
5. Conduct the demonstrations on role-playing in which students take both sides in the institutional evaluation of psychological research proposed by independent investigators.

GENERAL INTRODUCTION
Ethical questions often arise about the conduct of scientific research because it may intervene in the lives of participants who are subject to its procedures—even if only for a short time. Decisions made by investigators solely based on scientific or pragmatic considerations may be harmful to research subjects. The subjects are usually not in a position to have advance knowledge of what will be done to them or to refuse exposure to procedures unacceptable to them. Much research takes place in institutional settings where there are strong pressures on potential subjects to comply with authorities, such as in prisons, the military, factories, summer camps, schools, and colleges.

Research involving human subjects raises ethical and legal issues of sufficiently serious and widespread concern that a comprehensive mechanism has been developed through which the judgments of researchers are reviewed. Under the National Research Act of 1974, institutions applying for funds must establish an IRB to review research conducted by that institution. Of course, many institutions and departments already had established IRBs prior to this act, including most psychology departments, which supported “Human Subject Committees,” to review psychological research. The IRB’s goals, then, are to determine whether subjects will be placed at risk, and, if so, whether the risks are outweighed by the benefits to the subject and the importance of the knowledge being sought. In addition, it is necessary to determine if the rights and
welfare of the subjects are protected and if “legally effective informed consent” will be obtained by adequate and appropriate means.

The purpose of the evaluation procedure is to protect the welfare of human subjects. This includes protection against undue or unnecessary invasion of privacy, disrespect for human dignity, and physical, physiological, or social harm.

In this demonstration we want students to discuss research ethics by having them participate in several role-playing scenarios in which experimenters defend their proposals before an IRB. To give them good material to work with, we have prepared proposals modified from several experiments that have proven over the years to generate a fair amount of controversy.

PROCEDURE

Materials
Four research proposal summaries of relevant parts of psychological experiments. Each of them includes procedures that raise questions about its ethics. The proposals are based on research by:

1. Sherif and associates on intergroup conflict among children in a summer camp (not usually described in the literature as ethically questionable).
2. Freedman and Fraser’s foot-in-the-door compliance field experiment.
3. Sheridan and King’s modification of Milgram’s obedience study
4. Zimbardo’s prison simulation.

Subjects
15-25 students are ideal. Four are selected to act as university research professors, each advocating approval of his or her proposal. The rest of the class serves as the IRB (see variations for a possible third role for 2 impression management observers).

Time Required for Role-Playing
20-45 minutes for the presentation, questioning and evaluation of the four proposals (5-15 minutes for each depending on the intensity and detail of the role-playing).

Time Required for Discussion
10-20 minutes.

Method
1. Decide which of the research proposals will be presented to the class IRB, depending on your time schedule. You may want to add one or more of your own choosing or use only a few of ours.
2. Preselect the research investigators who will argue for their proposals, either assigning them the previous week to become familiarized with the specific proposals or choosing students who arrive early to the section. In a large class, you may want to have pairs of students be a research team.
3. Explain the role-playing scenario. The researchers, eager to begin their research as soon as possible with minimal modifications, have submitted a proposal for the experiment to the human subjects committee for review. They have received a reply from the committee stating that there are some ethical (and possibly other) questions about the study, and that they have been requested to appear before the committee to defend their proposal and presentation strategy. They should attempt to defend it as best they can, given the material. You might even inform them that their entire career and everything they’ve worked for depends on getting this study through the committee (with reasonable modifications).
4. The IRB should read the study, each member listing questions to raise. You may want to alert them to some specific concerns they might miss. Appoint a chairperson to coordinate the session. With a large class you might save time with two IRBs, the second one preparing the materials for Proposals
2 and 4 while the first does 1 and 3.

5. The first experimenters are invited to present the reasons for seeking approval of their research. Then the committee members raise their concerns and objections. The experimenters have a chance to reply, after which a group IRB decision is made.

6. Follow the same procedure for each additional proposal.

7. Throughout the section, you may act as moderator (or devil’s advocate) to lend support to one side or the other if the discussion gets bogged down or is missing important points.

PITFALLS TO AVOID

1. Be sure to create a present-time perspective of this event unfolding now in order to maximize personal involvement.

2. Set time limits for review of each proposal; if heated discussion arises, it is easy to run overtime.

3. Establish the important role of the IRB and possible student representation on it, in order for the class members to take their roles seriously.

DATA ANALYSIS AND INTERPRETATION

1. What is the overall verdict of the committee on the studies in question? What are the individual verdicts? Are there any studies that split the committee or caused a stalemate?

2. Analyze and summarize specific features of proposals that were found objectionable.

3. Review specific arguments that were effective or ineffective in persuading the IRB to approve the research.

4. Were there stylistic or content features of these proposals that made some more likely to be accepted than others; for example, reference to prior research, explicit mention of benefits of research, basic versus applied orientation, rhetoric, etc.?

DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS

1. Does the concern of an IRB unnecessarily limit scientific research? What are the drawbacks to such a system of review?

2. What should the composition be of an IRB at your school, i.e., what constituencies should be represented?

3. How might the status of the researcher influence the IRB, and how can this possible bias be handled?

4. Can there ever be true informed consent for populations in coercive environments such as prisons or for poor people who need the money they get for participating in the research?

5. How can research be conducted to demonstrate that deception has negative consequences if it is judged unethical to deceive subjects?

6. What are the ethical issues in the treatment of animal subjects? (Perhaps obtain guidelines for such research from your school.)

7. Make connections with previous sections:
   
   • How ethical was the section on guilt, in which one volunteer was instructed to perform actions outside the classroom so that he would “feel” like a criminal?
   
   • Is suicide intervention ethical? Should people be allowed to freely make their own decision
in this matter? What are the limits and safeguards on what can be done under the name of “education” or “therapy” that is not “research”?

- Relate this section to the one on impression management by analyzing how the experimenters tried to manage favorable impressions. Have two student observers code the researchers’ behavior and the confirmatory or disconfirmatory questions of the committee.

8. Discuss the issue of living in an “experimenting society,” in which we assume that adequate research will be conducted before new drugs are put on the market or we are exposed to certain products. Somewhere in that process, humans or animals were subjects in that research related to pain, disease, stress, and other noxious experiences.

9. Raise the problems with “debriefing” subjects after an allowable deception has been conducted in an experiment. Can people really be returned to the condition they were in before experiencing an experimental treatment, given that it was intense enough to influence their behavior?

10. Consider the public’s positive reaction to “Candid Camera” deception episodes. What does that say about us?

ADDITIONAL RESOURCES


One survey of IRB actions presents the following data, which the class might find useful. The data are for all types of institutions—universities, medical school, hospitals and others (2389 were surveyed).

<table>
<thead>
<tr>
<th>IRB Actions</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Board modified</td>
<td>33</td>
</tr>
<tr>
<td>Modified after an informal discussion with IRB members</td>
<td>7</td>
</tr>
<tr>
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<tr>
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<tr>
<td>Total:</td>
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</table>

Here is a description of the infamous U.S. Public Health Service study of syphilis, in which the control group received a placebo—and most died. It supports arguments for strong IRBs.

The study was started in 1932 by the service’s venereal disease section. It involved 625 black men, mostly poor and uneducated, from the county surrounding Tuskegee, Alabama, which then had the highest syphilis rate in the nation. Two hundred of the men did not have syphilis and served as a control group for comparison purposes; 425 had latent (and therefore noncommunicable) syphilis and received little if any treatment for it. As an incentive to participate in the study, they were offered free treatment for any other
illnesses, free hot lunches, and free burial after autopsies were performed.

At the time the test began, treatment for syphilis was uncertain at best and involved a lifelong series of risky injections of such toxic substances as bismuth, arsenic, and mercury. However, in the years following World War II, the PHS’s test became a matter of medical morality. Penicillin had been found almost totally effective against syphilis, and by war’s end it had become generally available. Nevertheless, the PHS did not use the drug on those participating in the study unless the patient asked for it.

Recent reviews of 125 cases by the PHS’s Center for Disease Control in Atlanta found that half had syphilitic heart valve damage. Twenty-eight had died of cardiovascular or central nervous system problems that were complications of syphilis.

The study’s findings on the effects of untreated syphilis have been reported periodically in medical journals for years. It was not until 1972, however, that an Associated Press correspondent noticed and reported that the lack of treatment was intentional. Senator William Proxmire of Wisconsin, a member of the subcommittee that oversees PHS’s budget, called the study “a moral and ethical nightmare” and an investigation soon followed.

The probe did not help much, for the damage had already been done. The officials responsible for the study have long since retired. Present CDC officials agree that such a study could not be conducted today. Unfortunately, their solicitude is small consolation for the 74 of the original 425 syphilitics still surviving. The agency is treating them for whatever other diseases or physical problems they might have, but it can do little for their syphilis. The average age of the survivors is 74, and the massive penicillin therapy necessary to arrest their long-ignored affliction could do more harm than good.

For them, the PHS reversal has come too late. But the notoriety of this study has done much to raise the consciousness of researchers and research service administrators and legislators.

**PROPOSAL 1**

**Title:** Resolution of Social Conflicts

**Department:** Social Anthropology

**Proposal:** Many groups face social conflicts that, without adequate means of resolution, erupt into group hostility and destructive behavior. On the basis of previous research by M. Sherif, we believe that the critical variable in the conflict resolution process is the availability of superordinate goals, that is, common goals or objectives that can be fulfilled only via cooperative rather than competitive strategies.

Subjects will be housed in an environment that is new to them (a summer camp) with others who are strangers. This is to control for extraneous influences and prior group formation. The subjects will be divided into two groups, each of which will be housed separately, and led by a team of adult supervisor-observers. There will be four phases to our study: (1) development of strong within-group cohesion and solidarity in each of the two camp groups; (2) creation of the opportunity for conflict between the two groups; (3) introduction of a common problem (e.g., breakdown in water supply to the camp) facing both groups; and (4) observation of strategies of resolution.

The duration of each phase will be: Phase 1-five days; Phase 2-three days; Phrase 3-one day; Phase 4-five days—a total of two weeks.

Trained observers will record all interactions that occur during meals, sports, recreation, and at other times.

**Subjects:** 60 lower-socioeconomic status children whose parents agree to send them to this experimental summer camp for two weeks. There will be no fees at all for transportation, food, tuition, etc., in return for the use of the children as subjects. The children will not be informed of the experimental nature of the camp, but parents will sign an informal consent form (submitted to this committee separately). All parents will receive a report of the study in which children’s identity will be confidential. There will be adequate medical and health supervision at all times during this study.
Remarks: It is expected that we will learn some important principles to help in the design of environments to promote cooperation and minimize competition. Such “social engineering” may remove conflicts not only in gangs but also between ethnic and racial groups and be of value even at the political-international level (witness cooperation among oil-deprived nations).

PROPOSAL 2

Title: Low-Pressure Determinants of Compliance

Department: Psychology

Proposal: Research done in the mid-1960s by Freedman and Fraser demonstrated that compliance with a small request greatly increased the probability of future compliance with a large request, even when the large request was made two weeks after the small request. The large request made in this research required the subjects to allow their home property to be used in specific ways. It was thus a request for acquiescence.

Our study will replicate the Freedman and Fraser investigation, except that the large request will call on subjects to actively carry out a rather time-consuming task.

Subjects: The subjects will be householders in a suburban middle-class community. They will be contacted in their homes, in person, and treated in one of three ways: (a) informed about a new effort to persuade the city council to enact an ordinance prohibiting research and development of antipersonnel weapons in the city limits (FAMILIARIZATION CONDITION); (b) asked to sign a petition to the city council advocating such an ordinance (SMALL REQUEST CONDITION); (c) agree to sign a petition when approached to do so later (AGREEMENT CONDITION) – Half the subjects in each of these three conditions will later be approached and asked to invite their neighbors to a coffee meeting in their homes to generate support and raise funds for this effort. The other half will be approached and asked to hold a similar meeting to generate support and raise funds for an effort to enact new pollution control ordinances.

The study therefore includes a control group that is merely contacted, a group that agrees to a small request, and a group that actually carries out the small request. Subjects from all three groups are then asked to carry out major requests that are either related or unrelated to their previous experience.

Remarks: Events of the past few years have caused great concern among Americans about political manipulation and commercial exploitation of the public. In politics, “dirty tricks” has become a household phrase. Advertising through the media is widely believed to influence consumer preferences. We believe that understanding of the subtle tactics political organizers and salespeople attempt to use can enable private individuals to behave in a more independent fashion. Our interest focuses on low-pressure techniques precisely because many people are sensitized to high-pressure tactics and can presumably defend themselves against those tactics to some extent. Low-pressure tactics, on the other hand, may go unrecognized by the target population and thus render them more susceptible to insidious influence attempts.

PROPOSAL 3

Title: Obedience in Response to Authority

Department: Educational Psychology

Proposal: This study will replicate and extend research by Milgram and by Sheridan and King on the conditions under which adults will administer painful or potentially lethal punishment to a victim in obedience to the instructions of an authority figure. Male and female subjects will be asked to serve as the “teacher” in a study of the effects of punishment on learning. A fluffy, attractive puppy in a cage with an electrifiable grid floor will be presented as the learner attempting to learn to discriminate steady lights from lights flickering at rates near the critical fusion frequency for dogs. The subject’s task is to administer a series of increasingly intense shocks to the puppy, increasing the shock level after each error. The panel of
switches on the shock generator will be marked to indicate a range of 15 to 450 volts, increasing in 15-volt steps. 

In fact, the shocks the puppy experiences will be restricted to levels insufficiently intense to produce tissue damage. For half the subjects of each sex, a small amount of anesthetic gas will be introduced into the dog's cage so that the animal appears to slump into unresponsiveness because of the shocks.

Dependent measures in this study will include: (a) the maximum shock administered by the subject; (b) the duration of shocks administered; (c) subject's verbal and expressive behavior during the experiment.

Remarks: History is tragically rich in examples of atrocities carried out by people whose principal motivation is responsiveness to instructions issued by an authority figure. Thus, ordinary German citizens participated in the torture and massacre of Jews, American aviators dropped atomic bombs on Japanese cities, and flesh-shredding antipersonnel weapons are currently being used in Indochina by technicians whose remote control devices prevent them from even seeing the results of their actions.

It is vital that we understand the conditions under which people will and will not carry out instructions leading to inhumane acts so that adequate legal and social safeguards against the abuse of authority may be instituted without delay. The subversion of the American political process revealed through the Watergate investigations only highlights the urgency of research in this area.

The puppy victims will experience some distress in the course of each session. While the investigators do not consider an animal's suffering something to be treated casually, it is felt that this research design is compatible with the traditional requirement that animal suffering be justified by the human benefits of the resulting knowledge. Variations on the design will include creating a “compliance hierarchy,” with a series of subjects passing orders down the line to the final executor.

PROPOSAL 4

Title: Interpersonal Dynamics in a Simulated Prison

Department: Sociology

Proposal: The institution of prison is of special interest for social scientists because of the unique character of the social relations and interactions that occur there. Several years ago, research by Zimbardo and his colleagues demonstrated that prison behavior could be scientifically studied under the control conditions of a “simulated” laboratory environment. They found that behavioral syndromes associated with prison life (for example, guard brutality, prisoner disintegration) could be reliably elicited in an experimental milieu, with little loss in the authenticity of reactions and within a relatively convenient time.

In our modest proposal, we will attempt to extend this early research in several crucial directions. Generalization from the Zimbardo study to social behavior in real prisons is limited by the fact that it employed normal, healthy, middle-class college students—precisely the kind of people least likely to enter a real prison. In our study we propose to utilize a subject population of lower class, preferably minority, persons as prisoners, and a group of working-class white males as guard personnel. In this way we will be better able to draw inferences about the parameters which control the behavior in actual prison populations. In addition, our study will employ much larger groups of prisoners and guards than the 20 used in the original study, since it is only in this way that statistically reliable results may be obtained and valid conclusions drawn about prison behavior. Finally, we propose increasing the length of the study to several months (depending on budgetary constraints) in order to investigate the more important effects of long-term imprisonment, rather than simply short-term adjustment. We will also study, in a second phase of the research, whether female guards and prisoners act as the males do, and whether different types of training of the guards yield more “positive” outcomes.

Because our simulated prison environment will be designed to maximize experimenter surveillance and data collection, we are confident that all deleterious effects will be carefully monitored and recorded.
Administrative Panel for Human Subjects in Behavioral Science Research

PROTOCOL ________________
(Leave blank)

Request for Institutional Review/Approval

Regular Review __ Expedition Review __ Date__________

Principal Investigator(s) _____________________ Faculty______ Student______ (check one
If student, please indicate faculty sponsor: ________________

Department____________________________
Phone/ext where you may be contacted____________

______________________________
(Faculty Sponsor Signature)

Title of Research Proposal______________

For Sponsored Projects (Funding by outside agency):

Circle one: New Competing Project is under
Proposal Continuation Renewal an existing grant

Funding Agency___________________________ Proposed start date:______________

Grant/Contract No._________________________
(Include P.I. name if other than one given above)

Proposed Start Date_______________________

Approval certification (HHS Form 596) to be sent
to: ________________________________
(Name & Agency if available)

For Renewal of Approval (whether sponsored or unsponsored)
(Please submit at least 30 days PRIOR to expiration date of previous approval)

Date of previous approval_______________ Protocol No. (if known)______________

In addition to a copy of original protocol please provide a brief progress report of the previous year’s activity which includes:

1. Number of subjects involved
2. Problems or complications (if any)
3. Description of results to date
4. Any changes or modifications since original approval was given
5. Project plans for the coming year (for which approval is being requested)
6. A copy of the consent form you are using for this study

Name and address to which human subject approval memo should be sent (if other than investigator and department indicated above):

*Give paragraph # which qualifies protocol for expedited review (see reverse side)
INSTRUCTIONS

A short (1—3 pages) summary of the project is needed for review by the Human Subjects Panel; this should include a description of the purpose of the study, the procedures which will involve human subjects, the length of their involvement, and the means for ensuring confidentiality of data regarding the subjects. Please avoid any technical terms not readily understood by individuals outside your discipline. You do not need to include a copy of your complete proposal, but please do include copies of any questionnaire or structured interviews (if any).

Some specific points to be included in the summary are the following:

Risk or Benefit to the Subject
This is a major concern of the Panel—please detail any deception, possible psychological or physical risk to the subject, and benefit (if any). (Benefit does not include any compensation the subject may be given for participation.) Projects involving deception raise certain ethical problems often best dealt with by debriefing subjects after their participation. Please describe your debriefing procedures. If you choose not to debrief, this decision must be justified in your summary. In addition, for your protection as well, it is advisable to have a second consent form after the subject is debriefed, reaffirming permission to release information received from the subject during the study.

Description of Sample Population
This should include where the study will take place, age of subjects, the number of subjects, and the length of involvement time, and must identify precisely the type of subjects if other than normal.

Description of the Disclosure of Information and Consent
A consent form must describe the project in nontechnical language; it must clearly indicate that participation is voluntary, that the subject is free to withdraw his/her consent and discontinue participation at any time, and that individual privacy will be maintained in publication of any data resulting from the study.

In addition, the consent form must include the name and telephone number of the researcher as a contact if further information is sought by the subject, and also the following statement (although not necessarily this wording): “If I have any concerns or dissatisfaction with any aspect of this program at any time, I may report grievances—anonymously, if desired—to the Human Subjects Coordinator, Sponsored Projects Office, Stanford, CA 94305.” A copy of the consent form should be given to the subject.

Projects involving children often require a consent form for the child (especially those from upper elementary and high school levels) as well as the parent.

Include copies of consent form(s).

To request review of your protocol, please send eight copies of this application and all attachments to:
RESEARCH PROPOSAL FORMAT

All proposals must follow the following outlined format.

Please answer the questions, identifying each by number. Please type all responses.

1. Describe the purpose of your study and the procedures that human subjects will undergo in your research design. What are the risks and possible consequences of these procedures?

2. Please write, using nonprofessional terms, a description of what is disclosed to a subject concerning the purpose of the research and its possible risks.

3. Describe your subject population and your method for obtaining the subjects’ informed consent. Please attach a sample of a written consent. Also indicate briefly where and how these consent forms will be filed. University policy dictates that they be retained for a period of three years after the conclusion of the project.

4. If personality tests, questionnaires, or inventories are to be administered, describe the reason for their use, the manner in which they will be given, and the information to be given to the subjects about obtained scores. How will you ensure confidentiality of the findings from this research?

5. If your response to any of the following is affirmative, please explain.

   • Will deception be used in any aspect of the subject’s relation to the research? YES___ NO___
   • Will any stimulus or other conditions be imposed on subjects, or any response be required of them, that could possibly pose a physical risk? YES___ NO___
   • Will any personality tests, questionnaires, or inventories be administered? YES___ NO___

Note: The proposals already submitted for student reviewers to evaluate are not in that format but will be accepted for review here because they were prepared prior to this memo.

GUIDE TO REVIEW-EVALUATION ANALYSIS

1. For each proposal, decide whether it should be:

   • Approved as is
   • Approved with minor changes (noted)
   • Denied approval until major changes are made in the design and procedure
   • Denied approval pending pilot study evaluation on following questionable issues
   • Rejected in principle

2. Detail specific benefits/risks, gains/losses if each study is conducted or refused permission.
**CLINICAL INTERVENTIONS**

**OBJECTIVES**
1. To illustrate some of the differences and similarities between alternative approaches to psychotherapy.
2. To encourage thinking about the forms of therapy that are most appropriate for different types of mental disorders.
3. To demonstrate the kind of information-gathering process that is involved in a clinical interview of a prospective client by a therapist.

**OVERVIEW**

Individuals who seek help for the problems caused by their mental disorders or behavioral malfunctioning may be treated differently depending on the type of therapeutic approach practiced by their therapist. The same therapist may proceed differently depending on the presenting symptoms or behavioral problems of the client/patient. How different are the approaches of therapists who have different psychological orientations? How are therapeutic strategies varied according to the nature of the problem to be treated or modified? In this section we will:
1. Begin by discussing the goals of psychotherapy in general and some of the specific objectives of the major psychological approaches to therapy.
2. Discuss the goals that a person with psychological problems might have in seeking therapy; ask students what they would expect from therapy.
3. Mention issues of the high cost of therapy, the time required, problems of therapist—client “fit,” definitions of the client’s “problem,” and determination of when therapy has succeeded or failed.
4. Review basic aspects of therapy based on behavioristic, psychodynamic, and humanistic principles.
5. Conduct the demonstration on role-playing a clinical interaction.

**GENERAL INTRODUCTION**

The decision a clinical psychologist or psychiatrist must make in prescribing the kind of therapy a patient should receive, or even whether he or she should be given any at all, is a complex one. We tend to think of it as following in a rather straightforward way from analysis of the “facts”, or the patient’s problems. This is rarely, if ever, true.

The decision regarding the tactics of therapeutic intervention depends on:
1. The therapist’s interpretation of the facts.
2. The therapist’s type of training and orientation. This, in turn, influences his or her definition of what constitutes behavior pathology and also determines what behavior and casual relations he or she will focus on (or even notice). Moreover, the therapist is usually trained to administer only a limited brand of therapy. The therapist’s values about who should be helped (the young or the old, men or women, influential people or ordinary ones, those with mild problems or those with severe ones, rich people or poor ones, attractive people or unattractive ones, interesting people or uninteresting ones, etc.).
3. The therapist’s attitudes about what behavior is desirable. Should homosexuals be turned into heterosexuals? Should pacifists be made more aggressive so people won’t “step on them”? Should patients be calm and manageable or allowed to be active and self-directing? These questions involve judgments that are not scientific.
4. The available resources and the competition for them. For example, with a large patient population and a small staff, intensive psychoanalysis may not be possible.

5. The patient’s apparent level of motivation, past history or therapy, and other attributes. In addition, the environment in which the patient lives or to which he or she will return may also play a role in the type of treatment instituted.

6. Whether the therapy takes place on an “outpatient” basis, an “inpatient’ basis, within a clinical or mental hospital institution, or a “halfway-patient” basis in a halfway house setting.

PROCEDURE

Materials
Therapeutic Intervention Coding Form
Students selected to act as therapists read the chapter of Psychology and Life relevant to their “specialty.”

Subjects
10—20 students are ideal; 1 or 2 students to enact each of the two or three different therapist roles, 2 students to enact the client roles, and the rest of the class to act as observers and recorders of the interaction.

Time Required for Research
At least 45 minutes (5 minutes for each of six interviews and 10 minutes for summarizing data analysis).

Time Required for Discussion
10—30 minutes.

Method
1. Select three students a week in advance of the class meeting and assign the following therapist roles: behavioral, psychoanalytic, and humanist. (You may assign more than one student to each approach if you would like them to work in teams.) Have them study the relevant material in the text and give them some supplementary material on the three types of therapy. Have them prepare their strategy for interviewing the “clients” they will see in class meetings.

2. To facilitate the interviews, you may wish to have the therapists prepare questions they will ask their clients.

3. Select two or more students prior to the beginning of the class meeting and ask them to play the role of client. We suggest that you use DSM-IV case summaries, but other descriptions of patients could also be used. Have these students study their case histories and prepare themselves to play the role of a client who is seeking professional help. Obviously, they may be asked for information that is not actually given in the summary. Explain to the students that they should feel free to fabricate details that are consistent with the role they will be playing. Alternatively, you may play the client role.

4. Each therapist or therapist team may interview one or both clients.

5. Clients are instructed to role-play being phobic or depressed.

6. To ensure that the therapists will be maximally different in style and content, it is helpful to ask them to wait outside of the classroom until they have conducted an interview. After conducting an interview, the therapist could then remain in the class and observe his or her colleagues.

7. Each therapist should also prepare a brief assessment of the patient and recommendations for treatment. These could be read to the class after everyone has been interviewed.

8. Be sure all parties are aware of the time constraints of this brief “initial” interview.

9. Have the other class members actively participate as observers by coding the therapist’s questions (to be described in Data Analysis). Instruct them in the coding when therapists are out of the room.
10. Summarize the conclusions to be drawn from this mock clinical interaction.

PITFALLS TO AVOID
1. Remind students of the seriousness of the clinical encounter and the need to appreciate the difficulties involved for both therapist and client to create a professional atmosphere for the role-playing. Try to get students who seem to be good actors to play the client role and those who are most responsible to play the therapist role. Assigning the roles the previous week gives them more preparation time but requires “back-up” precautions if any students fail to come to this section. You might also want to assign “understudies.”
2. Remember to keep an eye on the elapsed time or even set an alarm because the role-playing can get involved and 5—10 minutes goes by quickly.

DATA ANALYSIS AND INTERPRETATION
1. Record on the coding forms every time the therapist asks a clear question, according to whether it requests information about the client’s past, present, or future, or about the client’s positive or negative characteristics. For example, “Do you feel sad?” would be coded present-negative; “Did you have problems getting toilet trained?” would be coded past-negative; “Do you expect that we’ll hire you if you continue to be considerate?” would be coded future positive.
2. Compute the frequency and percentage of each question type for each therapist category and patient type.
3. Compute the average for each row and column total, collapsing across time focus for positive-negative focus, and across the latter to get summaries of the time focus.
4. Compute the mean percentage of each question type by collapsing across all types of therapy.
5. What conclusions can be drawn about types of questions asked by therapists in general, by each therapist, and of each client?
6. Compare the different interpretations and treatment recommendations advanced by each of the therapists.

DISCUSSION, EXTENSIONS, AND EXPERIMENTAL VARIATIONS
1. What are the similarities and differences among the three approaches to therapy?
2. What information-seeking strategies did the therapists use in their interviews?
3. What are the possible consequences of such selective search strategies? What gives rise to them? What effects might they have on the client? On the therapist’s perceptions of what the client is “really like”?
4. What are the connections between the impression formation and management processes discussed in the first section and comparable processes demonstrated here?
5. Do different types of therapy seem more appropriate for particular types of client problems?
6. Which “facts” of the case agree and which are in dispute among the different approaches?
7. What are the most significant differences among the therapeutic approaches? What were their similarities?
8. Which therapist role seemed most interesting to play? What made it so?
9. Mention the limitations of this role-playing session—the lack of experience of the mock therapists, the time constraints, and the client’s nonpathological condition.
10. Raise the issue that any of the students might be solicited at some time for help with someone’s psychological problem. How will they approach the problem of offering support and advice to someone in need? (However, caution them against acting like therapists on the basis of their limited experiences in this course.)

ADDITIONAL RESOURCES


THERAPEUTIC INTERVENTION CODING FORM

Disorder:________________       Disorder:________________

| Disorder:________________       Disorder:________________ |
|--------------------------------|----------------|
| **Behavioristic**              | **Psychodynamic** |
| Positive | Negative | Positive | Negative |
| Past     | Present  | Past     | Present  |
|          | Future   |          | Future   |
| Positive | Negative | Positive | Negative |
| Past     | Present  | Past     | Present  |
|          | Future   |          | Future   |
| Positive | Negative | Positive | Negative |
| Past     | Present  | Past     | Present  |
|          | Future   |          | Future   |

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