Module 15  Operant Conditioning

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MODULE OBJECTIVES

After completing their study of this module, students should be able to:
- explain the law of effect and how it can be used to modify behavior.
- describe how positive and negative reinforcements work and how they differ.
- evaluate which type of reward affects our learning more: immediate rewards or delayed rewards.
- differentiate between primary and secondary reinforcement.
- analyze how punishment influences behavior and why it tends to be ineffective.
- explain how you can use operant conditioning to teach a new behavior.
- describe how we learn to behave differently in response to similar stimuli and how we manage to get rid of behaviors we have learned.
- define operant conditioning.
- explain the law of effect.
differentiate among the types of reinforcement and how each process works.
analyze how punishment influences behavior and why it tends to be ineffective.
explain how you can use operant conditioning to teach a new behavior or make one stop.
debate the advantages and disadvantages of the different schedules of reinforcement.
describe how cognition and biology affect the operant conditioning process.

MODULE OUTLINE

Getting Started

Activities and Demonstrations

Critical Thinking Activity: Consequences and Their Effects
Concept: Studies show that reinforcement is better in encouraging behavior than punishment. This activity encourages students to consider whether reinforcement or punishment would be more effective in certain situations.
Materials: Handout 15–1
Description: Before reading the module, distribute this handout to each student. Students should circle the situation in which the behavior is more likely to be encouraged. (The correct answers to Handout 15–1 are shown below.)

1. A—This situation uses positive reinforcement instead of the punishment used in situation B.
2. B—Getting a reward in this situation is likely to decrease TV watching.
3. B—Grounding that is not contingent on a behavior to remove it is less effective than indefinite grounding. Indefinite grounding is punishment whereas grounding with contingencies is negative reinforcement.
4. B—Time out or omission training is a form of punishment, and it is not as effective as positive reinforcement in decreasing such behaviors as whining. Situation B offers the child an alternative to whining rather than simply discouraging whining.
5. A—This situation describes negative reinforcement in which the negative stimulus (shocking) is removed when the desired behavior is performed. Situation B is less likely to develop the desired behavior since there is no real connection established between the head bobbing and the consequence.
6. B—The positive reinforcement of lowered insurance premiums (especially if the teen is paying for these himself!) is more likely to encourage careful driving than receiving a speeding ticket. Although speeding may decrease in the time immediately after getting the ticket, it won’t last as long as it would if it were tied to the reward of lowered premiums in the long run.
7. B—The child is more likely to behave in public if he or she is rewarded for being nice rather than being negatively reinforced for throwing tantrums. In essence, the child is being rewarded for misbehaving and the parent is being negatively reinforced to stop the misbehavior. If the parent wants the child to stop misbehaving, they should reward proper behavior.

Discussion: This activity can be an effective pre-reading strategy. Students will be primed to look for information that confirms or negates their own preconceptions, making them more likely to be attentive to difficult concepts.
Building Vocabulary/Graphic Organizer: Concept Flowcharts

Concept: Graphic organizers provide a visual format to help students organize their notes from the text. With concept flowcharts, students can visualize the relationship between terms in the module, giving them an extra method of processing what they learn.

Materials: Handouts 15–2 and 15–3

Description: Distribute Handouts 15–2 and 15–3 to students at the beginning of the module’s lessons. There are two possible uses for this handout, depending on your needs and the needs of your students:

- Students can read the module and complete the handouts independently as a vocabulary exercise in preparation for a quiz or module test.
- Students can fill in the handouts during the module’s lessons as the terms are discussed. The handouts then become a note-taking device and will help students who are independent learners or who have special needs. (See below for detailed descriptions of the handouts’ usefulness in these areas.)

Discussion: These flowcharts help students see how the concepts of classical conditioning are related to each other. (Answers to this handout are available in the Answer Key.)

❖ Independent Learning Option: Students can use this text to fill out the organizers independently, either as class work or homework. If you decide to lecture from the text, students can fill out the information as you discuss it. You can use these handouts or the versions of these handouts with answers (from the Answer Key) as master copies from which to make transparencies. You can then project the flowcharts and either write in the answers as you lecture or show the completed flowcharts for students to check their work.

❖ Cooperative Learning Option: Students can fill in the organizers in groups of two or more as in-class assignments. You can use the master copies of the versions of these handouts with answers (from the Answer Key) to make transparencies and project correctly completed flowcharts for groups to check their work after they have finished.

❖ Option for Exceptional Learners: Often, individualized education plans call for teachers to provide notes for students with special needs. The graphic organizers can come in handy to help these students with notes. You can either provide students with completed organizers to use as a guide during class lectures and discussions, or provide blank organizers for students to complete while other students take traditional notes. The organizers can be completed at home as a reading comprehension guide for the textbook.

❖ Making Multicultural Connections: Nonnative English-speaking students can visualize the relationships among words, aiding in the encoding process. Providing this opportunity to encode visually, using the flowcharts may help them translate the meanings of the words more quickly.

The Nature of Operant Conditioning

Digital Connection

DVD: B. F. Skinner—A Fresh Appraisal

This recent video provides an excellent overview of B. F. Skinner and his research on operant conditioning. Beginning with a brief overview of his early life, the program traces three major intellectual currents that helped shape the emergence of behaviorism: Darwin’s evolution, Freud’s psychoanalysis, and Pavlov’s classical conditioning. Basic principles of operant conditioning—shaping; positive, negative, and partial reinforcement; and punishment—are defined and illustrated. The program is very strong in describing the numerous applications of operant conditioning. Coverage includes Skinner’s famous air crib, teaching machines, and Walden Two. Particularly
intriguing is Skinner’s basement study in which he attempted to apply operant conditioning principles to his own behavior. Narrated by Murray Sidman, a colleague of Skinner and a practitioner of behavioral analysis, the video comes with a student learning guide and discussion questions for the classroom. (Davidson Films, 40 minutes) For ordering information, please visit www.davidsonfilms.com.

**DVD: B. F. Skinner and Behavior Change**
This is an excellent film to use for reviewing all aspects of Skinner’s work on operant conditioning, from the basic concept of reinforcement to its application in a variety of settings. Students will see the operant conditioning principles used as parents work with their mentally retarded children, as the staff of a youth center teach delinquent children more effective social skills, and as therapists resolve marital conflict. Distinguished professionals from a variety of disciplines join Skinner in discussing the issues and controversies generated by his work. Both philosophical and ethical questions raised by behaviorism are covered. A Discussion Guide for use in the classroom accompanies the film and provides a list of additional readings. (Research Press, 45 minutes) For ordering information, please visit www.researchpress.com.

**DVD: Classical and Operant Conditioning**
This program covers most of the important topics in Modules 19 and 20, but this emphasis is on Module 20, where classical and operant conditioning are compared. It introduces and clearly explains the important principles of both classical and operant conditioning, including the pioneering work of Pavlov and Skinner. The video features archival footage of Pavlov’s study of the salivary response in dogs and contemporary research using rats in Skinner boxes. Considerable attention is paid to behaviorism and its importance in the history of psychology. In addition, the program presents many important applications of basic learning principles to clinical therapy, education, and childrearing. There are also numerous examples of conditioning in everyday life. (Films for the Humanities and Sciences, 56 minutes) For ordering information, please visit www.films.com.

**The Law of Effect**

**Digital Connection**

**Technology Application Activity: PsychSim: “Operant Conditioning”**

**Concept:** This computer program clearly explains and illustrates the basic elements of operant conditioning. This is best used after students understand reinforcement schedules.

**Materials:** PsychSim CD-ROM and workbook; computer access

**Description:** Structured like the program on classical conditioning (see Module 19), this tutorial begins by explaining and illustrating the basic elements of operant conditioning. It also points out the differences between classical and operant conditioning. Types of reinforcers are introduced and illustrated. In the concluding module, a rat presses a bar to obtain drops of water. The student selects the schedule of reinforcement; the rat’s response rate under each schedule is shown on a comparative graph.

**Discussion:** The PsychSim CD can fulfill many needs for students. If installed in a computer lab or on a network, students can work on the CD as part of a laboratory assignment. If installed on a few computers in a classroom, the CD can be used as an enrichment tool for advanced students or independent learners, or as a reteaching tool for students who haven’t mastered the concepts from the module.

**Enrichment**

**Enrichment Lesson: Beyond Freedom and Dignity**

Few issues will stimulate a more lively classroom debate than B. F. Skinner’s statements regarding human freedom and dignity. Skinner believed our beliefs in human freedom and dignity are illusions. He believed that we are slaves to our environment and not
actually free to do as we chose. Skinner argued that denial of the fact that we are controlled by our environment leaves us vulnerable to control by subtle and malignant circumstances and by malicious people. Governments and political leaders, he contended, may seek to control us for their own benefit rather than to serve our best interest. Recognizing that behavior is shaped by its consequences is the first step in taking control of the environment and ensuring that it delivers consequences promoting desirable behavior. When we demand freedom, argued Skinner, what we really mean is freedom from aversive consequences, but not freedom to make choices. In the final analysis, we can have “freedom” but only by arranging our own consequences and not by leaving them to “fate” or the “government.”

For Skinner, “dignity” was also an illusion. “We recognize a person’s dignity or worth,” he argued, “when we give him credit for what he has done.” We tend to do this when we are unable to readily identify the environmental factors that control another’s behavior. When a person makes an anonymous charitable donation, for example, we may attribute it to something inside the person, to his or her altruism. To credit people for doing good is to ignore the environmental factors that give rise to “good” behavior. Something in the person’s formative years has obviously shaped the desirable behavior. Only by identifying the external factors that gave rise to “doing good” can we bring them under control so that more people will do good more often. This movement toward a better society demands giving up the belief in “dignity.”

Did Skinner practice what he preached? Yes, as you can see from the following closing to one of his speeches:

“...And now my labor is over. I have had my lecture. I have no sense of fatherhood. If my genetic personal histories had been different, I should have come into possession of a different lecture. If I deserve any credit at all, it is simply for having served as a place in which certain processes could take place. I shall interpret your polite applause in that light.”


Enrichment Lesson: Walden Two, Los Horcones, and the Twin Oaks Communities

Discussion of the applications of operant conditioning might well include references to B. F. Skinner’s Walden Two. In his book, Skinner describes an ideal community, a utopia, based on operant conditioning principles. The community has no major social problems, such as crime, racism, unemployment, or poverty. Petty jealousies, boredom, and laziness have been eliminated. One of Walden Two’s most attractive features is a labor credit system. With this system, labor credits replace currency as payment for work performed. Residents are not charged for goods or services, but each agrees to contribute 1200 labor credits per year. Unpleasant work has a higher credit value, and thus is not performed over long periods. Residents work an average 28-hour week.

In the community described in Walden Two, the residents share property in common, enjoy a high standard of living, and spend their leisure time performing Bach’s Mass, playing chess, or painting. Childcare is communal and, for the most part, in the hands of child-rearing experts. The nuclear family does not exist. Ethical and moral conditioning is complete by age 6, and principles of reinforcement are systematically applied in the socialization of the child. For example, partial reinforcement is used to develop frustration tolerance. Beginning at 6 months of age, babies are given toys designed to develop perseverance. In order for a toy to be reinforcing—say, for a music box to play—the infant learns to pull a ring. When the infant has learned the response, the reward is delivered on a variable-ratio schedule. Without experiencing great frustration, very young children begin to build up perseverance that serves them well later in life.
Most memorable for many readers of *Walden Two* is the use of lollipops to teach self-control. Every morning, preschoolers are given suckers that have been dipped in powdered sugar so that a single lick can be detected. The children may eat the candy in the afternoon only if they can keep from licking it in the meantime. The child who takes a small, immediate reward sacrifices the larger, delayed reward of a whole lollipop. Frazier, the story narrator in *Walden Two*, describes the process of training in this way:

First of all, the children are urged to examine their own behavior while looking at the lollipops. This helps them recognize the need for self-control. Then the lollipops are concealed and the children are asked to notice any gain in happiness or reduction in tension. Then a strong distraction is arranged—say, an interesting game. Later the children are reminded of the candy and encouraged to examine their reaction. The value of the distraction is generally obvious . . . when the experiment is repeated a day or so later, the children all run with their lollipops to their lockers . . . a sufficient indication of the success of our training.

While the community of Walden Two has its own code of behavior, there is little institutionalized government. Neither a democracy nor a totalitarian state, the community is run by a six-member Board of Planners. Managers are in charge of childcare, agriculture, public relations, and so forth. Visitors are welcome but, like residents, must work for their keep. Walden Two is composed of approximately 1000 members and has sister communities elsewhere.

Could *Walden Two* become a reality? Most students will be surprised to hear that *Walden Two* principles have been used as the blueprint for a few communities. Los Horcones, an outpost community in Mexico’s Sonora Desert, is a good example. For more than 25 years, the residents of Los Horcones have attempted to live by the simple statement on the welcome sign at the edge of their land: “We apply the science of behavior to the design of a new society.”

To describe it in brief, the community was established in the late 1960s when Juan Robinson, a university psychology student in Mexico City, read *Walden Two* and became a convert. After he and his wife had successfully applied Skinner’s principles to the treatment of retarded children, they and four urban friends moved to the countryside to establish Los Horcones—“the pillars” of a new society. They first outlined the details of what they considered a collective lifestyle in the form of a Code of Adult Behavior. The adults were to be parents to all children; residents would be discouraged from saying “mine” and encouraged to say “ours.” Los Horcones was to be a living experiment, a cultural lab, in which they could test Skinner’s ideas. The Robinsons would be the researchers but also, together with the children, the “pigeons.”

At latest report, Los Horcones has a population of approximately 24 adults and children. The community farms and is 75 percent self-sufficient in terms of the food it needs, buying only such staples as rice and flour. A small bedroom is the only space an adult can call his or her own. There’s a basketball court, a swimming pool called Walden Pond, and one or more wood and metal shops. A dozen or so mentally impaired children are housed in a dormitory that earns enough to buy supplies. A pigeon lab is used for behavioral experiments. The community frequently publishes in academic journals; these papers examine, among other things, the steps Los Horcones has taken to achieve a system of government by consensus and the kinds of reinforcers that have seemed most effective in producing behavioral change. One research topic has been whether children can learn to postpone reinforcement. Using M&Ms, the coordinator of childcare tells the 2- through 7-year-olds, “You can eat it now, but if you wait until I say ‘eat’ you get another.” The graphs reveal that the children will wait up to 4 minutes. In general, the children receive an enormous amount of attention from all the adults, and they are bright and sociable and seem to feel capable and loved. After meeting the youngsters on their visits to the United States, Skinner noted “They’ve done wonderful things with their children.”
In 1998, the community was invited to present a symposium at the annual conventions of the Association for Behavior Analysis (ABA) and the American Psychological Association (APA). The symposium was titled “Walden Two: 50 and 25 Years Later.” In 1999, community residents received the ABA Award for the International Dissemination of Behavior Analysis. Late in 1999, the entire community took a “sabbatical” to travel to Europe. One important goal of the trip was to help establish a Walden Two community in Spain.

The community is not without its problems, however. Adults work more than the 4 hours Skinner projected in *Walden Two*. In fact, they all work from 6 to 9 hours a day, sometimes more. The main problem continues to involve efforts to correct the adults’ training in individualistic living. People who have been reared to believe in “looking out for #1” will often find it difficult to adapt to the philosophy that other people’s happiness is their own happiness. Possessiveness and jealousy are hard to eradicate. Two residents that became too much of a couple, walking hand in hand and generally behaving like honeymooners, were booted out. Others have left voluntarily after finding that they disliked the communal lifestyle. In fact, over the past 20 years, more than 60 people have come and gone. Observes Juan Robinson, “We must investigate in more detail the variables that control these problems.”

*Walden Two* was also the blueprint for Twin Oaks, a small community founded in 1967 near Richmond, Virginia. Still in existence, it is one of the longest-running and largest communes in the country. (Twin Oaks prefers the term “intentional community.”) Located on 450 acres of farms, fields, and woods, its present population consists of 87 adults and 13 children (all ranging in age from 2 to 75 years) who share income and property. The 28-hour week proposed by Skinner hasn’t yet proved practical; members work 43 hours weekly. Most of the work requires physical labor, including milking the cows. Initially, Twin Oaks attempted to use a modified form of the labor credit system described in *Walden Two*—having some forms of labor worth more credit than others—but residents found this aspect of the system too divisive and dropped it.

Sources of income include hammock- and tofu-making businesses. The community also has a book-indexing service. It makes a significant annual profit selling hammocks to the Pier 1 retail chain. Unlike many communities that disintegrate over money issues, Twin Oaks obtained its contract with Pier 1 early on, so that its income grew along with the company. The profits go into a general budget, but each member gets a monthly stipend in spending money.

From the start, the founders of Twin Oaks were determined that the community would not become a hippie hangout. In addition to making sure that everyone worked, they were specific in their plans that everyone share clothes from a communal clothing room and that although monetary resources may be held outside the community, one cannot benefit from their use while a member. Children are cared for by their parents. Parents often make voluntary arrangements with other parents or nonparents to mind their children some of the time.

Although three planners (rather than the six at Walden Two) have been in charge of the community’s overall direction, residents attend open meetings to consider community issues. Candidates for planner may be vetoed by 20 percent of the full membership. A simple majority can overturn planner decisions. The entire community gets to vote for or against funding for each project, whether it is starting a video library or raising chickens and goats. Unlike residents of Walden Two, most members are interested in the community’s politics, bringing a strong democratic tradition to Twin Oaks. There is no television at Twin Oaks, but residents do watch videos. One couple, now married, left Twin Oaks after the majority refused to let them slaughter chickens or keep a herd of goats.
The community does have what it calls “leaving issues.” By far, the most frequent of these is a failed romance. Boyfriends and girlfriends break off their relationships and become involved with someone else in the community.

Although Twin Oaks does not follow the principles of *Walden Two* to the letter, members say they try to apply Skinner’s concept of positive reinforcement in everything they do. B. F. Skinner visited the community at least twice before his death. Some years ago he reported that Twin Oaks “could very well be something close to *Walden Two* when it gets bigger. I think the main problem is that they’re serving as a therapeutic institution. These people come looking for something better than what they have found in the world. They get it and they grow stronger and healthier and then the world attracts them again and they go out. They’ve been cured.”

**Sources:**

**Activities and Demonstrations**

**Critical Thinking Activity: Negative Reinforcement Versus Punishment**

**Concept:** Negative reinforcement, which is frequently confused with punishment, may be psychology’s most often misunderstood concept. Robert Tauber provides a classroom exercise to teach the distinction between negative reinforcement and punishment.

**Materials:** Blackline Master 15–1; Handout 15–4

**Description:** Distribute Handout 15–4. After giving students a few minutes to respond, ask for their answers. Many, perhaps most, will answer the first question with “punishment” or something similar. They are likely to answer most of the other questions incorrectly as well, concluding that they would not use negative reinforcement in the future (question 5).

Using Blackline Master 15–1, introduce the headings of the Consequence Matrix. Lead students through the matrix, beginning with “supply an pleasant stimulus”; fill in each of the boxes as the correct answer is given (in this case, “positive reinforcement”). By the time you ask, “What is it called when someone removes an aversive stimulus?” most students will answer “negative reinforcement,” although reluctantly. Then ask, “Given that negative reinforcement involves the removal of an aversive stimulus, is it used to strengthen or weaken behavior?” Although there may be some hesitation, most students will now recognize that negative reinforcement strengthens desired behaviors.

**Discussion:** You may now want to review the quiz. Negative reinforcement is clearly not a synonym for punishment. Point out that the correct answer to the second question is “b,” and the correct answer to the third question is “yes.” Because both positive and negative reinforcement are used to strengthen behavior, students answering “yes” to the fourth question and “no” to the fifth may want to reconsider their answers.

End the discussion by giving some examples of negative reinforcement and punishment. For instance, you might propose to students, “If you clean your room, you will no longer have to stay inside” as an illustration of negative reinforcement. You may also state, “Because you did not clean your room, you will have to stay inside today” as an illustration of punishment. The first statement says, “If you do what I want (clean your room), I will remove an aversive stimulus (you no longer have to stay inside).” The second statement says, “Because you did not do what I want (clean your room), I will supply an aversive stimulus (you must stay inside).” Ask your students to volunteer their own examples of contrasting statements.
Summarize the difference between these important concepts with this statement: "Negative reinforcement and punishment are used for entirely different purposes. Negative reinforcement strengthens behaviors, whereas punishment weakens behaviors."


Critical Thinking Activity: Examples of Negative Reinforcement

Concept: The difficult concept of negative reinforcement can probably be taught best with a series of relevant illustrations. In recognizing that examples of positive reinforcement and punishment are easier to generate than those of negative reinforcement, Miguel Roig and Carolyn Greco-Vigorito provide a catalog of the latter to be used in introductory psychology.

Materials: Blackline Master 15–2

Description: In introducing the examples below, you might first review the two kinds of reinforcers.

- **Positive reinforcers** strengthen a response by presenting a positive stimulus after a response.
- **Negative reinforcers** strengthen a response by reducing or removing an aversive (unpleasant) stimulus.

As you go through the list of situations provided on Blackline Master 15–2, ask students to identify the aversive stimulus and the behavior being strengthened by its removal.

Discussion: Understanding the difference between punishment and negative reinforcement is paramount to understanding operant conditioning. Since negative reinforcement is designed to increase the likelihood of a behavior, it is much more effective at encouraging positive behavior. Punishment only serves to show what behavior is wrong rather than giving information about what behavior is appropriate.

Reinforcement

Digital Connection

Technology Application Activity: Positive Reinforcement On-line Tutorial

Concept: Lyle Grant’s tutorial titled “Positive Reinforcement: A Self-Instructional Exercise” at the Web site psych athabascau ca/html/prtut/reinpair.htm, offers students an opportunity to test their knowledge of reinforcement terms in an interactive format.

Materials: Internet access. This activity can be an independent learning assignment or a class assignment if a computer lab is available that accommodates an entire class. Most public libraries offer free access to the Internet for students who do not have Internet access at home.

Description: Have students access the Internet and pull up the Web site listed above. First, Grant defines and illustrates the concept of positive reinforcement with examples and nonexamples. In the second part of the exercise, students classify fourteen new situations as examples or nonexamples of positive reinforcement and are given feedback on their performance.

Discussion: This tutorial is intended for use with a college-level psychology course, but the example/nonexample approach used in this tutorial could work well in a high school classroom, especially as an enrichment or reteaching tool. The information about positive reinforcement is more extensive than what would be taught in a high school classroom, but going through the tutorial examples is a worthwhile experience for students having trouble with or interested in learning more about positive reinforcement.
Technology Application Activity: Clicker Training and Operant Conditioning

Concept: Most students have some type of pet, and trying to domesticate that pet can be a challenge. This Web site offers a popular training technique. The technique uses operant conditioning principles of shaping and positive reinforcement to train all sorts of animals, based on the work of Karen Pryor. She is the author of Don't Shoot the Dog: The New Art of Teaching and Training, a popular book on behavioral training.

Materials: Handout 15–5; Internet access. This activity can be an independent learning assignment or a class assignment if a computer lab is available that accommodates an entire class. Most public libraries offer free access to the Internet for students who do not have Internet access at home.

Description: Have students access clickertraining.com. The site describes teaching strategies using positive reinforcement. “Clicker training,” an application of operant conditioning, is a major focus of the site. After students browse the site, have them answer the questions on Handout 15–5.

Discussion: Have students relate their own stories of how they or their parents trained their pets. How successful were their techniques? Did they feel their relationships with their pets improved or not with the techniques? Have their parents ever used conditioning techniques on them? Have they used these techniques on their parents? A lively conversation will occur if students understand the concepts of operant conditioning.

Activities and Demonstrations

Analysis Activity: Consideration of Future Consequences Scale

Concept: The immediacy of reinforcement influences human behavior. For smokers, alcoholics, and other drug users, immediate gratification outweighs future ill effects. Part of maturity is learning to delay gratification. Walter Mischel has argued that the ability to delay gratification is a basic personality competence that remains reasonably stable throughout life. This activity uses a measure designed by Alan Strathman and colleagues, the Consideration of Future Consequences Scale, to determine students’ ability to delay gratification.

Materials: Handout 15–6

Description: Handout 15–6 measures our tendency to consider potential distant outcomes of current behaviors, as well as the tendency for current behaviors to be influenced by these potential distant outcomes. Have students complete the handout.

Discussion: In scoring their own scale, students should reverse the numbers they gave in response to statements 3, 4, 5, 9, 10, 11, and 12 (that is, 1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1). Then they should total the numbers in front of all twelve items. Total scores can range from 12 to 60 with higher scores reflecting greater consideration of future consequences. Students in an introductory psychology course at the University of Missouri obtained a mean score of 42.5.

Research suggests that greater consideration of future consequences is positively linked to conscientiousness, optimism, hope, and an internal locus of control. Higher scores were also positively related to general concern for health, and negatively related to cigarette and alcohol consumption. Those with higher scores were also more likely to be environmentally conscientious by recycling, driving a fuel-efficient car, and using a water-saving showerhead.

Enrichment Lesson: The Self-Injurious Behavior Inhibiting System (SIBIS)

Should aversives, or devices and techniques that punish behavior, ever be used in altering the behavior of children? Approach the subject by citing the controversy over the Self-Injurious Behavior Inhibiting System (SIBIS), a device that is used to control self-destructive behavior in autistic children.

Developed by the parents of two autistic children, the SIBIS has dramatically reduced head banging in the six individuals on whom it was initially tested. It consists of lightweight headgear and an arm or leg band. When the wearer strikes his or her head, a radio signal is sent from the headpiece to a small receiver in the arm or leg band, which administers a mild electric shock similar to that received from static electricity.

Mooza and Leslie Grant designed the device 20 years ago in an effort to stop their daughter’s self-destructive behavior, and staff of the Applied Physics Laboratory at Johns Hopkins University helped them refine the equipment. Thomas Linscheid, associate professor of pediatrics and psychology at Ohio State University, has tested the refined equipment and has reported a dramatic drop in the amount of head-banging by the children in his study. In one case, he recorded a drop from 3000 head-bangings per hour to none after the subject had worn the SIBIS only a short time.

Potentially, the SIBIS has a wide application. An estimated 50,000 autistic and mentally retarded persons in the United States engage in self-abusive behavior. Some must be restrained to prevent concussions, eye injury, and even possible death. Although SIBIS seems to be beneficial, some argue against its use. For example, two federal government officials wrote, “We wish to state that there are serious moral and legal concerns about the use of this type of aversive treatment, as well as a body of evidence that calls into question the relative effectiveness of such treatment.” The proponents of SIBIS agree that positive reinforcements are preferred in treating behavior disorders, but note that aversives must sometimes be used to immediately reduce self-destructive behavior. Moreover, the device is typically used in conjunction with positive reinforcement. It comes equipped with a timer that alerts an attendant when the wearer has refrained from head banging for a specified time, so that a reward may be given. Finally, the SIBIS, which costs between $3000 and $4000, may only be sold on the order of a physician or psychologist and it must be carefully monitored.

B. F. Skinner was also drawn into the debate. Skinner generally emphasized positive reinforcement over punishment. Does that mean, however, that he was opposed to all forms of punishment? In his “Statement on Punishment,” Skinner held that his support of positive reinforcement had been misconstrued as opposition to punishment in every form. In attempting to correct this misunderstanding, Skinner wrote, “If brief and harmless aversive stimuli, made precisely contingent on self-destructive behavior, suppress the behavior and leave children free to develop in other ways, I believe it can be justified.”

In September 1989, the National Institutes of Health assembled a 14-member panel to reach a consensus on the best treatment for severely disturbed persons who cause themselves serious injury. Although the panel did not rule out the use of aversives that may cause pain, it did urge therapists to use treatments such as electric shock only in comprehensive and individualized treatment programs and only after appropriate review and informed consent.

Critics who had hoped that the panel would take a firm stand against aversives accused conference organizers of ignoring research that demonstrates the greater effectiveness of positive over aversive methods of behavior change. For example, Marcia Smith has reported using food as a positive reinforcer. In less than 2 months, Smith reports, her severely disturbed client went from banging his head for 95 percent of his waking hours to doing so only 5 percent of the time.
One mother, however, reported to the conference that she had become so depressed over the failure of other treatments to alter her son’s self-destructive behavior that she had decided to take his life. However, she said, “Now Mark has SIBIS. He no longer hits himself. He can feed himself. Mark is learning. I thank God for the SIBIS.”

Susan Jacob-Timm provides an excellent review of the literature on the prevalence, etiology, and treatment of self-injurious behavior. Equally important, she shows how the SIBIS controversy highlights the ethical and legal issues associated with the use of aversives in public schools. Beginning with specific cases of how parents have had to file suit to gain use of SIBIS for their children, Jacob-Timm explains how SIBIS raises questions about the child’s right to treatment, whether strategies that expose children to pain are ever acceptable (even if they effectively stop self-injury), the legal obligation of mental-health professionals to select the least drastic alternative in the treatment of behavior disorders, the right to nondiscriminatory treatment (some psychologists have argued that the use of aversives with the disabled person is discriminatory), and the right to self-determination (developmentally disabled persons may be unable to give informed consent).


Punishment

Activities and Demonstrations

Application Activity: Conditioning the Instructor’s Behavior

Concept: Joan Chrisler uses stories about student conditioning their instructors’ behavior as the basis for a student project in her psychology of learning course. It can readily be adapted to a high school psychology course.

Materials: none

Description: Suggest that students choose a specific behavior for conditioning you, the teacher, in a way that would improve your teaching. Ask them not to select something that is obscene or embarrassing. Have them gather in a library to discuss their project so you can watch them without hearing their plans. Tell them that they will be given approximately 30 minutes of class time to prepare their project. Appoint a discussion leader and briefly present the following directions:

1. Choose a behavior they want to condition in you that would improve your teaching (i.e., making eye contact with every student, recognizing only those students who raise their hands to speak, etc.)
2. Determine how they will reward the behavior they want to condition.
3. Appoint a few observers who will record the teacher’s behavior during the experiment.

After deciding on the specific behavior to condition, students should take a baseline over a few class periods, monitoring your usual behavior in class. (Let them decide precisely how many.) The conditioning process (involving the reinforcer of their choice) should continue over a period of time, probably a few weeks. They should carefully assess any change in the frequency of the behavior being conditioned. If you like, they might also include a time period during which they stop conditioning, again assessing any behavioral changes. They are to end the project by debriefing you, their subject.

Discussion: Chrisler reports that she is always surprised by the results, even when the class has not been successful in conditioning her behavior. Even when unsuccessful, students value the experience, typically realizing themselves what went wrong.
Shaping is not always as easy as it seems. The successes include making eye contact with all class members, moving about the classroom more frequently, giving more examples from personal experience to illustrate concepts, and writing on the chalkboard more often. Powerful reinforcers include eye contact, smiling, nodding, note taking, and class participation.

NOTE: A strong level of trust should exist between teachers and students who engage in this project. It may be useful to get a fellow instructor to work with you to monitor the students during this project, approving the behavior to be conditioned and the reinforcer to be used.


Cooperative Learning Activity: Shaping Demonstration

Concept: David Watson of the University of Hawaii suggests this activity for shaping students’ behavior—in case, unlike the previous activity, you’d rather subject them to conditioning rather than yourself! This activity deals with shaping—that is, reinforcing successive approximations of one behavior to the exclusion of other behaviors. The exercise helps students learn the basic principles of reinforcement and makes it possible for them to compare the effects of positive reinforcement and punishment.

Materials: none

Description: Start the exercise by showing students how shaping is done. Ask for a volunteer whose behavior you will shape. Send the volunteer out of the room while you and the class select a simple behavior to shape—for example, touching the chalkboard. Have the volunteer return, and explain the task as follows: “We’ve picked a particular act that we want you to do, but we won’t tell you what it is; you have to figure it out. It’s simple and not embarrassing. Each time you move in the direction of doing it, I will say ‘good.’ If you don’t move in that direction, I won’t say anything. When you get a little warm, I won’t keep on saying ‘good.’ I’ll wait for you to get a bit warmer before saying it. That way you will make progress. What I’ll be doing is called shaping.”

Begin shaping the volunteer’s behavior by saying “good” to any movement in the direction of the desired act. For example, if the volunteer is to touch the chalkboard, say “good” to any glance, turn, or step toward it. Then say “good” only to steps toward it, then to approaches of the hand toward it, and so forth. Eliciting the desired act takes about 10 minutes, on the average.

Now divide the class into pairs. At the outset, one partner should be the shaper, and the other should be the person whose behavior will be shaped. Then, the roles should be switched. Have the shapers select a target behavior, reminding them that the behavior should be a simple one, not embarrassing. Then, have them proceed to shape their partner’s behavior. While they are working, circulate among the student shapers, coaching.

On the same day, if time allows (or on another day), continue the exercise, but instead of having shapers say “good” when their partner gets warmer, have them say “bad” when their partner gets colder.

Discussion: End a discussion about this experience with what students have learned. Bring out the following points:

• Reinforcers, such as the word “good,” guide behavior.

• Reinforcement must come quickly if it is to have an effect.

• Shaping is an effective way to develop behaviors.

Consider why some shapers did better than others. A shaper may have required too large an initial step, inadvertently reinforced the wrong move, or not given enough reinforcers. Also discuss the effects the change of approach from “good” to “bad” had. Typically,
punishment (as represented here by the word "bad") does not affect each new behavior effectively. There are also some typical side effects: the person on whom punishment is being used becomes frustrated or aggressive, may show disrupted behavior, and may want to escape from the whole situation.

Ask students for examples of shaping from real life. Point out that much shaping occurs without conscious intent.


Reinforcement Procedures

Digital Connection

Videocassette: Behavioral Treatment of Autistic Children
This program focuses on the work of O. Ivan Louvaas, who has successfully used operant conditioning to treat autistic children. After briefly describing the symptoms of autism, the narrator reviews B. F. Skinner's principles of operant conditioning and shows how Louvaas has applied them in therapy, using food and praise as reinforcers. The program shows the dramatic change in autistic children as reinforcement is carefully and systematically applied to the shaping of their behavior, particularly their verbal responses. Many carefully documented case histories are presented. In the most dramatic, individuals are shown as autistic infants, then as adolescents and highly intelligent young adults who are socially adjusted. The program is particularly effective in changing the belief that behavior modification is manipulative and necessarily dehumanizing. The program is long, but it is quite possible to show only the first part or to skip over some of the case histories. (Focus International, 44 minutes) To order, contact Focus International, 1160 East Jericho Turnpike, Huntington, NY 11743, (631) 549-5320.

Schedules of Reinforcement

Activities and Demonstrations

Application Activity: Partial Reinforcement Schedules
Concept: Students can apply their knowledge of partial reinforcement schedules with this activity.
Materials: Handout 15–7
Description: After reviewing the four major schedules presented in the text, you can use the handout for individual review, as a small group exercise, or for full class discussion.

Enrichment

Enrichment Lesson: Superstitious Behavior
Skinner's research on "superstitious" behavior in pigeons can be presented in class to illustrate both the power of reinforcement and its application to everyday life. According to Skinner, a superstitious behavior is a response that is accidentally reinforced—that is, there is no prearranged contingency between the response and reinforcement. Because the behavior and reinforcement occur together, the behavior is repeated and, by chance, is again followed by reinforcement. This process may explain why we carry a half dollar as a good luck piece, wear the same slacks when taking tests, and step over cracks in the sidewalk.

In one study, Skinner placed hungry pigeons in a Skinner box where food was presented for five seconds at regular intervals. The food was made available regardless of the pigeon's behavior. Six of the eight pigeons exhibited "superstitious" behavior. One
pigeon happened to be turning counterclockwise when the food was presented early in the experiment, and so it would reliably turn two or three times in a counterclockwise direction between reinforcements. A second bird received food after thrusting its head into one of the upper corners of the cage. Two other pigeons learned to swing their upper bodies in a pendulum motion.

Skinner reported that a 15-second interval between reinforcements was ideal for the development of these superstitious behaviors. Longer intervals decreased the likelihood that the same behavior would occur at the time of the next reinforcement. Shorter intervals limited the number and kinds of behaviors that might precede reinforcement. In such cases, only the response “head lowered in front of the cup entrance (food dispenser)” was likely to be reinforced.


New Understandings of Operant Conditioning

Digital Connection

Videocassette: Patient Like the Chipmunks
The text discussion of biological predispositions refers to Keller and Marian Breland’s use of operant procedures to train animals for circuses, TV shows, and movies. This video chronicles the fascinating story of Animal Behavior Enterprises (ABE), the first commercial application of Skinner’s operant conditioning. Marian Breland studied under B. F. Skinner in 1938 and, with her first husband, Keller, worked with Skinner to train pigeons to guide World War II missiles. That experience prompted the Brelands to found ABE in 1943. In addition to describing the training procedures used to get the pigeons to track missiles, the video portrays ABE’s pioneering work with free-flying birds and free-swimming dolphins. Over the years, the Brelands and Baileys (Marian married Robert Bailey after the death of Keller) trained more than 140 species, thousands of individual animals, and people, too. In describing the applications of operant conditioning, this program explains how Skinner’s early research evolved into a powerful and practical behavioral technology. Two versions of the program are available. The first is almost two hours long; the classroom version is just 45 minutes, available for $65.00 from Robert Bailey, 714 Arkridge Circle, Hot Springs, Arkansas 71913. Calvin Trillin provides a brief account of the Brelands’ and the Bailes’ work, specifically on their training chickens to play tic-tac-toe, in “The Chicken Vanishes,” New Yorker, February 8, 1999, pp. 38–41. (Eclectic Science Productions, 45 minutes) For ordering information, please visit www.behavior1.com.

Technology Application Activity: PsychSim: “Maze Learning”
Concept: This computer program clearly explains and illustrates the role of cognition in operant conditioning.

Materials: PsychSim CD-ROM and workbook; computer access

Description: In this tutorial, a rat is in a maze trying to reach a piece of cheese. The student is supposed to use cognitive maps to try to get the rat to the cheese. Students will have a wonderful time with this.

Discussion: The PsychSim CD can fulfill many needs for students. If installed in a computer lab or on a network, students can work on the CD as part of a laboratory assignment. If installed on a few computers in a classroom, the CD can be used as an enrichment tool for advanced students or independent learners, or as a reteaching tool for students who haven’t mastered the concepts from the module.
Activities and Demonstrations

Critical Thinking Activity: The Overjustification Effect

Concept: Many people find the overjustification effect counterintuitive, and, as such, it shows that psychological research often goes beyond common sense. To illustrate this, you may want to use an exercise suggested by psychologist Harry Hor.

Materials: none

Description: Assuming that students have not yet read the relevant research in Module 16, introduce the exercise with a short discussion on whether preschool children enjoy drawing and receiving recognition in the form of good player badges and honor-roll boards. Then, have the class imagine that they are conducting an experiment at a local preschool center. Ask them to pay close attention to the following synopsis of research by M. R. Lepper and colleagues, so they will be able to make predictions before learning the research outcome.

- Only preschoolers showing high interest in drawing during free playtime were selected for the research. The children were tested individually and assigned randomly to one of three conditions. In the expected reward condition, children were shown a good-player badge and told that if they did a good job of drawing, they could earn a badge and have their names put on the school honor-roll board. All children in this condition received the expected rewards. In the unexpected reward condition, children were asked to draw without any mention of the awards. Unexpectedly, at the end of the drawing period, all of these children were given the awards. Finally, in the control condition, children were asked simply to draw without promise or presentation of the awards. After this task, children were observed back in the classroom during free playtime, and the amount of time they spent drawing was recorded.

After highlighting the various conditions, have students list the similarities and differences among the three conditions for reward expected and reward received. Then, have them predict how much time they think the children from each condition would spend drawing during the later free play period. Draw bar graphs of their time predictions on the chalkboard.

Discussion: Their predictions will be quite different from the actual results. The correct prediction is that children from the expected-reward condition later draw less than children from either the control or the unexpected-reward condition, with no significant differences between the latter two conditions. Explain how an already justifiable activity can become overjustified by the promise of added reward. Interest can survive, however, when rewards are used not to bribe or to control, but to communicate a job well done.

Enrichment

Enrichment Lesson: The Overjustification Effect

Philip Zimbardo relates the amusing story of Nunzi, a shoemaker and an Italian immigrant. Every day after school, a gang of young American boys came to his shop to taunt and to tease him. After attempting in a variety of ways to get the boys to stop, Nunzi hit upon the following solution.

When the boys arrived the next day after school, he was in front of his store waving a fistful of dollar bills. "Don't ask me why," said Nunzi, "but I'll give each of you a new dollar bill if you will shout at the top of your lungs ten times: 'Nunzi is a dirty Italian swine.'" Taking the money, the boys shouted the chants in unison. The next afternoon Nunzi successfully enticed the gang to repeat their taunts for a half dollar. On the third day, he had only a handful of dimes: "Business has not been good and I can only give you each ten cents to repeat your marvelous performance of yesterday."

"You must be crazy," said the ringleader, "to think we would knock ourselves out screaming and cursing for a lousy dime."
"Yah," said another. "We got better things to do with our time than to do favors for only a dime." And away the boys went, never to bother Nunzi again.

Do rewards sometimes undermine motivation in adults? Many studies now show this to be so. In one experiment, adults who were paid to lose weight at first lost pounds faster than those who were not paid. When payments stopped, the paid subjects regained some of the lost weight, while those who had not been paid continued to lose. Similarly, rewards can cast a pall over romantic love. Dating couples were asked to think of either the extrinsic rewards (for example, "she/he knows a lot of people") or the intrinsic rewards (for example, "we always have a good time together") they obtained from going out with their partners. When later asked to state their feelings, the couples that had thought about the extrinsic rewards evaluated themselves as being less in love than did those who had thought about the intrinsic rewards.

The simplest interpretation of these findings is that rewards lead people to think that an activity does not deserve doing in its own right. Why else would someone offer rewards? People, therefore, come to see the activity as a means rather than an end, and their actions come under the control of the extrinsic reward. When rewards are withdrawn, people judge the activity as no longer worth doing.

Edward Deci has argued that rewards do not inevitably undermine intrinsic motivation. He suggests that rewards—money, praise, gold stars, or candy bars—can be used in two ways: to control us or to inform us on how well we are doing in meeting the challenge of a particular task. When rewards are used to control or manipulate, they are likely to undermine intrinsic motivation. When they are used to inform, they may actually boost people's feelings of competence and intrinsic motivation.

Deci reports research findings in which teachers’ use of rewards had either a positive or negative impact on intrinsic motivation. Teachers who valued order and control in the classroom tended to use rewards as sanctions. Those who favored autonomy, encouraging the children to take responsibility for their actions, tended to use rewards informationally. The former undermined intrinsic motivation, while the latter actually fostered it. In the Nunzi story, as well as in the other research examples, the recipients of the rewards probably viewed them as attempts to control rather than inform.

How rewards are presented often determines whether children will see them as controlling or informative. In one study, children were offered prizes for playing with a drum. For one group, the prize was in plain view. For the other group, the prize was hidden, and the leaders made no further mention of it during the children's performance. Only the children with the reward in plain view showed a significant decrease in intrinsic motivation. Evidently, a clearly presented reward siphons attention away from enjoyment of the immediate task.

Anticipated rewards thus seem to have more serious (and negative) consequences than unanticipated rewards. People are more likely to see the latter as giving them information about their performance, since the reward was not presented at the beginning as a bribe. Rather than emphasizing rewards from the outset to control a class or a child, perhaps teachers and parents might better use them occasionally as an unexpected bonus.

Alternative Assessment/Portfolio Project: Modifying an Existing Behavior

Concept: Alternative assessment tools are designed to enable students to demonstrate understanding of concepts outside of traditional pen-and-paper assessments. Students can choose a behavior of their own to modify, applying the principles of this module to their own lives.

Materials: Handout 15–8

Description: Ask students to choose one of their behaviors they would like to change. Perhaps they want to get more exercise, lose weight, or improve their study habits. To use operant conditioning principles to establish and strengthen the desired behavior, they should follow the steps suggested below by Anthony Grasha.

1. Identify a target behavior that is important to you. Don’t attempt to do too much at once, but be specific. Instead of “I want to get more exercise,” state “I need to start jogging one mile every day.”

2. If a desirable behavior, such as exercise, is presently nonexistent, go to step 4. However, if it is present in limited form or is a behavior you want to eliminate, monitor it for about a week to establish a baseline of occurrence by keeping a journal of your regular activity. Behaviors can be recorded by frequency or by duration. For example, if nail biting is to be decreased, count the number of nail bites presently taken per day. If studying is to be increased, record the number of hours presently invested daily. Also keep track of the situations in which it occurs, as well as the favorable or unfavorable consequences. (Sometimes monitoring an action will cause a change. This project can be simplified by having students merely observe their behavior and record any change.)

3. Gain control over the behavior by controlling discriminative stimuli. Some people may bite their nails while bored, or snack only while watching television. Finding something to do or limiting time in front of the TV may help in changing the target behavior.

4. Identify positive reinforcers (reading a favorite magazine, telephoning a friend, taking a hot shower). Select one that is likely to influence the behavior you want to change, and then use it to change your behavior. Establish a schedule of reinforcement. For example, you get to make a phone call to a friend only after you have read one module in the textbook or after you have gone three hours without biting your nails.

5. If possible, enlist social support. Modifying behavior can be difficult, and so it often helps to have someone to talk with to keep you honest and committed to your plan. Grasha writes that one graduate student put $200 into a jar and instructed her husband that for every week she failed to reach her goal in working on her dissertation, he was to send $25 to her least favorite charity.

6. Monitor and record your progress toward changing the behavior. Remember that behavioral change takes time. Shift from continuous to partial reinforcement once a target behavior is acquired. Your goal should be to wean yourself from the control of external reinforcers.

Use the following options for students to document their efforts on this project:

- Students may document their experiences in an ongoing journal or video diary. They should reflect on their feelings about the changes in their lives, as well as documenting the actual procedures they follow over time.

- Students may create a poster presentation that documents their experiences, showing “before” and “after” conditions.
Discussion: This project will likely take a significant amount of time to complete, so consider making this project part of an overall final grade for a grading period or term. You may also want to consider having periodic updates with students to see how they are progressing and whether they are applying the principles correctly. Be careful not to grade students on whether they are successful in changing their behaviors, but rather on whether they correctly applied the principles of operant conditioning and their diligence in using those principles. If you choose to use the general rubric provided in Handout 15–8, also take into consideration the following questions when evaluating these projects:

- Did the students complete all the steps above with what you would consider a “good effort”? (Take care not to deduct points based on the behavior students choose to modify.)

- How well did the students apply the principles of operant conditioning to their lives? Did this project demonstrate that they truly understood the concepts?

HANDOUT 15–1

Consequences and Their Effects

Directions: Circle the situation that would be more likely to encourage someone to continue the behavior described.

1. A. Your parents offer you $100 for each A you receive on your report card.
   B. Your parents make you pay them $100 for each time you don’t make an A on your report card.

2. A. You receive a painful shock each time you watch more than two hours of television a night.
   B. You earn an extra ten minutes added to your curfew for watching less than two hours of TV a night.

3. A. Your parents ground you indefinitely for making a bad test grade in science.
   B. Your parents ground you until you make a better grade on tests in science.

4. A. A mother puts her child in time-out for 10 minutes when her toddler whines for more cookies.
   B. A mother gives her child cookies only when he/she asks for cookies in a pleasant voice.

5. A. A pigeon stops getting shocked when he bobs his head three times in a row.
   B. A pigeon gets shocked when he doesn’t bob his head three times in a row.

6. A. A teen gets a ticket for speeding.
   B. A teen gets a decrease in insurance premiums that he must pay himself for not having speeding tickets over a 6-month period.

7. A. A child who throws a temper tantrum for candy at the grocery store gets candy to make her stop misbehaving in public.
   B. A child is only given candy when she stops misbehaving in public.
HANDOUT 15–2
Operant Conditioning: The Basics

Directions: Fill in the definitions or concepts in the appropriate boxes below, using the Word Bank as a guide.

Law of effect:

Operant conditioning:

Shaping:

Discrimination:

Overjustification effect:

Word Bank
Law of effect
Operant conditioning
Overjustification effect
Discrimination
Reinforcement
Punishment
Extinction
Latent learning
Cognitive map
Shaping
HANDBOOK 15–3
Reinforcement
Directions: Fill in the definitions or terms for the following boxes, using the Word Bank as a guide.

Reinforcement Types

Immediate:

Primary:

Secondary:

Reinforcement Schedules

Ratio schedules:

Word Bank
Immediate reinforcement
Delayed reinforcement
Positive reinforcement
Negative reinforcement
Primary reinforcement
Secondary reinforcement
Continuous reinforcement
Partial reinforcement
Ratio schedules
Interval schedules
Fixed-interval schedule
Variable-interval schedule
Fixed-ratio schedule
Variable-ratio schedule
HANDOUT 15–4

Negative Reinforcement Quiz

1. If you were asked for another word or phrase for negative reinforcement, what would you select?

2. When you supply negative reinforcement, it usually results in:
   a. Weakening a behavior that you want weakened.
   b. Strengthening a behavior that you want strengthened.

3. Do people usually look forward to receiving negative reinforcement?
   a. Yes    b. No

4. Do you anticipate regularly (consciously) supplying positive reinforcement to those you might manage in the future?
   a. Yes    b. No

5. Do you anticipate regularly (consciously) supplying negative reinforcement to those you might manage in the future?
   a. Yes    b. No

HANDOUT 15–5
Clicker Training and Operant Conditioning

Directions: Answer the following questions regarding Karen Pryor's Clicker Training Web site at www.clickertraining.com.

1. Briefly describe clicker training and the operant conditioning techniques that are used.

2. Click on the “15 Tips for Using the Clicker” link. Which tips are related to shaping a behavior?

   Tip #6 says, "Fix bad behavior by clicking good behavior." What element of operant conditioning is highlighted by this tip?

   Tip #14 talks about the importance of timing. Why would timing be important to successful operant conditioning?

3. From the home page, click on “What is Clicker Training?” Choose one of the questions about clicker training. What operant conditioning concepts are highlighted in the answer? List all you see.

4. From the home page, click on the "Cat Training" link. Then click on the link entitled "Teach Your Cat to Play the Piano." Read the article and describe what operant training techniques are required for this task.

5. Read articles related to dog training, cat training, and other animal training with clickers. Compare and contrast the operant training techniques used with each type of animal.
HANDOUT 15–6

Consideration of Future Consequences Scale

Directions: For each of the statements below, please indicate whether or not the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a 1 to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a 5 next to the question. And, of course, use the numbers in the middle if you fall between the extremes. Please keep the following scale in mind as you rate each of the statements below.

1. I consider how things might be in the future and try to influence those things with my day to day behavior.

2. Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.

3. I only act to satisfy immediate concerns, figuring the future will take care of itself.

4. My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.

5. My convenience is a big factor in the decisions I make or the actions I take.

6. I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.

7. I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.

8. I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.

9. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.

10. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.

11. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.

12. Since my day-to-day work has specific outcomes, it is more important to me than behavior that has distant outcomes.

HANDOUT 15–7

Reinforcement Schedules

Directions: The text indicates that in real life, continuous reinforcement is rare. Sometimes responses are reinforced, sometimes not. Among the most important schedules of partial reinforcement are the fixed ratio (FR), variable ratio (VR), fixed interval (FI), and variable interval (VI). Identify the schedule in the examples below by writing your answer—FR, VR, FI, or VI—in the spaces on the left.

1. A person buys state lottery tickets and wins.

2. A hotel maid may take a 15-minute break only after having cleaned three rooms.

3. Someone watches and sees shooting stars on a dark night.

4. A teenager receives an allowance every Saturday.

5. A person checks the front porch for a newspaper when the delivery person is extremely unpredictable.

6. A professional baseball player gets a hit approximately every third time at bat.

7. A person checks the oven to see if chocolate chip cookies are done when the amount of time needed for baking is known.

8. A blueberry picker receives $1 after filling 3 pint boxes.

9. A charitable organization makes an average of ten phone calls for every donation it receives.

10. A person calls a garage mechanic to see if his or her car is fixed yet.

11. A student’s final grade improves one level for every three book reviews submitted.

12. A student goes to the cafeteria to see if the next meal is available.
**HANDBOOK 15–8**  
**General Rubric for Portfolio Project**

<table>
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<th>Project Criteria</th>
<th>Assessment Value</th>
<th>1</th>
<th>2</th>
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<th>6</th>
<th>7</th>
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<td>Project accurately presents information required.</td>
<td>Excellent</td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
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<tr>
<td>Project presents the most important and relevant information.</td>
<td>Acceptable</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Project presents the information in an engaging manner.</td>
<td>Insufficient</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Appeal:</td>
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<tr>
<td>Project visually engages the audience well.</td>
<td>Excellent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Project demonstrates a high level of creativity and originality.</td>
<td>Acceptable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Project uses color effectively.</td>
<td>Insufficient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Overall Appeal Evaluation:</td>
<td></td>
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<tr>
<td>Mechanics:</td>
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<tr>
<td>Project demonstrates correct use of grammar.</td>
<td>Excellent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Project demonstrates correct spelling.</td>
<td>Acceptable</td>
<td>1</td>
<td>2</td>
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<td>4</td>
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<td>6</td>
<td>7</td>
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<tr>
<td>Overall Mechanics Evaluation:</td>
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<tr>
<td>Oral Presentation:</td>
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<tr>
<td>Students spoke loudly and clearly.</td>
<td>Excellent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Students made appropriate eye contact.</td>
<td>Acceptable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Students communicated the information accurately.</td>
<td>Insufficient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Students demonstrated poise and maturity.</td>
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<td>Overall Oral Presentation Evaluation:</td>
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<td>Overall Portfolio Evaluation:</td>
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</tbody>
</table>

Comments:
ANSWERS TO HANDOUT 15–2
Operant Conditioning: The Basics

Law of effect: behaviors with less favorable consequences will occur less frequently and behaviors followed by more favorable consequences will occur more frequently.

Operant conditioning: a type of learning in which the frequency of a behavior depends on the consequence that follows that behavior.

Reinforcement:
any consequence that increases the future likelihood of a behavior.

Shaping: reinforcement of behaviors that are more and more similar to the one you want to occur.

Punishment:
any consequence that decreases the likelihood of a behavior.

Extinction:
occurs in operant conditioning when no consequence occurs to a behavior or

Discrimination:
the ability to distinguish between two similar signals or stimuli.

Latent learning:
learning that occurs but is not apparent until there is incentive to demonstrate it.

Cognitive map:
a mental representation of a place.

Overjustification effect:
the effect of promising a reward for doing what one already likes to do.
ANSWERS TO HANDOUT 15–3

Reinforcement

Reinforcement Types

Positive: anything that increases the likelihood of a behavior by following it with a desirable event or state

Negative: anything that increases the likelihood of a behavior by following it with the removal of an undesirable event

Immediate: reinforcement that is given right after the desired behavior

Delayed: reinforcement that is given after a period of time following the desired behavior

Primary: something that is naturally reinforcing, such as food (if hungry), warmth (if cold), and water (if thirsty)

Secondary: something that you have learned to value, such as money

Reinforcement Schedules

Continuous: a schedule of reinforcement in which a reward follows every correct response

Partial: a schedule of reinforcement in which a reward follows only some correct responses

Ratio schedules: schedules based on the number of behaviors that must be performed in order to receive reinforcement

Fixed-ratio: rewards a response only after some defined number of correct responses

Variable-ratio: rewards an unpredictable number of correct responses

Interval schedules: schedules based on the amount of time that must pass before receiving reinforcement

Fixed-interval: rewards only the first correct response after some defined period of time

Variable-interval: rewards the first correct response after an unpredictable amount of time

Immediate: reinforcement that is given right after the desired behavior

Delayed: reinforcement that is given after a period of time following the desired behavior
### Consequence Matrix

<table>
<thead>
<tr>
<th>Stimulus Type</th>
<th>Supply a Stimulus</th>
<th>Remove a Stimulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired Stimulus</td>
<td>Positive Reinforcement</td>
<td>Time-out* or Omission Training</td>
</tr>
<tr>
<td>Aversive Stimulus</td>
<td>Punishment</td>
<td>Negative Reinforcement</td>
</tr>
</tbody>
</table>

*For example, a child misbehaving at a birthday party may be required to sit on a chair in the laundry room for 5 minutes. (The situation from which a person is withdrawn must be enjoyable and reinforcing.)
Examples of Negative Reinforcement

1. taking aspirin to relieve a headache
2. hurrying home in the winter to get out of the cold
3. giving in to an argument or to a dog’s begging
4. fanning yourself to escape the heat
5. leaving a movie theater if the movie is bad
6. smoking to relieve anxiety
7. following prison rules to be released from confinement
8. feigning a stomach ache to avoid school
9. putting on a car safety belt to stop an irritating buzz
10. turning down the volume of a very loud radio
11. putting up an umbrella to escape the rain
12. saying “uncle” to stop your older brother from wrestling with you