

Chapter 5: Learning

Learning Processes

- Classical conditioning
- Behaviorism
- Operant conditioning

Adaptation to the Environment

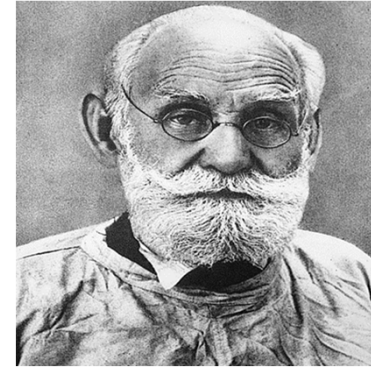
- Learning—any process through which experience at one time can alter an individual's behavior at a future time

Adaptation to the Environment

- Conditioning—the process of learning the associations between environmental events and behavioral responses

Behaviorism

- The attempt to understand observable activity in terms of observable stimuli and observable responses.
- John B. Watson (1913)
- B. F. Skinner (1938)



Ivan Pavlov (1849–1936)

Pavlov's Dogs

- Digestive reflexes and salivation
- Psychic secretion



Neutral Stimulus—Bell

- Does not normally elicit a response or reflex action by itself
 - a bell ringing
 - a color
 - a furry object

Unconditioned Stimulus— Food

- Always elicits a reflex action: an unconditioned response
 - food
 - blast of air
 - noise

Unconditioned Response— Salivation

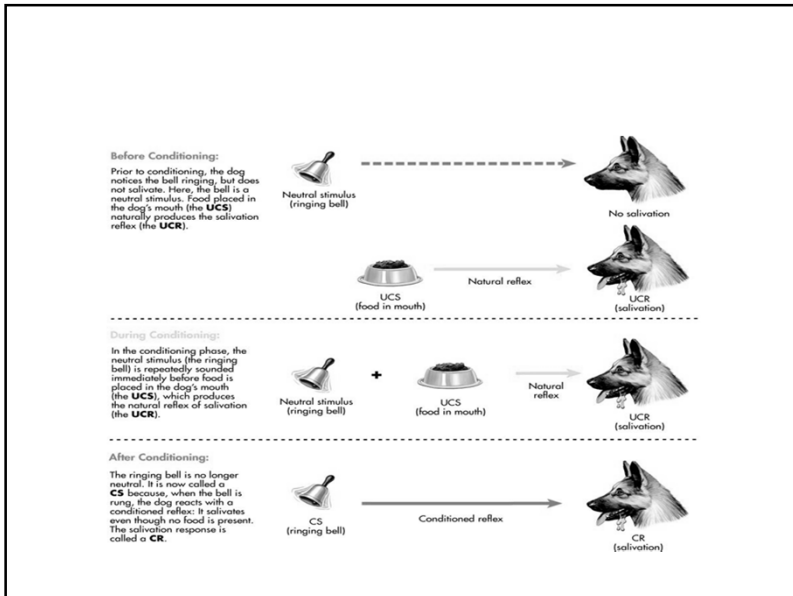
- A response to an unconditioned stimulus—naturally occurring
 - Salivation at smell of food
 - Eye blinks at blast of air
 - Startle reaction in babies

Conditioned Stimulus—Bell

- The stimulus that was originally neutral becomes conditioned after it has been paired with the unconditioned stimulus.
- Will eventually elicit the unconditioned response by itself.

Conditioned Response

- The original unconditioned response becomes conditioned after it has been elicited by the neutral stimulus.




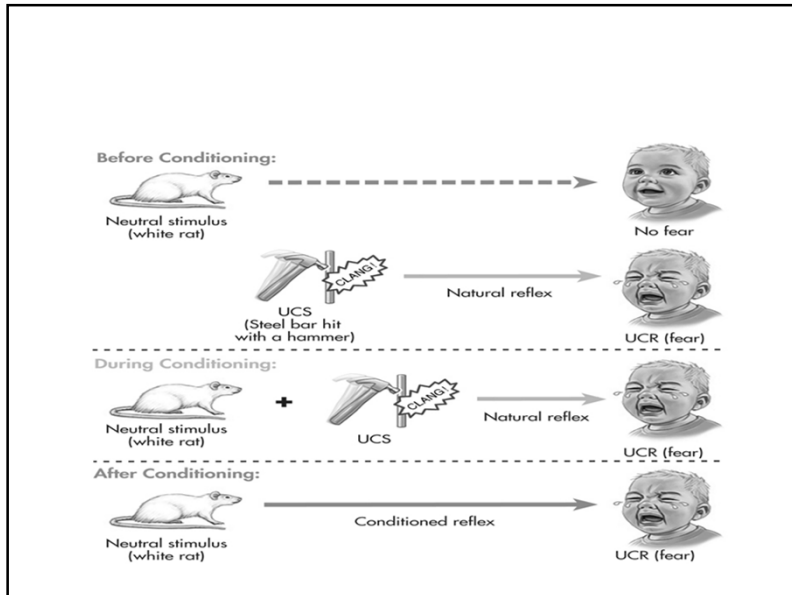
Classical Conditioning Phenomenon

- Extinction
- Spontaneous recovery
- Stimulus generalization
- Discrimination training

John B. Watson and Little Albert

- Conditioned emotional responses
- Generalization
- Extinction



Classical Conditioning and Drug Use

- Regular use may produce “placebo response” where user associates sight, smell, taste with the drug effect.
- Conditioned compensatory response (CCR)—classically conditioned response in which stimuli that reliably precede the administration of a drug elicit physiological reaction that is opposite to the drug’s effects.
- May be one explanation for the characteristics of withdrawal and tolerance.

Cognitive Aspects of Classical Conditioning

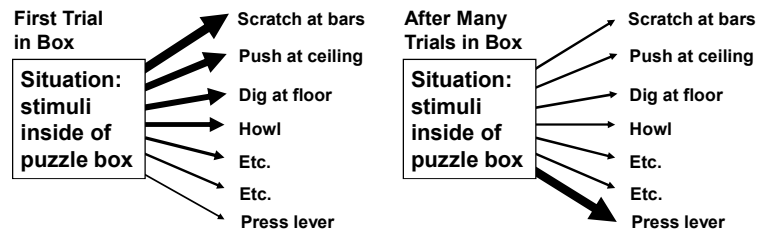
- Reliable and unreliable signals
- Actively process information
- Robert Rescorla

Evolutionary Perspective

- Conditioned taste aversions
- Internal stimuli—associate better with taste
- External stimuli—associate better with pain
- Biological preparedness
- John Garcia—not all neutral stimuli can become conditioned stimuli.

Early Operant Conditioning

- E. L. Thorndike (1898)
- Puzzle boxes and cats



Edward L. Thorndike (1874–1949)



B. F. Skinner (1904–1990)

B. F. Skinner's Operant Conditioning

- Did not like Thorndike's term "satisfying state of affairs."
- Interested in emitted behaviors
- Operant—voluntary response that acts on the environment to produce consequences.

Operant Conditioning

Reinforcement—the occurrence of a stimulus following a response that **increases** the likelihood of the response being repeated.

Table 5.1

Comparing Positive and Negative Reinforcement

Process	Operant	Consequence	Effect on Behavior
Positive reinforcement	Studying to make dean's list	Make dean's list	Increase studying in the future
Negative reinforcement	Studying to avoid losing academic scholarship	Avoid loss of academic scholarship	Increase studying in the future

Reinforcers

- Primary—a stimulus that is inherently reinforcing for a species (biological necessities)
- Conditioned—a stimulus that has acquired reinforcing value by being associated with a primary reinforcer

Punishment

Presentation of a stimulus following a behavior that acts to **decrease** the likelihood that the behavior will be repeated.

Problems with Punishment

- Does not teach or promote alternative, acceptable behavior
- May produce undesirable results such as hostility, passivity, fear
- Likely to be temporary
- May model aggression

Table 5.2

Comparing Punishment and Negative Reinforcement

Process	Operant	Consequence	Effect on Behavior
Punishment	Using radar detector	Receive speeding ticket and fine for illegal use of radar detector	Decrease use of radar detector in the future
Negative reinforcement	Using radar detector	Avoid speeding ticket and fine	Increase use of radar detector in the future

Operant Conditioning Terms

- Shaping
- Extinction
- Spontaneous recovery
- Discriminative stimuli
- Schedules of reinforcement

Discriminative Stimuli

Environmental cues that tell us when a particular response is likely to be reinforced.

Table 5.4

Components of Operant Conditioning

The examples given here illustrate the three key components involved in operant conditioning. The basic operant conditioning process works like this: In the presence of a specific discriminative stimulus, an operant response is emitted, which is followed by a consequence. Depending on the consequence, we are either more or less likely to repeat the operant when we encounter the same or a similar discriminative stimulus in the future.

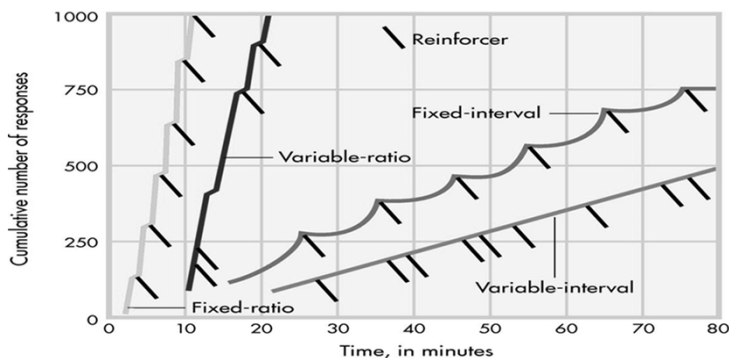
	Discriminative Stimulus	Operant Response	Consequence	Effect on Future Behavior
Definition	The environmental stimulus that precedes an operant response	The actively emitted or voluntary behavior	The environmental stimulus or event that follows the operant response	Reinforcement increases the likelihood of operant being repeated; punishment or lack of reinforcement decreases the likelihood of operant being repeated.
Examples	<p>Wallet on college sidewalk</p> <p>Gas gauge almost on "empty"</p> <p>Informal social situation at work</p> <p>Soft-drink vending machine</p>	<p>Give wallet to security</p> <p>Fill car with gas</p> <p>Tell an off-color, sexist joke</p> <p>Put in quarters</p>	<p>\$50 reward from wallet's owner</p> <p>Avoid running out of gas</p> <p>Formally reprimanded for sexism and inappropriate workplace behavior</p> <p>Get no soft drink and lose money</p>	<p>Positive reinforcement: More likely to turn in lost items to authorities</p> <p>Negative reinforcement: More likely to fill car when gas gauge shows empty</p> <p>Positive punishment: Less likely to tell off-color, sexist jokes in workplace</p> <p>Negative punishment: Less likely to use that vending machine</p>

Reinforcement Schedules

- Continuous—every correct response is reinforced; good way to get a low-frequency behavior to occur
- Partial—only some correct responses are reinforced; good way to make a behavior resistant to extinction

Partial Schedules—Ratio

- Ratio schedules are based on the number of responses emitted.
- Fixed ratio (FR)—a reinforcer is delivered after a certain (fixed) number of correct responses
- Variable ratio (VR)—a reinforcer is delivered after an average number of responses, but varies from trial to trial



Partial Schedules—Interval

- Interval schedules are based on time.
- Fixed interval (FI)—reinforcer is delivered for the first response after a fixed period of time has elapsed.
- Variable interval (VI)—reinforcer is delivered for the first response after an average time has elapsed, differs between trials.

Cognitive Aspects of Operant Conditioning

- Cognitive map—term for a mental representation of the layout of a familiar environment
- Latent learning—learning that occurs in the absence of reinforcement, but is not demonstrated until a reinforcer is available
- Learned helplessness—phenomenon in which exposure to inescapable and uncontrollable aversive events produces passive behavior

Biological Predispositions

- Animal training issues
- Instinctive drift—naturally occurring behaviors that interfere with operant responses

Classical Conditioning Versus Operant Conditioning

Table 5.5

Comparing Classical and Operant Conditioning

	Classical Conditioning	Operant Conditioning
Type of behavior	Reflexive, involuntary behaviors	Nonreflexive, voluntary behaviors
Source of behavior	Elicited by stimulus	Emitted by organism
Basis of learning	Associating two stimuli: CS + UCS	Associating a response and the consequence that follows it
Responses conditioned	Physiological and emotional responses	Active behaviors that operate on the environment
Extinction process	Conditioned response decreases when conditioned stimulus is repeatedly presented alone	Responding decreases with elimination of reinforcing consequences
Cognitive aspects	Expectation that CS reliably predicts the UCS	Performance of behavior influenced by the expectation of reinforcement or punishment
Evolutionary influences	Innate predispositions influence how easily an association is formed between a particular stimulus and response	Behaviors similar to natural or instinctive behaviors are more readily conditioned

Observation Learning

- Observation
- Modeling
- Imitation
- Albert Bandura and the Bobo doll study

Bandura's Social Learning Theory

- Bandura's early observational learning studies showed preschoolers enthusiastically mimicking the movie actions of an adult pummeling a Bobo doll.
- He found that observed actions were most likely to be imitated when:
 - They were performed by a model who is attractive, and who has high status or is a dominant member of the viewer's social group.
 - The model is rewarded for his or her behavior.
 - The model is not punished for his or her actions.

Table 5.6

Factors That Increase Imitation

You're more likely to imitate:

- People who are rewarded for their behavior
- Warm, nurturing people
- People who have control over you or have the power to influence your life
- People who are similar to you in terms of age, sex, and interests
- People you perceive as having higher social status
- When the task to be imitated is not extremely easy or difficult
- If you lack confidence in your own abilities in a particular situation
- If the situation is unfamiliar or ambiguous
- If you've been rewarded for imitating the same behavior in the past

Source: Based on research summarized in Bandura (1977, 1986, 1997).

Mirror Neurons

- Types of cells in the premotor cortex which are activated when a person:
 - executes object-directed actions
 - when the individual sees another individual performing actions of the same type

Violence and Television Watching

- Staggering findings
- National Television Violence Study found that more than 60 percent of television programs contained depictions of violence.
 - Depicted in ways that are known to *increase* the likelihood of imitation.
 - In 80% of the violent shows, the violence did not result in any long-term consequences.
 - Television and film depictions of violence have become more graphic, not less – and more readily available.

Exposure to Media and Aggression

- Studies have shown that exposure to media violence produces short-term increases in laboratory measures of aggressive thoughts and behavior.
- Links between exposure to violent media and aggressive behavior both in and out of the classroom.
- The American Psychological Association, the American Academy of Pediatrics, and four other public health organizations issued a joint statement on the impact of entertainment violence on children.
 - Based on a review of more than 30 years of research, they concluded that “viewing entertainment violence can lead to increases in aggressive attitudes, values, and behavior, particularly in children.”

Media Violence as a *Cause* of Violent Behavior?

- Violent behavior unlikely to have a single cause.
- Longitudinal research has shown that hours spent viewing violent television programming was associated with lower cognitive performance and negative social behavior in:
 - white males
 - African American females
 - White females
 - but *not* in African American males
- Vast majority of studies in this area are criticized to be *correlational*, which does not imply causation.
- Some viewers *are* highly susceptible to the negative effects of media violence.
- Current trend is to look at which factors are most likely to be associated with media violence's harmful effects, rather than *whether* it causes aggressive behavior

Famous Last Words???

Do as I say, not as I do.

This will teach you to hit your brother

Why do you do that? You know you get in trouble for it.