Learning: Some Key Terms

- Learning: Relatively permanent change in behavior due to experience
- Reinforcement: Any event that increases the probability that a response will recur

- Focus on what can be seen and measured.
- Classical Conditioning – Pavlov/Watson
- Operant Conditioning- Skinner
- Social Cognitive Theory – Bandura (emerged from Learning theories but now distinct)
Figure 9.2
An apparatus for Pavlovian conditioning. A tube carries saliva from the dog’s mouth to a lever that activates a recording device (far left). During conditioning, various stimuli can be paired with a dish of food placed in front of the dog. The device pictured here is more elaborate than the one Pavlov used in his early experiments.
Figure 6.2 The sequence of events in classical conditioning. (a) Moving downward, this series of three panels outlines the sequence of events in classical conditioning, using Pavlov’s original demonstration as an example. (b) As we encounter other examples of classical conditioning throughout the book, we will see many diagrams like the one in this panel, which will provide snapshots of specific instances of classical conditioning.
Classical Conditioning: Terminology

- Unconditioned Stimulus
- Unconditioned response
- Neutral stimulus
- Conditioned Stimulus
- Conditioned Response
- Trial = pairing of UCS and CS
- Acquisition = forming a new conditioned response tendency
- Stimulus contiguity = occurring together in time and space
Figure 6.7 The conditioning of Little Albert. The diagram shows how Little Albert’s fear response to a white rat was established. Albert’s fear response to other white, furry objects illustrates generalization. In the photo, made from a 1919 film, John B. Watson’s collaborator, Rosalie Rayner, is shown with Little Albert before he was conditioned to fear the rat.

Photo: Archives of the History of American Psychology, University of Akron, Akron, Ohio
Applications to Daily Life

- Pets
- Baby in the Doctor’s office
- Conditioned fears and phobias
- Vicarious conditioning
- Food aversions

- Use in principles of advertising

- POSITIVE EMOTIONS CAN ALSO BE CONDITIONED
Psychology Humor

- What did the sign on Pavlov's lab door say?
- Please knock. DON'T ring the bell.

- I hope you get this rather sad joke after this lesson
Operant Conditioning

- Learning based on the consequences of responding
- Law of Effect
- Operant Reinforcer: Any event that follows a response and increases its likelihood of recurring
- Response-Contingent Reinforcement: Reinforcement given only when a particular response occurs
- Positive Reinforcement: Stimulus that strengthens the response if it follows the response.
- Negative Reinforcement: An unpleasant stimulus—when removed—strengthens the response that removes the stimulus. For example, the loud tone or lights in your car go off when you put the seatbelt on.
Thorndike’s experiment on instrumental conditioning

![Graph showing the time required to escape (sec) over trials.](image-url)
Operant Conditioning

• BF Skinner Key Theorist of the Operant Model
Figure 9.9
The Skinner box. This simple device, invented by B. F. Skinner, allows careful study of operant conditioning. When the rat presses the bar, a pellet of food or a drop of water is automatically released. (A photograph of a Skinner box appears in Chapter 2.)
Another view of the Skinner box – with the shock Generator for negative reinforcement and punishment.
More Operant Conditioning Terms

- Punishment: Any event that follows a response and decreases the likelihood of it recurring.
- Shaping: reinforcement of successive approximations toward a target behavior.
- Extinction: Remove all reinforcers from a behavior and the behavior is likely to decrease or disappear.
Punishment

- Punishment: Present an unpleasant stimulus or remove a positive one.
  - Leads to a *decrease in behavior*.

- **Negative Reinforcement** versus **Punishment**
  - Negative Reinforcement: Strengthens behavior
  - Punishment: Weakens behavior
Figure 6.15

Positive reinforcement
- Response: Press lever
- Consequence: Rewarding stimulus presented (Food delivered)
- Effect on behavior: Tendency to press lever increases

Negative reinforcement
- Response: Press lever
- Consequence: Aversive stimulus removed (Shock turned off)
- Effect on behavior: Tendency to press lever increases
Types of Reinforcers

- Primary Reinforcer: Non-learned; satisfy biological needs. Food, water, sex
- Secondary Reinforcer: Learned reinforcer; money, grades, approval
- Token Reinforcer: Tangible secondary reinforcer e.g. money, gold stars, poker or casino chips
Schedules of reinforcement

Fixed-ratio schedule: Piece-rate work
- Rapid responding
- Post reinforcement pause
- High resistance to extinction
- High, steady rate
- No pauses

Variable-ratio schedule: Gambling
- Fixed-ratio schedule: Studying
- Long pause after reinforcement yields "scalloping" effect
- Lower resistance to extinction
- Fixed-interval schedule: Redialing
- Higher resistance to extinction
- Low, steady rate
- No pauses

Variable-interval schedule: Redialing
COGNITIVE LEARNING

- Higher level learning involving thinking, knowing, understanding and anticipation
- Latent Learning: Occurs without obvious reinforcement and is not demonstrated until reinforcement is provided
- Rote Learning: Takes place mechanically, through repetition and memorization, or by learning a set of rules
- Discovery Learning: Based on insight and understanding
Figure 9.22
Latent learning. (a) The maze used by Tolman and Honzik to demonstrate latent learning by rats. (b) Results of the experiment. Notice the rapid improvement in performance that occurred when food was made available to the previously unreinforced animals. This indicates that learning had occurred, but that it remained hidden or unexpressed. (Adapted from Tolman & Honzik, 1930.)
Modeling or Observational Learning (Albert Bandura)

- Occurs by watching and imitating actions of another person, or by noting consequences of a person’s actions
  - Occurs before direct practice is allowed

**Vicarious conditioning**: Type of observational learning where person is influenced by watching or hearing about consequences of others’ behaviors
Figure 6.19
Observational learning. In observational learning, an observer attends to and stores a mental representation of a model’s behavior (example: assertive bargaining) and its consequences (example: a good buy on a car). If the observer sees the modeled response lead to a favorable outcome, the observer’s tendency to emit the modeled response will be strengthened.
Model of Reciprocal Determinism

Motivating beliefs, perceptions, values, emotions, meanings

Environmental factors (reinforcers, punishers)

Behavior
Steps to Successful Modeling

- Pay attention to model
- Remember what was done
- Must be able to reproduce modeled behavior
- If successful or behavior is rewarded, behavior more likely to recur
- Bandura created modeling theory with classic Bo-Bo Doll experiments
  - Bo-Bo: Inflatable clown
Self-Managed Behavior

- Premack Principle: Any high frequency response used to reinforce a low frequency response
  - E.g. no GameBoy until you finish your homework
- Self-Recording: Self-management based on keeping records of response frequencies
- Behavioral Contract: Formal agreement stating behaviors to be changed and consequences that apply; written contract