

Chapter 7 - Operant Conditioning

Theories of Reinforcement



Theories of Reinforcement

- In the effort to answer the question, “What makes reinforcers work?”, researchers have developed some theories.
 - Drive reduction theory
 - The Premack principle
 - Response deprivation hypothesis
 - Behavioral bliss point approach

Hull-drive reduction theory

- If you are hungry and go looking for food and eat some, you will feel more comfortable because the hunger has been reduced.
- The desire to have the uncomfortable “hunger drive” reduced motivates you to seek out and eat the food

Hull-drive reduction theory

- Hull (1943) - Drive reduction theory
 - Biological needs (e.g., nutrients) lead to physiological drive states (e.g., hunger)
 - A stimulus acts as a reinforcer to the extent that
 - For example, food deprivation produces a hunger-drive that makes the animal seek out food – when food is obtained the hunger is reduced
- Example:
- If a hungry rat in a T-maze turns right and finds food, the behavior of turning right is strengthened because
 - Animals will repeat behaviors that produced stimuli that

Hull-drive reduction theory

- Drive-Reduction Hypothesis gave the first testable hypothesis of primary reinforcement
- Accounts for a number of facts about reinforcers
- Theory predicts that
 - Miller & Kessen (1952)
 - Trained hungry rats to go to a goal box in a T-maze
 - Group 1 =
 - Group 2 =
 - Results
 - Task learned best by
- Must be more to reinforcement than reduction of drives
- This type of approach may explain some behaviors (like sex) but not others (like playing video games)

Incentive Motivation

- Sometimes, we just do things because they are FUN!
- When this happens, we can say that motivation is coming from some property of the reinforcer itself rather than from some kind of internal drive
 - Examples include playing games and sports, putting spices on food, etc.

Premack Principle

- Premack (1965, 1971) – Premack Principle
 - We can use a behavior we love (_____) to reinforce a behavior we don’t like to do very much (_____).
 - Reinforcement is defined by
 - Any kind of response can reinforce behavior
 - He argued that we have a hierarchy of behaviors arranged according to
 - Can be conditioned to elicit behaviors lower on our *preference hierarchy* if the consequence is the opportunity to engage in behaviors higher on our preference hierarchy

Premack Principle

- Premack (1959)
 - Observed children with free access to a candy dispenser and pinball machine to determine which behaviors were preferred
 - Some children preferred playing pinball to eating candy, whereas the reverse was true for other children
 - Premack found that he could
 - For example, children who preferred candy could be conditioned to play pinball more if
 - Bobby, you can read those comic books once you have mowed the grass!
 - He also demonstrated that the opportunity to perform the less desired response (e.g., pinball) did not function to reinforce the more desired behavior (e.g., eating candy)

Premack Principle

- Premack also suggested that behavior preferences are not static
- Preferences are influenced by:
 - *Response deprivation*

 - *Response satiation*
- Response deprivation and response satiation experiments have shown that low probability behaviors can sometimes be used to reinforce high probability behaviors (e.g., Mazur, 1975)
- Limitation – need to know the probabilities of two behaviors to determine whether one can be used to reinforce the other

Response Deprivation Hypothesis

- Response deprivation hypothesis
 - A behavior can serve a reinforcer when

Example:

A rat runs in a spinning wheel for 30 mins per day (its preferred duration of running). If running time is restricted (e.g., 10 mins per day) it is unable to reach its preferred duration for that activity (response deprivation). The rat will likely be willing to work (e.g., lever press) to obtain more time on the running wheel.

– *Premack Principle* –

– *Response deprivation* –

Behavioral Bliss Point Theory

- The Response Deprivation Hypothesis makes an assumption that there is an optimal or best level of behavior that a person or animal tries to maintain
 - If you could do ANYTHING at all you wanted to do, how would you distribute your time?
 - This would tell you your “behavioral bliss point” for each activity or behavior

Behavioral Bliss Point Theory

- Behavioral bliss point theory
 - If free access to more than one behavior, the organism will

Example:

A rat prefers to run in a spinning wheel for 30 mins per day and explore a maze for 1 hour per day (optimal level of reinforcement).

- If performance of one activity is contingent on performance of the other, the optimum distribution may be unattainable.

Example:

The rat is required to do 2 minutes of spinning wheel running to receive 1 minute of maze exploration. In this case the rat will redistribute its activities in such a way as to maximise overall reinforcement (e.g.,

Behavioral Bliss Point Theory

- In other words, if you can do anything you want, you will spend time on each thing you do in a way that will give you the most pleasure
- This means that you can almost never achieve your “behavioral bliss point”
- So you have to compromise by coming as close as you can, given your circumstances
- Looking back on childhood--some don't want to leave it behind.