Respondent and Operant Conditioning

Presented by: Sunny Kim, Ph.D., BCBA

Respondent Behavior

- **Respondent behavior**: behavior that is elicited by antecedent stimuli

- **Reflex**: stimulus-response relationship

- Example:
  - Antecedent: Bright light
  - Respondent behavior: Pupil constriction

  - Antecedent: Heat
  - Respondent behavior: sweating

Respondent Conditioning

- Pavlov: Dog salivation experiment
  - **Stimulus-stimulus pairing**
    - Metronome and sight of food
  - **Unconditioned stimulus**
    - Food in mouth
  - **Neutral stimulus**
    - Sound of the metronome
  - **Conditioned stimulus**
    - Sound of the metronome
  - **Conditioned reflex**
    - Salivation at the sound of the metronome

Respondent Conditioning

Respondent Extinction

- **Respondent extinction**: conditioned stimulus is repeatedly presented without the unconditioned stimulus

- Example: metronome being presented without food

Operant Behavior

- **Operant Behavior**: any behavior whose <u>FUTURE</u> frequency is determined primarily by its history of consequences

- Operant behavior is selected, shaped, and maintained by consequences that have followed in the past

Operant Conditioning

- **Operant conditioning**: process and selective effects of consequences on future behavior

  - **Reinforcer**: a stimulus change that increases the future frequency of behavior that immediately precedes it

  - **Punisher**: a stimulus change that decreases the future frequency of behavior that immediately precedes it

Operant Conditioning

- Consequences can affect only future behaviors

- Consequences select response classes, not individual response

- Immediate consequences have the greatest effect

- Consequences select any behavior

- Operant conditioning can occur automatically

Reinforcement

- **Anything that occurs following a behavior that <u>increases</u> the likelihood of that behavior happening again**

- **Strengthens response-reinforcer relationship**

Positive reinforcement

- **Positive reinforcement:** response is followed immediately by the presentation of a stimulus change that increase future occurrence of similar response

$$R \rightarrow S^{R+}$$

Immediacy of Reinforcement

- Temporal relations between the behavior and its consequences that are on the order of a few seconds
  - Every second counts!
- Delay in the delivery of reinforcement can reinforce the wrong behavior
- Consequences that occur late does not strengthen (i.e., reinforce) the behavior
- Delayed consequences do not reinforce behavior, but when combined with language it can influence future behavior through instructional control and rule following
  - Learning to follow rules is one way that a person's behavior can come under the control of consequences that are too delayed to influence behavior directly

Reinforcement is Not a Circular Concept

- Reinforcement is not a circular concept
  - The response and consequence components can be separated
- Circular reasoning is faulty logic
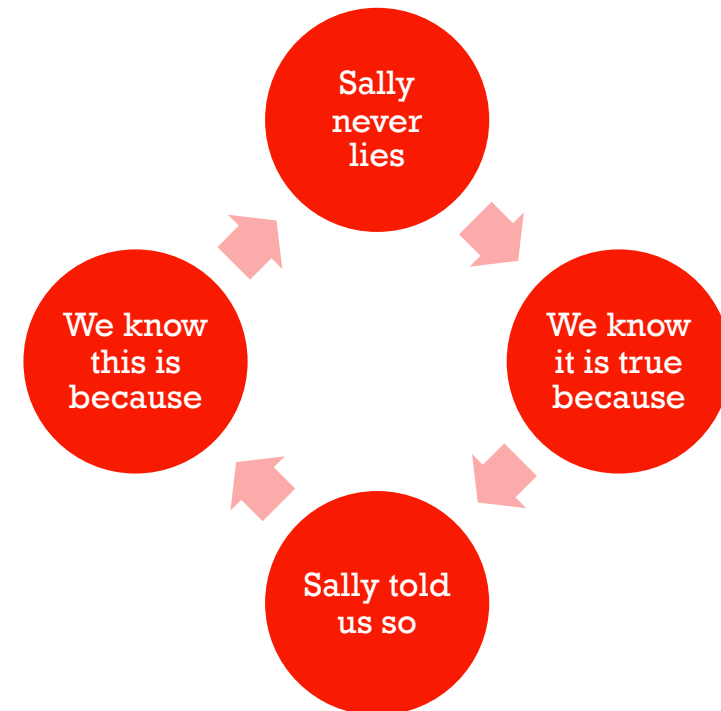
Reinforcement + Antecedent Stimulus Conditions

- Reinforcement changes the function of stimulus that immediately precede the reinforced behavior

- Reinforcement alters the S^D because the person learns to exhibit more behaviors under that stimulus condition

Role of Motivation

- MOs can momentarily change the effectiveness of any stimulus change (S^D), which can influence the person's behavior

- This is where EOs can impact the potency of the reinforcer

Arbitrariness of Behavior Selected

- Reinforcement strengths any behavior that immediately precedes it

- Conditioning takes place due to the temporal relation
  - Behavior occurs → reinforcement provided

Automaticity of Reinforcement

- The person does not need to understand, verbalize, or be aware that his or her actions/behaviors are being reinforced

Automatic Reinforcement

- Two definitions:
  - (1) Absence of social mediation
    - Behavior-stimulus change occurs without the presentation of consequences by other people
    - Sensory consequences
      - Feels good, sounds good, looks good, smells good, etc....
  - (2) Behavior persists in the absence of any known reinforcer
    - Persistent, repetitive movements, non-purposeful, and self-stimulatory behaviors
      - Hand flapping, body rocking, head rolling, etc....

Types of Reinforcers

- **Unconditioned Reinforcers**: No prior learning history

- **Conditioned Reinforcers**: Neutral stimulus conditioned to serve as a reinforcer through stimulus-stimulus pairing

- **Generalized Conditioned Reinforcers**: A conditioned reinforcer that as a result of having been paired with many unconditioned and conditioned reinforcers does not depend on the current EO for any particular reinforcement for its effectiveness.

Classifications of Reinforcers by Formal Properties

- Edible reinforcers
    - Food items
- Sensory reinforcers
    - Vibrations, tactile stimulation, flashing lights, music
- Tangible reinforcers
    - Toys, trinkets
- Activity reinforcers
- Social reinforcers

Using Reinforcement Effectively

- Initially, set an easily achievable criterion for reinforcement
  - E.g., "Each time you exhibit ____ behavior, you earn _____."
- Use high quality reinforcers of sufficient magnitude
- Vary the reinforcers to avoid satiation
- Use direct rather than natural reinforcement contingencies whenever possible
- Combine response prompts and reinforcement
- Initially reinforce each occurrence of the desired behavior
- Provide contingent attention and behavior specific praise
- Gradually increase the response to reinforcement delay
- Gradually shift from contrived to naturally occurring reinforcers

Video Example 1

Escape and Avoidance Contingencies

- **Escape contingency**: terminates an ongoing stimulus
  - E.g., turn off loud music, wear sunglasses when the sun is bright

- **Avoidance contingency**: prevents or postpones the presentation of a stimulus
  - E.g., not going to certain places to avoid someone

Characteristics of Negative Reinforcement

- Any response that terminates an aversive stimulation will be strengthened

- Negative reinforcement can account for the development of maladaptive behaviors

- Social negative reinforcement involves stimulus termination through the action of another person

- Automatic negative reinforcement involves stimulus termination as a direct result of a response

Applications of Negative Reinforcement

- Positive reinforcement is still heavily preferred/used or negative reinforcement

- Presentation of a task demand during instruction may function as an EO for escape
  - Escape behaviors may persist and may even escalate

- Extinction procedures for behaviors maintained by negative reinforcement means the client can no longer escape or avoid the demand/stimulus

Positive Punishment

- **Positive punishment**: response is followed immediately by a stimulus change that decreases the future frequency of that type of behavior.

$$R \rightarrow S^{P+}$$

Factors that Influence the Effectiveness of Punishment

- Immediacy of the delivery of the punisher
  - Quicker the better
- Intensity of punishment should be high
- Schedule and consistency of punishment
  - Each occurrence of the behavior should be followed by a punishing consequence
- Reinforcement for the target behavior is reduced
- Reinforcement is available for alternative behavior

Side Effects

- Emotional and aggressive reactions

- Escape and avoidance behaviors

- Behavioral contrast

- Modeling of undesired behavior

- Overuse of punishment caused by negative reinforcement of the punishing agent's behavior

Positive Punishment Interventions

- Reprimands

- Response Blocking

- Response interruption and redirection (RIRD)

- Contingent exercise

- Overcorrection

  - Resituational overcorrection

  - Positive practice overcorrection

  - Negative practice overcorrection

Guidelines for Using Punishment

- Select effective and appropriate punishers
  - Punisher assessment to identify least intrusive punisher
- If problem behavior consists of a response chain, punish the earliest part of the response chain
- Punish each occurrence of problem behaviors
  - If this is not feasible, switch over to intermittent punishment
- Supplement punishment with a reinforcement procedure for occurrences of desired behaviors
  - Differential reinforcement
- Record, graph, and analyze data on a daily basis

Ethical Considerations

- Provide NO harm
  - All interventions, especially the ones including punishment procedures, must ensure everyone's safety
  - Element treatments that may be degrading or disrespectful to clients
- Least restrictive interventions
  - Must try reinforcement procedures before considering punishment based approaches
- A client's right to effective treatment
- Develop procedures and safeguards when using punishment-based approaches
- Ensure all staff members are highly trained and qualified

Video Example 2

Negative Punishment

- **Negative punishment**: response is followed immediately by the removal of a stimulus that decreases the future frequency of that type of behavior.

$$R \rightarrow S^{P-}$$

Negative Punishment Interventions: Time-Out

- **Non-exclusion time-out**
  - Planned ignoring
  - Terminate specific reinforcer contact
  - Contingent observation
  - Partition/select space time-out

- **Exclusion time-out**
  - Participant removed from time-in setting
  - Time-in setting removed from participant

Desirable Aspects of Time-Out

- Ease of application

- Acceptability

- Rapid suppression of behavior

- Can be combined with other interventions

Using Time-Out Effectively

- Enrich the time-in environment
- Clearly define the behavior(s) that will lead to a time-out
- Determine the form and variation of time-out procedure to use
- Obtain permission from parent/guardian
- Explain the rules and procedures of the time-out
- Determine the duration of time-out
  - When can the client re-enter the time-in setting?
- Apply time-out consistently
- Evaluate effectiveness
  - Is the behavior increasing? Then the procedure may be reinforcing the behavior

Negative Punishment Interventions: Response Cost

- **Response Cost**: Response-contingent loss of a specific number of positive reinforcer that has the effect of decreasing the future frequency of similar responses
  - Constitutes a fine for exhibiting the problem behavior

- **Existing Cache Response Cost**: When a fine is imposed against a person's existing bank of positive reinforcers, the individual loses a specific number of positive reinforcers from a supply of currently available reinforcers.

- **Bonus Response Cost**: Additional reinforcers are given to the client, but contingent upon the problem behavior the reinforcer is removed

Desirable Aspects of Response Cost

- Effectiveness

- Least restrictive alternative

- Moderate to rapid decrease in behavior

- Convenience

- Can be combined with other interventions

Using Response Cost Effectively

- Deliver fines immediately

- Select the appropriate response cost method

- Ensure reinforcer reserve

- Avoid overusing response cost

- Collect data and review effectiveness

Unconditioned Reinforcement & Punishment

- **Unconditioned reinforcer**: stimulus change that can increase the future frequency without prior pairing with any other form of reinforcement
  - E.g., food, water, sexual stimulation

- **Unconditioned punisher**: stimulus change that can decrease the future frequency without prior pairing with any other form of reinforcement
  - E.g., painful stimulation that cause tissue damage