Learning Theory

Unit	5
Rev 1	
Rate	
Vocab 1	
Vocab 2	

3.1 - Classical Conditioning

▼ Learning

A relatively permanent change in an organism's behavior due to experience.

Learning is more flexible in comparison to the genetically-programmed behaviors of geese, for example. (Migration)

This is different than the learning you do when studying

▼ Pavlov's Experiments

Before conditioning, food (Unconditioned Stimulus, US (unlearned stimulus)) produces salivation (Unconditioned Response, UR (unlearned response)). However, the tone (neural stimulus (something that has doesn't nessacarily have effect on the response) does not.

During conditioning, the neural stimulus (tone) and the US (food) are paired, resulting in salivation (UR). After conditioning, the neural stimulus (now Conditioned Stimulus, CS) elicits salivation (now Conditioned Response, CR)

▼ Acquisition

The initial stage in classical conditioning in which an association between a neural stimulus and an unconditioned stimulus takes place. (Rescorla)

1. In most cases, for conditioning to occur, the neural stimulus needs to come before the unconditioned stimulus. (ex. Sound before food)
2. The time in between the two stimuli should be about half a second

▼ Extinction

When the US (food) does not follow the CS (tone), CR (salivation) begins to decrease and eventually causes extinction

▼ Spontaneous Recovery

After a rest period, an extinguished CR (salivation) spontaneously recovers, but if...

▼ Stimulus Generalization

Tendency to respond to stimuli similar to the CS is called generalization. Pavlov conditioned the dog's salivation (CR) by using miniature vibrators (CS) on the thigh. When he subsequently stimulated other parts of the dog's body salivation dropped.

▼ Stimulus Discrimination

Discrimination is the learned ability to distinguish between a conditioned stimulus and other stimuli that do not signal an unconditioned stimulus.

▼ Classical Conditioning Example

UCS ⇒ UCR

NS ⇒ CS ⇒ CR

UCS: Water

UCR: Flinching

NS: "Can"

CS: "Can"

CR: Flinching

Neutral Stimulus always becomes Conditioned Stimulus

▼ Watson and Little Albert

- US and UR?
  - US
    - Loud sound behind head
  - UR
    - Flinch
- NS?
  - White Rat
- CS and CR?
  - CS
    - White Rat
  - CR
    - Crying, Flinching
- Generalization and discrimination?
  - Generalization
    - Furry animals, rodents, small-moving objects
  - Discrimination
    -
- Extinction?
- Higher-order learning

Watson wants to teach Little Albert to be afraid

3.2 - Operant Conditioning

- Operant and Classical Conditioning

  Classical conditioning involves respondent behavior that occurs as an automatic response to a certain stimulus. Operant conditioning is active. Classical is passive

- Skinner's Experiments
  - Law of Effect

    Rewarded behavior is likely to occur again

    Pigeon pecks lever and food comes out. Pigeon is more likely to peck lever

    Animals change their behavior

- Shaping

  The operant conditioning procedure in which reinforcers guide behavior towards the desired target behavior through successive approximations.

  Dolphin flip. Keep rewarding dolphin as it gets closer to a flip

- Types of Reinforces

  Any event that strengthens the behavior it follows. A heat lamp positively reinforces a meerkat's behavior in the cold

  - Negative Reinforcement
    - Taking aspirin to relieve headache
    - Fanning yourself to escape the heat
    - Putting on a seatbelt to make car stop beeping
  - Punishment

    An aversive event that decreases the behavior it follows
    - Positive

      Spanking; a parking ticket
    - Negative

      Time-out from privileges; revoked driver's licence
  - Differentiating between Reinforcement and Punishment

    Does the consequence make the behavior more or less likely in the future?

▼ Punishment

Although there may be some justification for occasional punishment, it usually leads to negative effects

1. Results in unwanted behaviors
2. Conveys no information to the organism
3. Justifies pain to others
4. Causes unwanted behaviors to reappear in its absence
5. Causes aggression towards the agent
6. Causes one unwanted behavior to appear in place of another

▼ Primary and Secondary Reinforcers

▼ Primary Reinforcer

An innately reinforcing stimulus like food or drink

▼ Secondary (conditioned) Reinforcer

A learned reinforcer that gets its reinforcing power through association with th primary reinforcer

- Token Economy

▼ Ratio Schedules

▼ Fixed-ratio schedule

Reinforces a response only after a specified number of responses; piecework pay

▼ Variable-ratio schedule

Reinforces a response after an unpredictable number of responses. This is hard to extinguish due to unpredictability; (gambling, fishing)

▼ Interval Schedules

▼ Fixed-interval schedule

Reinforces a response only after a specified time has elapsed. (preparing for the exam only when the exam draws close)

- Variable-interval schedule

  Reinforces a response at unpredictable time intervals

- Cognition and Operant Conditioning

  Cognition Maps

  - Latent Learning

    Such cognitive maps are based on latent learning, which becomes apparent when an incentive is given

- Learning by Observation

  Higher animals, especially humans, learn through observing and imitating others

  - Mirror Neurons

    Neuroscientists discovered mirror neurons in the brains of animals and humans that are active during observational learning

  - Learned Helplessness

    - Contingency

      Identifiable relation between actions and response

    - Cognition

      How we explain relationship

    - Behavior

      quitting