20180122 COGS101b Lecture Notes

Cabinet COGS101b Lecture Notes

Classical Conditioning

Conditioning and Information Value

Information Value: The conditioned stimulus (CS) must be informative for learning to take place.

Blocking: failure to learn association between stimulus and outcome because of the presence of another stimulus that already predicts that outcome.

e.g. tone + light does not produce salivation because the tone already does that.

Co-occurence: Stimulus and outcome is not enough to produce a conditioned response, there must also be **contingency** between the stimulus and the outcome.

Latent Inhibition: A familiar stimulus is much harder to condition than a novel stimulus.

e.g. Exposing a dog to a bell before pairing with food makes it more difficult to turn the bell into a Conditioned Stimulus.

Temporal Arrangement

- Delayed conditioning: NS precedes US with some overlap
    - Bell precedes feed, with some overlap.
    - A neutral stimulus (NS) that will become a conditioned stimulus
    - Tends to work best

- Trace conditioning: NS precedes US, gap between
    - Almost as good as Delayed as long as the gap is not too long.

- Simultaneous Conditioning: NS and US completely overlap
    - Doesn't work very well

- Backward Conditioning: NS follows US
    - This is the least likely to turn into a conditioned stimulus because there is no information value in the bell, unless there is some biologically relevant stimuli.
    - e.g. Showing images of snakes to rat *after* they had been shocked.

Generalization and Discrimination

Little Albert: Kid that was conditioned by John Watson to fear white rats and similar objects by banging a gong anytime the rat was present. Died from tuberculosis 6 years after the experiment.

Generalization: When similiar stimuli evoke the same response as the conditioned stimulus

This is not necessarily evidence of phobias because the stimulus had to be presented many times. Also, the fear diminished with time. Phobias typically get stronger with time, also they are onset suddenly as opposed to repeated exposure.

Discriminiation: When only a specific (but not similiar stimuli) evoke a conditioned response.

Extinction

A conditioned response can be weakened and eliminated by presenting the CS without the US repeatedly.

Spontaneous recovery: The reappearance of a conditioned response after a reset period from extinction.

Classical Conditioning and Drug Overdose

Soemtimes a conditioned stimulus elicits a behavior that is identical to the unconditioned response, sometimes it elicits an unconditioned response that is different (dogs and food, rats and shock).

Prepatory-response theory: The purpose of the conditioned stimulus is to *prepare* the body for the unconditioned response in whatever way is most adaptive.

Compensatory response: An automatic response that is in a direction *opposite* to the effect of an expected stimulus

Heroine related cues (NS) → Heroine(US) → Decreased Blood Pressure (UR) → Increase in blood pressure (UR)

This happens because the body wants to return to homeostasis.

Eventually, this association forms:

Heroine related cues (CS) → Increase blood pressure (CR)

> The same amount of drug that would produce a mild effect in a familiar environment can produce overdose in a novel environment.

Operant Conditioning

A **respondent behavior** is an involuntary, reflexive type behavior that occurs in response to a stimuli, whereas an **operant behavior** is more voluntary and are controlled by their consequences.

Operant Conditioning: is a type of learning in which the future probability of a *behavior* is affected by its consequences. A behavior leading to positive outcomes will happen more; a behavior leading to negative outcomes will happen less.

See B.F. Skinner and Thorndike.

Operant Conditioning Chamber (Skinner box)

An apparatus used to study operant behavior in a very controlled way. The animal is taught to perform certain actions (e.g. pressing a lever, pecking at a key) in response to a certin stimulus (e.g. a light, sound). When the animal correctly performs the action a reward is delivered (or punishment is avoided).

Lever press → Food

Type of Consequences

- Defined entirely on their effect on a behavior

- A consequence is a **reinforcer** if it (1) follows a behavior and (2) the future probability of the behavior *increases*.
- A consequence is a **punisher** if it (1) follows a behavior and (2) the future probability of the behavior *decreases*.