20180119 COGS 101b Lecture Notes

Cabinet COGS101b Lecture Notes

The biological basis of learning

Constraints guide learning.

Learning involves thousands of permutations. In raw form, this would be too overwhelming for a biological organism.

To overcome this, there are in-born behaviors and biases towards particular learning.

Preparedness

Certain associations are learned more readily than others (instinctive tendencies).

- Animals hardwired to approach desirable outcomes, retreat from undesirable outcomes
- Learning will happen more readily for certain cues-consequences combinations
- Tasted aversions learned very quickly
- Phobias related to teh survival of "pre-technology man" are most common type"

See Garcia, Hawkins, & Ruiniak 1974:

It's harder to get rats to *avoid* food and *favor* shock.

Taste/Nausea aversion is particularly sensitive.

Non-associative Learning

Change in response to a stimulus that does not involve associating the presented stimlus with another stimulus or event such as a reward or punishment

“How relevant is the stimuli to the current situation?”

More relevant = Sensitization
Less relevant = Habituation

The Coolidge effect: Enhances sexual arousal in the males of some species when presented with non-habituated females.

Habituation

A **decrease** in the strength of a stimulus to elicit a response after repeated presentations.

Short term habituation: clock tick
Long term habituation: persistent noises like traffic, or dogs barking

Typically caused by low intensity stimuli.

Sensitization

An **increase** in the strength of a stimulus to elicit a response after repeated presentations.

Tends to generalize to many stimuli.

Typically caused by high intensity stimuli or if it is evolutionarily significant.

Classical Conditioning

Pavlov’s Procedure

1. The Unconditioned Stimulus (US) automatically causes an Unconditioned Response (UR)
2. The Neutral Stimulus (NS) causes no response
3. The Neutral Stimulus (NS) is repeatedly paired with the Unconditioned Stimulus (US).
4. The Neutral Stimulus (NS) becomes a conditioned stimulus, which evokes a Conditioned Response (CR).

Classical Conditioning Basics

Acquistion: the process of developing and strenghthening of a conditioned response

Asymptote of acquisition: AT some point conditioning becomes saturated and ceases to increase.

Acquisition happens more rapidly for:

- More instense US
- More rapid US

Conditioning and Information Value

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

See Kamin 1969:

Blockng: The failure to learn association between stimulus and outcome because of the presence of another stimulus tha talready predicts that outcome.

See Rescorla 1967:

If it is information value that matters, contingency should lead to conditioning, but co-occurrence alone shouldn’t

Associative Learning