

Classical Conditioning: Special Procedures

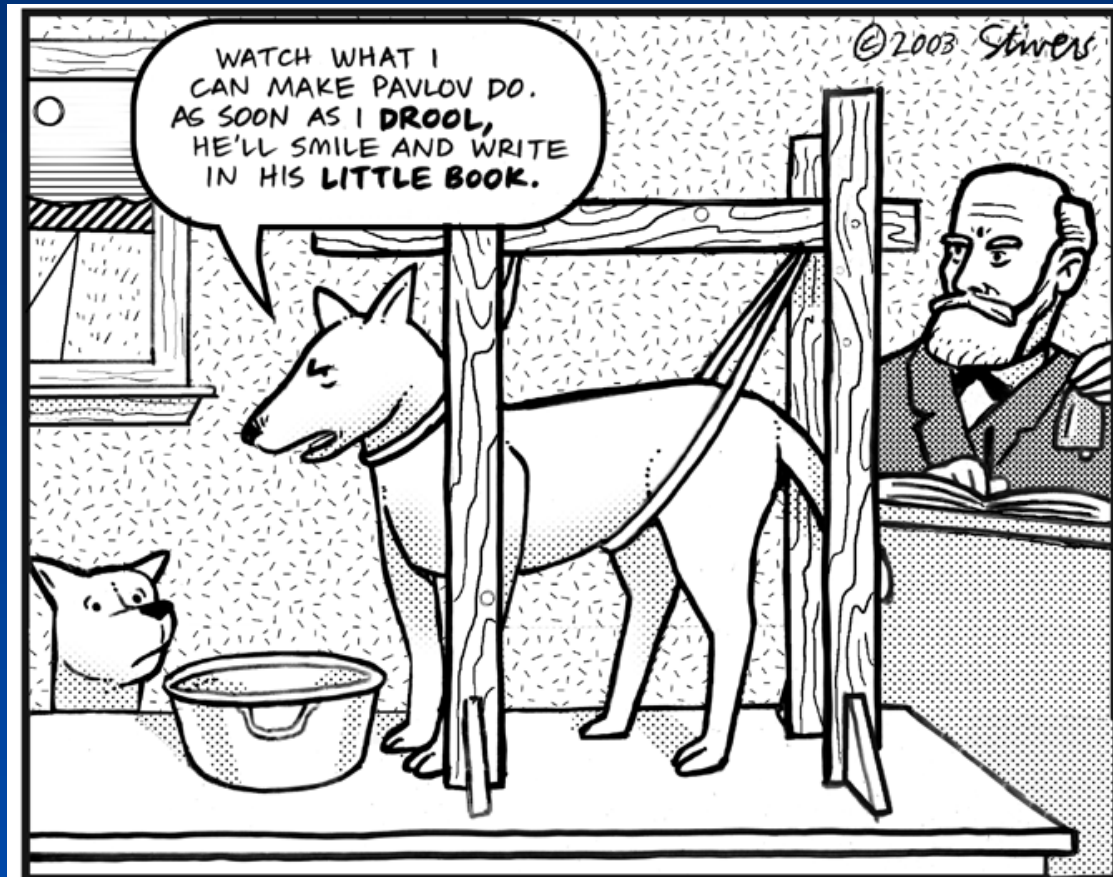
- Excitatory/ Inhibitory Conditioning
- Effects of experiences that precede ClassCon
 - Latent Inhibition
 - Higher-order Conditioning
 - Sensory Pre-conditioning
- Compound stimuli
 - Blocking
 - Overshadowing
- Timing

Excitatory/Inhibitory Conditioning

■ Excitatory Conditioning: CS+

■ NS -> presentation of US

E.g. bell -> food



Excitatory/Inhibitory Conditioning

- Inhibitory Conditioning: CS-
 - NS -> absence or removal of US
 - E.g. owner of scary dog is there -> dog doesn't bite
- Occasion setting: signals CS-US contingency
 - Presence or absence of stimulus affects CR
 - E.g. light: bell: food; no light: bell: no food
 - Light on -> salivation; light off -> no salivation
 - The Look-- :) or :(

Higher-order Conditioning

(aka **Second Order Conditioning**)

Metronome : Food $\xrightarrow{\text{US}} \text{UR}$ Salivation

CS CR
Metronome → Salivation

Light : Metronome $\xrightarrow{\text{CS}_1 \rightarrow \text{CR}_1}$ Salivation

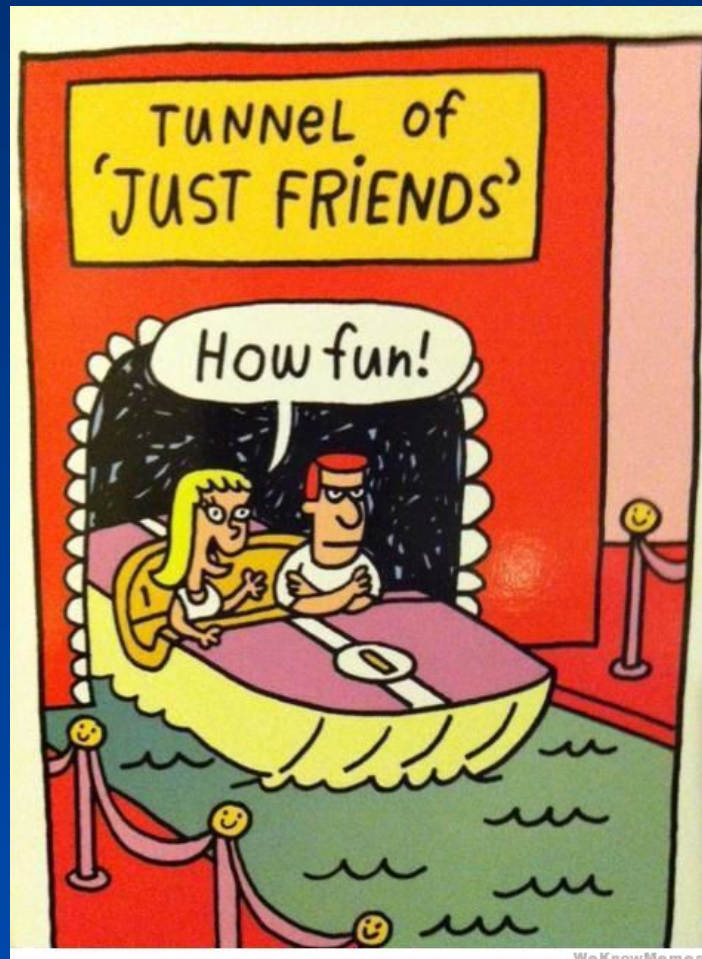
CS₂ CR₂
Light → Salivation

Higher-order Conditioning cont.

- Pairing a new stimulus with an established CS to elicit an established CR
 - The new stimulus becomes a CS_2 , and elicits a CR_2
 - CR_2 is usually lower in magnitude than the CR_1

Latent Inhibition (aka CS Pre-exposure)

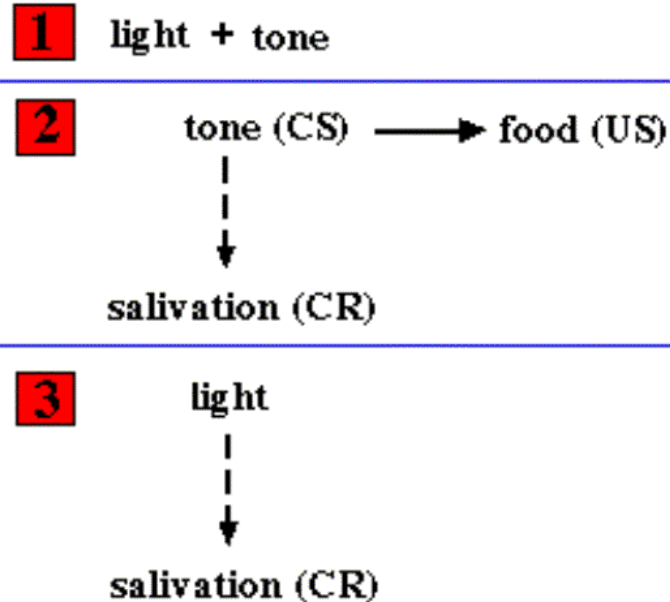
- novel stimulus more effective for conditioning
- Explanation for the dreaded 'Just a Friend' zone?



Sensory Pre-conditioning

- Like Higher-order Conditioning, stimulus becomes a CS even though it was never paired with US
- Difference: here, two stimuli paired before US was ever presented—neither had yet become a CS

Sensory Preconditioning



Compound Stimuli

■ Overshadowing:

- The stronger component of a compound stimulus becomes a CS, but the weaker component will not.
 - Gunfire + light tapping: candy -> salivation
 - Gunfire -> salivation
 - Light tapping -> no salivation

■ Blocking

- Presence of an established CS interferes with conditioning a new CS
 - Red light: candy -> salivation
 - Red light + green light: candy -> salivation
 - Green light -> no salivation

Similarities and Differences between...

- Higher Order and Sensory Pre-conditioning
- Overshadowing and Blocking
- Sensory Pre-conditioning and Blocking
- Higher Order and Blocking
- Latent Inhibition and Blocking

Timing of Classical Conditioning

- Delayed Conditioning: most effective
 - CS onset, US onset, CS offset, US offset
- Trace Conditioning: 2nd most effective
 - CS onset, CS offset, US onset, US offset
- Simultaneous Conditioning: not very effective
 - CS & US onset at same time
- Backwards Conditioning: least effective
 - US onset, then CS onset
- Predictive value (contingency) > contiguity!

Theories of Classical Conditioning

- Two Types of Theories
 - Type of Association Formed (S-S vs. S-R)
 - Nature of the CR
- Pavlov's Stimulus Substitution Theory
- Siegel's Compensatory CR Theory
- Rescorla-Wagner theory

Two Types of Theories

- Type of association formed as a result of classical conditioning
 - S-S (stimulus-stimulus)
 - S-R (stimulus-response)
 - Research emphasizes S-S associations more
- Form / Nature of the CR (eye blink, wing beats)

Pavlov's Stimulus Substitution Theory

- US stimulates a “US center” in the brain, which excites a “response center”
 - CS stimulates a different part of the brain than US
 - After pairings, CS-US neural connection made
 - CR should take form of UR: light-food: dog licks light
- Preparatory response theory
 - the form of the CR is dependent on type of S
 - Rat-shock: jump; light-shock -> light: freeze

Siegel's Compensatory CR Theory

- $US = \text{Drug} + \text{Primary effect of drug}$
 - Coffee example: $US = \text{Caffeine} + \text{Alertness}$
- $UR = \text{Response that } \underline{\text{opposes}} \text{ drug's primary effect}$
 - Coffee example: $UR = \text{Sleepiness}$
 - UR is a compensatory response
 - UR occurs after the drug's primary effect

Siegel's Compensatory CR Theory cont.

- The situation / environment in which you take your drug that always precedes your drug intake becomes a CS
 - Coffee example: Starbucks becomes a CS
 - $CR = UR$ (sleepiness); both are compensatory

Siegel's Compensatory CR Theory cont.

Another conditioning example:

[Beer Intake + Reduced HR (primary effect)] (US)

Bar Setting (CS) → Increased HR (CR)

- Note: CR occurs before primary effect
- Size of CR increases with training
 - Opposes 1⁰ effect more => drug has lesser effect
 - This is known as Chronic Tolerance

Siegel's Compensatory CR Theory cont.

Chronic Tolerance

- Results from learning association between drug intake & environment, NOT from repeated exposure to drug
- Depends on context of drug intake: situational specificity
- Context becomes CS & elicits compensatory CR

Rescorla-Wagner theory

- US supports limited amount of conditioning
 - Associative value distributed among CS' s
 - Stronger US' s support more conditioning
- overshadowing, blocking, over-expectation effect

Tone ($V = 0 \rightarrow 10$): Food ($\text{max}=10$) \rightarrow salivation

Light ($V = 0 \rightarrow 10$): Food ($\text{max}=10$) \rightarrow salivation

[Tone + Light] ($V = 10$) \rightarrow salivation ... Then:

Tone ($V=5$) \rightarrow salivation

Light ($V=5$) \rightarrow salivation

- Limits of love to give (as a classically Cond. Emo. R)?