



## Factors that Determine Whether a CR Will Develop

Psychology 390

Psychology of Learning

Steven E. Meier, Ph.D.

Listen to the audio lecture while viewing these slides

1

Psyc 390 – Psychology of Learning

### Contiguity

- The CS must precede the UCS by only a brief time period.
- In general the longer the delay between the CS and UCS, the poorer the conditioning.

2

Psyc 390 – Psychology of Learning

### CS Must Act as a Cue

- The CS must provide the most reliable information about the occurrence of the UCS over other stimulus cues that may be present in the environment.
- It must predict the UCS the best.
- Other cues can also prevent or block the development of the CR.

3

Psyc 390 – Psychology of Learning

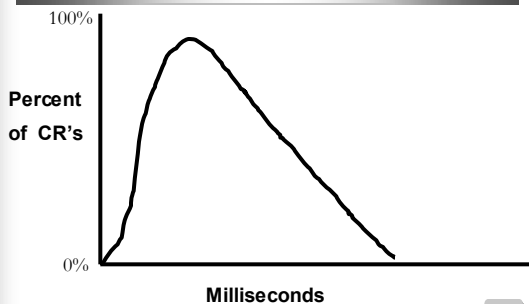
### Optimal Period for Learning

- Depends on the response
  - 450ms for eye blink dosure reflex
  - 2 sec for skeletal movements
  - 4 sec for salivary response
  - 20 sec for heart rate response.
- Why? Depends on the latency for responding in the particular reflex system.

4

Psyc 390 – Psychology of Learning

### Optimal Period for Learning



5

Psyc 390 – Psychology of Learning

### Exception

- Long delay learning
- Poison Based Avoidance Conditioning
- Can be several hours
- Why?
  - It is the association between stimuli

6

### Strength of the UCS

---

- In general, the stronger the UCS, the faster the conditioning.
- The stronger the UCS, the higher the level of the UCR.

7

### Strength of the CS

---

- While the strength of the UCS can significantly influence the CR, it does not always occur for the CS.
  - A stronger CS sometimes causes a CR increase.
  - A stronger CS sometimes does not cause a CR increase.
- Why?
  - When only get one CS may get a weak CR.
  - If give a weak and a strong CS, will get a greater CR to the strong CS.
  - Strong tone for 50 trials vs. weak tone for 50 trials.

8

### Saliency or Nature of the CS

---

- Stimuli will differ in their ability to become associated with the UCS.
- Some conditioned stimuli cannot become associated with the UCS.
- Saliency refers to the degree of associability of a particular CS to a UCS.
  - Salient stimuli become associated.
  - Nonsalient stimuli do not become associated.

9

### CS Delivery

---

- The CS must precede the UCS.
- No pairing will occur if the UCS occurs without the CS as often as it occurs with it (50/50 ratio of presentations).
- No CR will develop if the CS occurs without the UCS.

10

### Predictiveness

---

- Bolles
- Proposed that contiguity is not enough.
- The events must occur together before we get a CR.
- However, the CS must predict the UCS and not some neutral stimulus.

11

### Blocking

---

- Bolles suggested the cue must
  - predict the UCS.
  - also provide information not signaled by other cues in the environment.

12

### Kamin

---

- Demonstrated presence of predictive cues will prevent or block the development of an association with a second cue.

13

### Experiment

---

- Phase 1
  - Presented all rats a distinctive CS (light) paired with UCS (shock).
- Phase 2
  - Rats in exp. group received 8 pairings of light (CS1) and a second cue (CS2, a tone) and shock UCS.
  - Control group only received the tone with the shock but no light.

14

### Results

---

- Presented the light only
  - No bar press
- Presented the tone only
  - Rats continued to bar press (had no effect)
- Light became associated with shock but the tone did not.
  - Light blocked the tone
- Rats in experimental group continued to bar press but control group did not.

15

### Why

---

1. Presence of the light caused the experimental group animals to not pay attention to the tone.
2. When rats first experienced shock they were surprised. Surprise causes the rats to associate the light with the shock.

Later when present the light with shock, The animal is already surprised before the tone was presented.

16