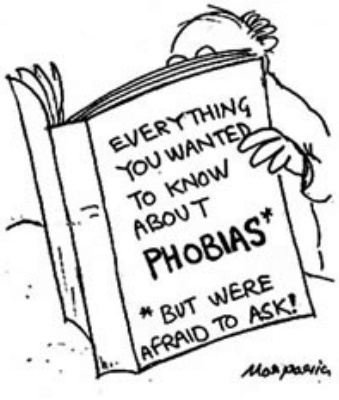
Chapter 5: Finishing up Classical Conditioning

Practical Applications of Classical Conditioning



Lecture Outline

- Underlying processes in Pavlovian conditioning
  - S-R vs. S-S learning
  - Stimulus-substitution vs. Preparatory-response theory
  - Compensatory response model
  - Rescorla-Wagner model
- Practical applications of Pavlovian conditioning
  - Understanding the nature of phobias
  - Treating phobias
  - Aversion therapy
  - Medical Applications

Practical Applications: Phobias

- Understanding the nature of phobias-(an adaptive response "run amok".
  - Phobias
    - Irrational fear of specific object or situation
    - Fear is disproportionate to real threat
    - *Overgeneralization* – conditioned fear to one event overgeneralises to other harmless events
  - Little Albert (Watson & Rayner)
    - Fear conditioning in 11-month old child
    - Presented with white rat (CS; no fear)
    - Paired presentation of white rat with loud noise (US)
    - After several CS-US pairings over several weeks Albert developed fear to rat (wouldn't touch it)

Practical Applications: Phobias

- Following several sessions conditioned fear of rat generalised to similar objects (e.g., cotton wool, Santa mask, fur coat)
- Fear persisted at 30 day follow-up (but diminished)
- Experiment depicted as phobic conditioning

– Limitations of Little Albert experiment in explaining phobias

Practical Applications: Phobias

- Additional factors in phobic conditioning
  - Not all phobias acquired through classical conditioning
  - Many unable to identify specific event
  - Other factors:
    1. Observational learning
    2. Temperament
    3. Preparedness
    4. History of control
    5. Incubation
    6. US revaluation
    7. Selective sensitisation

More Factors Affecting Conditioning

1. Observational learning
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   Example

   Mouse (CS) : Observe fear (US) → Fear (UR)

   Mouse (CS) → Fear (UR)
2. Temperament
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   - Genetically determined (even Watson thought this was important)
   - Pavlov (1927)
     - Shy, withdrawn, dogs conditioned more readily than active dogs

More Factors Affecting Conditioning

3. Preparedness
   - Species are genetically prepared to learn certain associations more easily than others
   - Predisposed to develop specific fears
     - Single trial learning
     - Resistant to extinction
     - Irrational (i.e., unaffected by cognitive influence)
     - Restricted to specific UC-US combinations
4. History of control
   - Having control lessens traumatic effects encountering scary stimuli
   - Mineka, Gunnar & Champoux (1986)
     - Monkeys who had control over food, water delivery were less fearful of toy monster than those monkeys who had no control over such events

More Factors Affecting Conditioning

5. Incubation
   - Conditioned fear responses can be strengthened by repeated, brief exposures to an aversive CR
   - Stronger fear response as a result of brief exposure to the US
   - Fear does not extinguish because of avoidance
   - When organism encounters CS, the contact is brief
   - Brief encounters → fear cannot extinguish → stronger fear
     - Ex. A child's fear of dogs or a teenage boy's fear of girls

More Factors Affecting Conditioning

6. UCS revaluation
   - Exposure to a US with a new intensity than used in conditioning can alter the intensity of the CR.
   - Dog Bite : Minor Pain → Slight Fear
   - Dog Bite → Slight Fear

   – Sometime later...
   - Snake Bite : Severe Pain → Strong Fear
   - Dog Bite → Strong Fear
   - Can also occur through observational learning

More Factors Affecting Conditioning

7. Selective sensitisation
   - Increase in reactivity to *potentially* stressful event following exposure to unrelated stressful event

Example

Minor fear of spiders becomes an extreme fear of spiders during an extremely stressful period in which the individual is going through a relationship break up. Stressful reactions to the end of the relationship generalise to other potentially aversive events.

Treating Phobias

- Systematic Desensitization (Wolpe, 1958)
  - A CS that elicits one type of response (e.g., fear) paired with another stimulus that elicits the opposite response (e.g., relaxation)
  - Counter-conditioning; Reciprocal inhibition
  - Procedure
    - Relaxation training (deep muscle relaxation; hypnosis)
    - Create of hierarchy of fears
      - e.g., start with image of spider 20 meters away progressively get closer and finally to touching the spider
    - Pair each item in the hierarchy with relaxation
      - e.g., start with imagining least fearful situation (15 s) then engage in relaxation; when fear is extinguished move to next most fearful situation
  - Imaginal or in vivo (visualising vs actual experience)

Treating Phobias

- Flooding
  - Prolonged exposure to feared stimulus allowing fear to extinguish (must be about 30-45 min or more)
  - Because avoidance is prevented fear can extinguish
  - Example

    Snake phobic individual presents to clinic. Treatment involves prolonged, inescapable exposure to the snake. The person will initially show considerable distress but with time the distress disappears when nothing bad happens in presence of snake.

  - Mainly in vivo but also imaginal

Treating Phobias

- Hybrid approaches
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  - Most commonly used practice for treatment of phobias
  - Öst (1989)
    - In vivo exposure
    - Ps asked to approach spider as close as possible
    - Remain until anxiety dissipates
    - Approach again etc.
    - Each stage proceeds when fear reduced by 50%
    - Of 20 Ps who underwent procedure 19 reported considerably less fear following 2.1 hours of treatment
    - 18 reported complete recovery at 4 year follow up

Treating problem behaviors

- Aversion therapy for eliminating problem behaviors
  - Reduces attractiveness of behaviors through association with aversive stimulus
  - Danaher (1977)
    - Rapid smoking procedure to eliminate smoking
    - Smokers in program required to inhale cigarette smoke every 6-10 seconds (many cigarettes)
    - Ps associate problem (pleasant) behaviour smoking with nausea
    - 1 session is typically enough to produce short-term abstinence (but large increases in heart-rate; ethics?)
  - Mainly in vivo but also imaginal (covert sensitisation)
  - Covert sensitisation less effective than in vivo
  - Also used for sex offenders (electric shock)

Medical Applications

- Allergic reactions
  - Example: smell of peanut butter (CS) elicits an allergic reaction (CR)
- Immune system functioning
  - Immunosuppression
    - Chemotherapy administered in a hospital setting
      - Example: sight of hospital (CS) lowers immune system functioning (CR)