Respondent Conditioning

Based on Pavlov's work on the salivary reflex in dogs
Also known as Pavlovian or Classical conditioning
Based on physiological responses to environmental stimulation
Contingency: Relationship between antecedent stimuli

Definition: Process whereby a previously neutral stimulus elicits a response due to pairing of the neutral stimulus with an unconditioned eliciting stimulus

Respondent Conditioning Paradigm

Before conditioning:
Unconditioned stimulus (US) → Unconditioned response (UR)
Meat powder → Salivation

During conditioning:
Neutral stimulus (NS) + (US) → Unconditioned response (UR)
Metronome + Meat powder → Salivation (UR)

Following conditioning:
Conditioned stimulus (CS) → Conditioned response (CR)
Metronome → Salivation (CR)

Extinction:
Repeated CS presentations → Disappearance of CR
Metronome → No salivation

An Example
Scenario: A patient goes to clinic to receive chemotherapy for cancer (the 4th session out of a 12-session course). As the patient enters the waiting room, she begins to feel nauseous and she vomits. Upon questioning, the patient says "I get queasy on my chemo day." This scenario recurs a few more times, until the patient drops out of therapy

Responses of interest:
Anticipatory nausea & vomiting
Dropping out of therapy

Anticipatory Nausea & Vomiting (ANV)

Initial therapy sessions:
Chemotherapy (US) → Post-chemotherapy nausea and vomiting or "PCNV" (UR)

But: A number of stimuli (NS) are paired with US
Eg: Wait room + chemotherapy → PCNV

Later therapy sessions:
See nurse (CS) → ANV (CR)
Wait room (CS) → ANV (CR)
Parking lot (CS) → ANV (CR)
Smell coffee (CS) → ANV (CR)
Perfume (CS) → ANV (CR)

Dropping out of Therapy

Antecedent Event	→ Response	→ Consequence
Chemotherapy day	→ Go to clinic	→ Chemotherapy (PCNV, ANV)
Chemotherapy day	→ Stay home	→ Avoid nausea (Sr-)

Respondent vs. Operant Conditioning

Similarities: Both processes involve
Learning produced by environmental contingencies
Responding controlled by antecedent stimuli

Difference between respondent and operant contingencies:

Respondent Conditioning: Pairing of antecedent stimuli (NS → US), one of which (US) already elicits a response, which produces: CS → CR

Operant Conditioning: Pairing of response and consequence (R → Sr), which occurs in presence of antecedent stimuli that may acquire discriminative properties, which produces: S^D → R → Sr

Whitehead, Lurie, & Blackwell (1976)

General Focus: To promote research on interactions between classical and operant conditioning

Specific Aim: To demonstrate a method for classical conditioning of decreases in human systolic blood pressure

Procedures

Participants: Exp (6 normal, 4 hypertensive), control (4 normal)
Apparatus: Tilt table with timer and bell

IV (US, CS):
- US: 15˚ downward head tilt
- CS: Timer noise + timer "ding" + tilt-table motor

DV (UR, CR):
- Systolic BP, measured via sphygmomanometer w/ light
- Measures taken once during each trial and once at end of ITI
- Note: Reported as mean BP (no individual data)
- Reliability?

Procedure: 90-min session, 3 BL trials, 30 conditioning/test trials

Baseline: 3 consecutive BP readings, taken 1 min apart

Conditioning/Test trials:
Exp: 15 CS+US conditioning trials interspersed with 5 CS-only test trials (1, 7, 11, 16, 20), then 10 CS-only EXT trials (21-30)
Control: 15 CS-only and 15 US-only trials, randomly presented

Experimental Design:
ABA (Exp only): CS-only trials during BL (A), conditioning (B), and EXT (A)
Multielement (Exp only): CS-only trials vs. ITIs during conditioning
Group design: CS-only trials for Exp vs. Control group

Results
BP (Normal Exp, Normal Control) < BP (Hypertensive Exp)
ABA comparison: CS-only trials: Conditioning < BL and EXT
Multielement comparison: During conditioning: CS-only trials < ITIs
Group comparison: CS-only trials: Exp < Control

Implications and Extensions

Major contribution: Rapid method for classical conditioning of systolic BP

Limitations:
- No data on individual performance
- No reliability data
- Small Δ- in BP (M = 4.35 mm Hg)

Extensions:
- Classical conditioning of other Rs: Heart rate, muscle tension, skin temperature
- Operant conditioning of BP and other Rs
- Clinical application