

## General Psychology Learning

### Only 3 things can be learned

#### Facts

Ebbinghaus (1850-1909)

1st to publish an article on measuring the intelligence of school children

1st to study memory experimentally

1st to study memory as it occurred

Found: What people already knew

1. Difficulty increases with length of list
2. Frequent repetitions needed to learn word lists
3. Serial position effect; first & last better than middle

Found: New findings

1. Difficulty and amount learned are not related one-to-one

Learning is linearly related to the amount of time spent on studying

2. Recall falls off rapidly, then more slowly

A very rapid forgetting in the first hour; flattens out at about 30% for first 2 days

People forget 90% of what they learn within 30 days

3. Recall better if learning is spaced out over small study times

Distributed practice is more efficient

Not necessarily perceived as fastest

Most efficient schedule for most any learning is one 1-hour session per day

Diminished returned at 2-hours; better but not as much bang for the buck

Virtually flat beyond 4-hours

4. Associations in list help

adjacent associated words very helpful

nonadjacent associations helpful

5. The best strategy for limiting the decline in recall is to “over learn” the material

Complete memory = can say it correct once

Savings = effort saved

Total time hypothesis

#### Pollyanna Effect

Tendency to remember positive words and images

Older adults recall fewer negative than positive images

The bias increased with age

#### 3 Types of distinctiveness

1. Primary Distinctiveness

Von Restorff effect = isolation effect

unusual item in middle of list

divides the list into two list

incongruent in current context

2. Secondary Distinctiveness

incongruent with past experience

1<sup>st</sup> day in college; 1<sup>st</sup> boyfriend-girlfriend; unusual spellings

3. Emotional Distinctiveness

Interrupted tasks: words form lists that were interrupted, plot of a novel while reading it

Doesn't allow closure

Which put first?

Most important first (primacy effect); serial recall

Most important last (recency effect); free recall

The importance of context

## Behaviors

Behaviors are the things we do

Ask, answer, bank, breathe, bob, belch, catch, cry, crawl, creep, dip, dive, drink, erase, elope, fight, flirt, gush, growl, grovel, hit, hide, hug, hustle, hurry, haggle, jog, jostle, jump . . .

## Pavlov

Reflexologist

skilled surgeon

studied reflexes; studied digestive reflexes

1904 Nobel Prize in Medicine

20 years studying digestive system

Associationism

First empirical model

Integrated reflexology and association

Pavlov's Experiment

Psychic secretion

Classical Conditioning

Forward Conditioning

CS before UCS

Bell before food

Works the best

50-60 trials

Simultaneous Conditioning

CS and UCS at same time

Bell and food together

Backward Conditioning

USC before CS

Food before bell

not very efficient

Temporal order of presentation of CS and UCS is important

Best conditioning: CS precedes UCS (forward)

Worst conditioning: UCS precedes CS (backward)

Interstimulus interval (ISI) between CS and UCS is important for conditioning

ISI's longer than 2 sec produce poor conditioning

Prior conditioning history is important

Latent Inhibition: Repeated exposure to a neutral stimulus alone (no UCS) makes it more difficult to use the stimulus as a CS in the future

Familiar ice cream taste is less likely to produce a CTA than a novel flavor

Blocking is the failure of a stimulus (light) to elicit a CR (salivation) when it is combined with a stimulus (bell) that already elicits the response (UCS is food)  
Size of stimulus is important  
Must be noticed to be conditioned  
Sensory systems expel irrelevant input

### John Watson (1878-1958)

The mind is a black box: contents are unknown  
S-R bonds  
Complex behaviors are aggregates of less complex habits  
based on the same principles of S-R bonds  
Applied Pavlovian conditioning to all behavior  
People are not good or bad  
They do good and bad behaviors  
All problems can be solved by changing behaviors  
Proposed a rehabilitation program for prison inmates  
Criminal behavior was antisocial behavior  
Change antisocial behavior to social behavior  
Called “experimental ethics”  
Not widely accepted  
1918, Watson and Rosalie Raynor  
Showed that fear is classically conditioned  
“Little Albert”  
Generalized that response to white fluffy toys and animals (stimulus generalization)  
Conditioning in humans follows same principles as animals

### Extinction

conditioned response decreases in frequency  
eventually disappears

### Spontaneous Recovery

no exposure to the conditioned stimulus  
reappearance of conditioned response  
after time has elapsed

### Stimulus Generalization

similar stimulus produces conditioned response  
similar to the original conditioned stimulus

### Generalization

If a response is conditioned to one stimulus, the organism may also respond to a similar stimulus  
Not to a dis-similar stimulus

### Elicit

CS (tone) comes to elicit salivation (CR)

### Conditioned Taste Aversion

If a flavor is followed by an illness experience, animals will avoid the flavor in the future

### Advertising

## B.F. Skinner (1904-1990)

### Approach

Elegantly simplistic theory

Functional analysis

1 subject at a time (laws of behavior must apply to every subject)

Internal structures are "fiction"

can't be directly observed

can't operationally define

can't systematically test them

Unnecessary to posit internal forces

personality and personality theories are superfluous

internal states (if they exist) are the by-product of behavior

Operational definitions

Clear definitions not open to interpretation

Didn't infer internal states (hunger, etc); # of hrs not eaten

Did not hypothesize drive, insight or any internal process

### Operant Conditioning

Also called instrumental conditioning:

Responses operate on the environment and are instrumental in receiving reward

3 Components

1. Antecedent condition

Circumstances that indicate when to respond

Discriminative stimulus

2. Behaviour

3. Consequence

The outcome, result of the behaviour

Reinforcement = positive outcome

Punishment = negative outcome

### Theory

Behavior is emitted from the organism

A consequence occurs

The organism adapts its behaviour accordingly

Focus on S-R-C (stimulus-response-consequence)

Not S-R (stimulus-response)

Rewards impact an entire class of behavior

Not a single response

Answering the phone

Types of Consequences

2 bi-polar dimensions of consequences

Posit and Negate

Reward and Punish

4 consequence conditions

Positive reinforcement

Positive punishment

Negative reinforcement

Negative punishment

## REINFORCEMENT

An environmental stimulus that occurs after the response and increases the likelihood that the response will occur in the future

Positive Reinforcement

Reward after behavior

Makes response more likely to occur in future

Negative Reinforcement

Sometimes called escape learning

Sometimes called avoidance learning

Behavior terminates an aversive stimulus

More likely to do behavior when in that situation again

Taking out trash to stop bickering

Removing impending doom

## 5 schedules of reinforcement

Continuous reinforcement (shaping)

Reinforcer is obtained for every response

Intermittent schedules:

Reinforcer is not obtained for every response

Fixed interval (FI) (scalloped)

Fixed ratio (FR)

Variable interval (VI) (resistant to extinction)

Variable ratio (VR) (very resistant to extinction)

Ratio Schedules

Fixed Ratio: Every Nth response

Variable Ratio: The average is every Nth response

Interval Schedules:

Fixed Interval: After the elapse of N minutes

Variable Interval: On average, after N minutes

Impact of Schedules of Reinforcement on Behavior

## Punishment

Punishment decreases a behavior

Temporarily

Has unwanted emotional consequences

## Types

Positive Punishment

Give an aversive stimulus (Positive)

Parent spanks a child for taking candy...

Owner swats a dog who has chewed her slippers...

Negative Punishment

Removal of a reward (Negative)

Teenager who stays out past curfew is not allowed to drive the family car for 2 weeks...

Husband who forgets anniversary sleeps on couch for a week...

## Difficulties with Punishment

- Learner may not understand which behavior is being punished
- Fear and emotional upset
- May not undo existing rewards for behavior
- Tends to be used when angry
- Models aggressive behavior
- Blocks behavior; doesn't change it

## Summary

- Rewards should be given differentially
- Parents should reward behaviors they want and ignore (extinguish) behaviors they don't want.
- Behavior can be shaped by rewarding successive approximations
- Practice without reinforcement doesn't improve performance.

## Concepts

- We don't carry facts with us
  - Too much storage space required
  - Look up the details when needed
- We carry general rules
  - Easy to carry rules
  - Can be applied to a wide variety of situations

## Schema

- Represent knowledge
- Experience with world; not abstract rules
- Active recognition devices
- Effort after meaning
- 3 Types of Schema
  1. Person schema
    - Consist of general knowledge and beliefs about other people's consistent traits and characteristics
  2. Self-schema
    - Consists of general knowledge that we believe to be true about our own personality traits, abilities, goals etc.
  3. Scripts
    - Contain generic information that people have about common, frequently occurring events
    - allow us to fill in missing details
    - allow us to anticipate events
    - Scripts = cultural assumptions

## Theories of Forgetting

1. Decay Theory
  - Would expect it to gradually go away
  - Ebbinghaus showed forget quickly
2. Interference Theory

Other information causes interference

Learn A

Learn B

Recall A

2 kinds of interference (McGeoch, 1932)

Proactive interference

Previous info impacts new

Retroactive interference

New info impacts old