University of Idaho

Schedules of Operant Conditioning

Psychology 390

Psychology of Learning

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Listen to the audio lecture while viewing these slides

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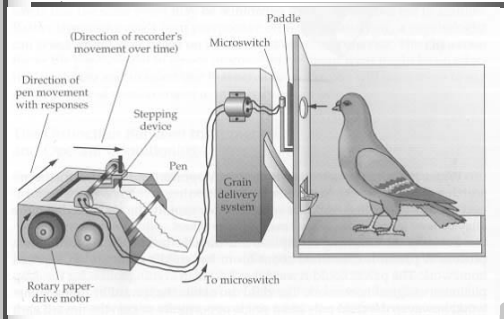
Operant Chamber

- Is a way we can measure responding
- Also called a Skinner Box

2

Operant Chamber



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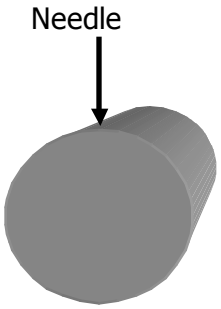
Operant Chamber



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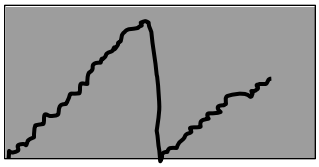
Result

- Responding Figure



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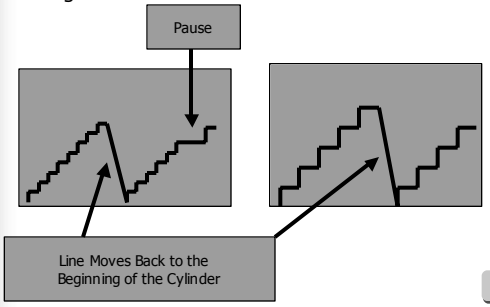
Rates of Responding

- High Rate
- Low Rate



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Types of Schedules

- Continuous
- Time and Response Schedules
- Differentiation

Continuous

- You reinforce the organism after every correct response.
- Get high rates of responding
- Get rapid extinction
- Can get rapid satiation if to much reinforcement is given.

Time and Response Schedules

- In the past were called partial schedules
- Two Types
  1. Ratio
     Based on number of Responses
  2. Interval
     Based on intervals of Time

Ratio Schedules

- Depends on the number of responses that occur before a reinforcer is given.
- Two types

Fixed Ratio (FR)

A reinforcer is given after a fixed number of responses have been emitted

5 widgets	get $10
5 widgets	get another $10
5 widgets	get $10

What schedule you are on = number of responses that are required before a reinforcer is given.

5 widgets per reinforcer = FR-5 schedule

Attributes

- Gives high rates of responding.
- If you get the schedule to thin (e.g., FR-2000) the organism will stop responding.
  - Called Ratio Strain
- Get rapid extinction at low levels.
- Begin with a low schedule then increase it gradually.

Note

- FR-1 is a continuous schedule

Variable Ratio (VR)

- A reinforcer is given after a variable number of responses have occurred.
- The number required for reinforcement changes every time.
  - 2 widgets get $10
  - 8 widgets get $10
  - 6 widgets get $10
  - 4 widgets get $10

Variable Ratio (VR)

The schedule you are on =
the number of responses divided by the number of reinforcers given.

e.g.
20 widgets / 4 reinforcers = VR-5 schedule.

Attributes

- Gives high rates of responding.
- Is very resistant to extinction.
- Does not suffer from ratio strain as much as FR schedules.

Interval Schedules

- Are based on time
- Two things must occur
  - A certain interval of time must elapse before
  - the organism can get the reinforcer.
  - The organism must make one response during the time interval to get the reinforcer.
- The first response the organism makes during the time interval is the one that is reinforced.
  Note: The number of responses emitted during the time block is irrelevant.

Fixed Interval (FI)

- A reinforcer is given for the First Response that occurs after a fixed period of time has elapsed.
- e.g. every 5 minutes a reinforcer becomes available.
- If the organism responds in the interval, they get the reinforcer. If they do not respond, they don't get the reinforcer.

Attributes

- Does not give the rates of responding that ratio schedules provide.
- The organism takes a break after receiving its reinforcement. Develops a scalping effect on the cumulative recorder.

Variable Interval (VI)

- A reinforcer is given for the First Response that occurs after a variable period of time has elapsed, but the time period changes every time.

  e.g.,

  3 minutes reinforcer is available
  7 minutes reinforcer is available
  2 minutes reinforcer is available
  8 minutes reinforcer is available

Variable Interval (VI)

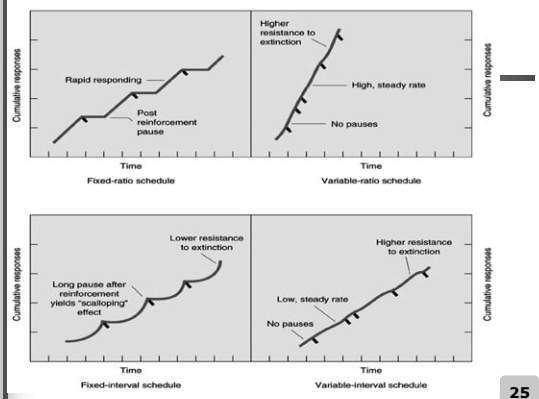
Schedule = Number of minutes divided by the number of time intervals where a reinforcer is available.

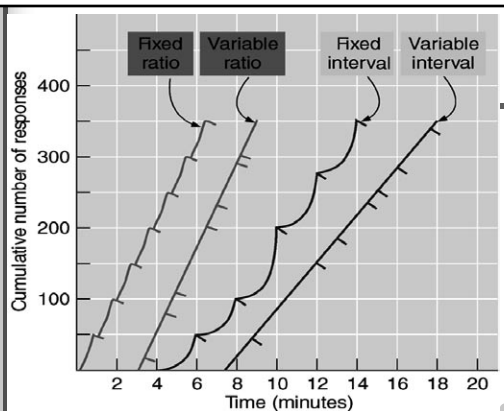
20 minutes / 4 reinforcers = VI – 5 schedule

Attributes

- Generally gives low rates of responding.
- But in academics, can give high rates of responding – studying behavior.
  - E.g., Pop exams throughout the semester.
- Is very resistant to extinction.

Attributes





Attributes

Differentiation Schedules

- Also called IRT schedules.
- Used where the reinforcer depends BOTH on time and and the number of reinforcers.
- Can be very effective in producing or reducing behavior.

Differentiation Rate of High Responding DRH

- Have to respond at a high rate within a certain amount of time.
- Example, your 25 page paper is due in two weeks.
- You work your tail off and get it in and receive an A.
- Is very effective - Get very high rates of responding.

Problem

Cannot make the level to high

If the organism does not respond enough, it will receive less reward and ultimately decrease the response rate.

Looks like an FI schedule.

Work hard, get paper in, then you take a break.

Differentiation Rate of Low Responding DRL

- Is designed to create low levels of responding during a particular time period.
- E.g., Don't want a child to act out in class.
  Give the kid a reinforcer when acting out responses are low during a particular time period.

  Will give low rates of responding.

Attributes

- Works well in applied settings.
  - Schools
  - Group homes
  - Other