

INSTITUTE OF PSYCHIATRY,
PSYCHOLOGY & NEUROSCIENCE

Module:
Psychological Foundations of Mental Health

Week 1:
Introduction to Cognitive Psychology



Professor Richard Brown

Topic 2:
The heyday of behaviourism:
Operant Learning
Part 3 of 3

1

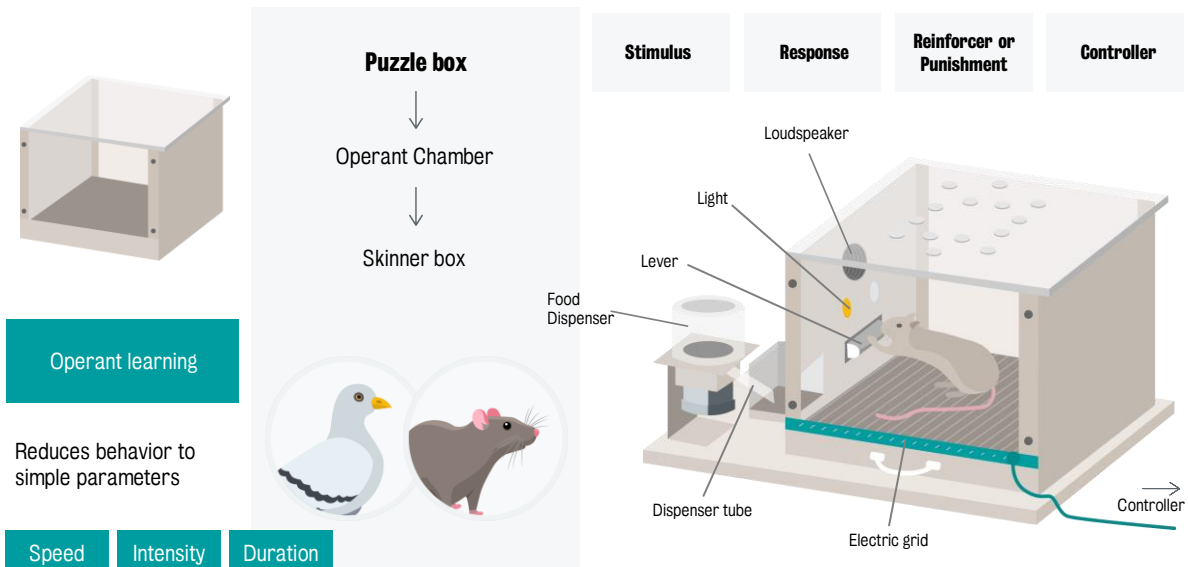
Measuring operant learning and behaviour



Click **Next** to continue

2

The operant chamber (Skinner box)



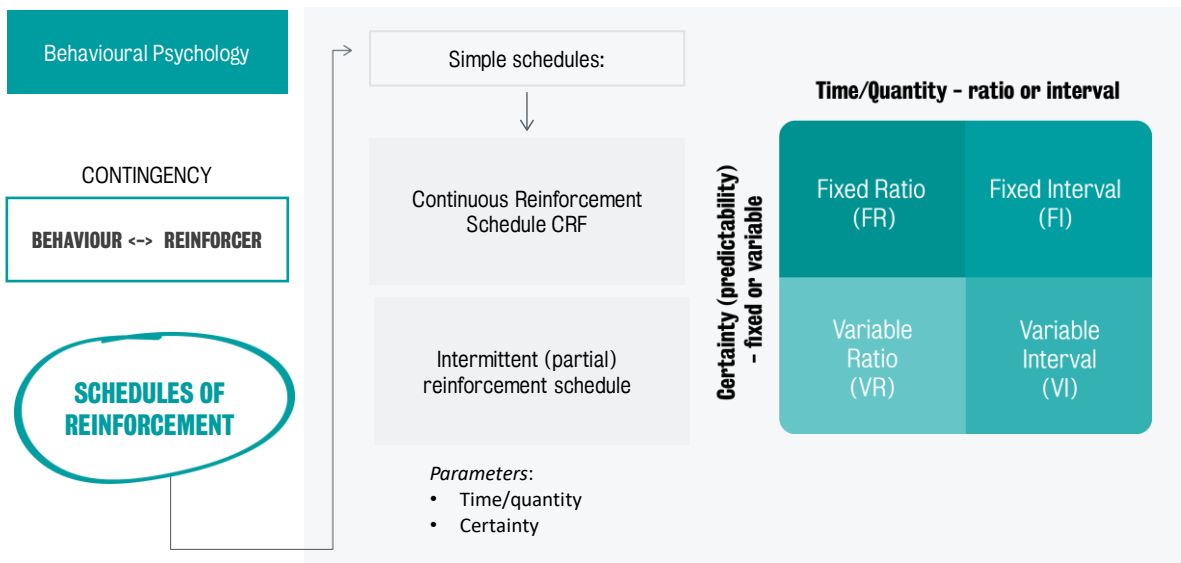
Week1 Introduction to cognitive psychology

Topic 2: The heyday of behaviourism: Operant Learning

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Reinforcement schedules (1)



Week1 Introduction to cognitive psychology

Topic 2: The heyday of behaviourism: Operant Learning

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Reinforcement schedules (2)

Take your time and review what has been discussed in the previous slide

- Continuous Reinforcement Schedule (CRF)
- Intermittent (ratio) schedules
 - Fixed Ratio (FR): every nth response (exactly)
 - Variable Ratio (VR): every nth response (on average)
- Intermittent (interval) schedules
 - Fixed Interval (FI): response every t minutes (exactly)
 - Variable Interval (VI): response every t minutes (on average)

Time/Quantity - ratio or interval	
Fixed Ratio (FR)	Fixed Interval (FI)
Variable Ratio (VR)	Variable Interval (VI)

If the gambling establishment cannot persuade a patron to turn over money with no return, it may achieve the same effect by returning part of the patron's money on a variable-ratio schedule.

- Skinner, *Science and Human Behavior*

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Skinner (1953)

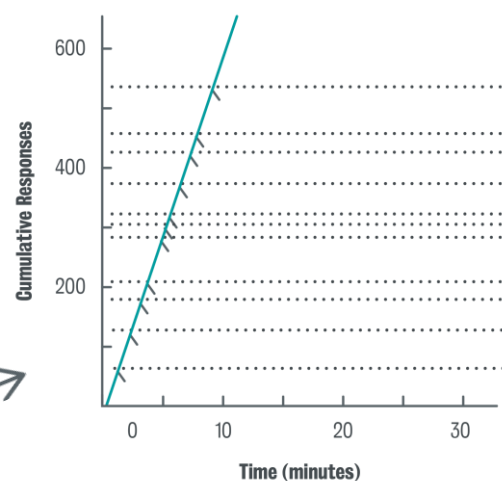
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How the reinforcement schedule affects behaviour

Reinforcement schedule

- Learning time
- Intensity and pattern of responding
- Persistence of learnt behaviour

Variable Interval Schedule

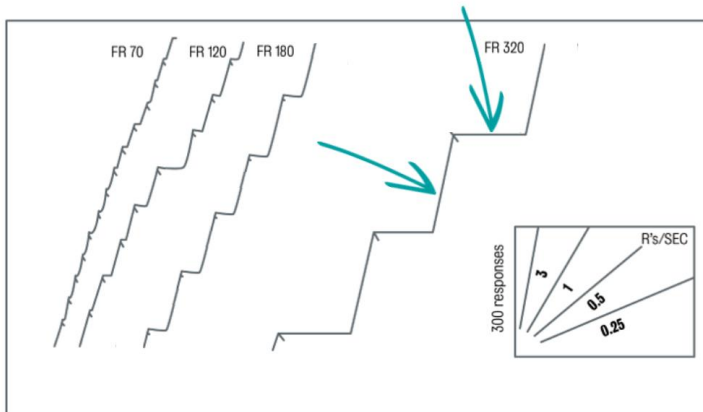


Skinner (1953)

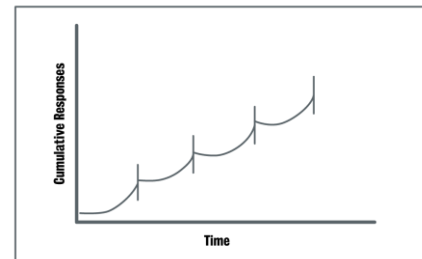
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Behaviour during fixed schedules

Fixed Ratio Schedules

**'Staircase pattern'**

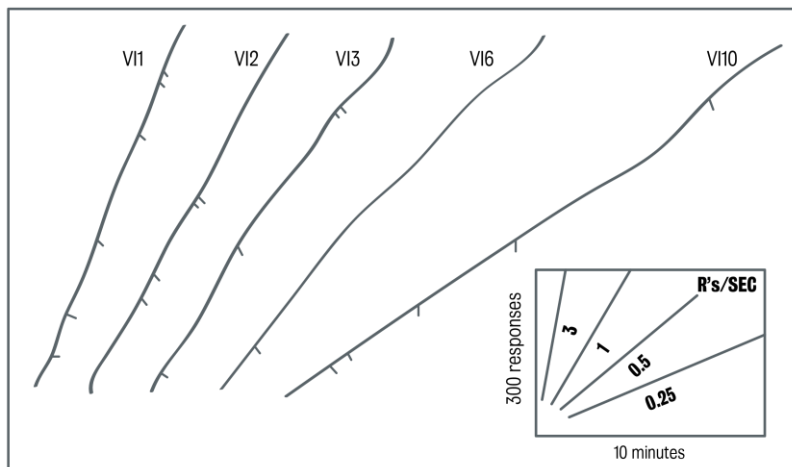
Fixed Interval Schedule

**'Scalloped'**

7

Behaviour during variable schedules

Variable Interval Schedules

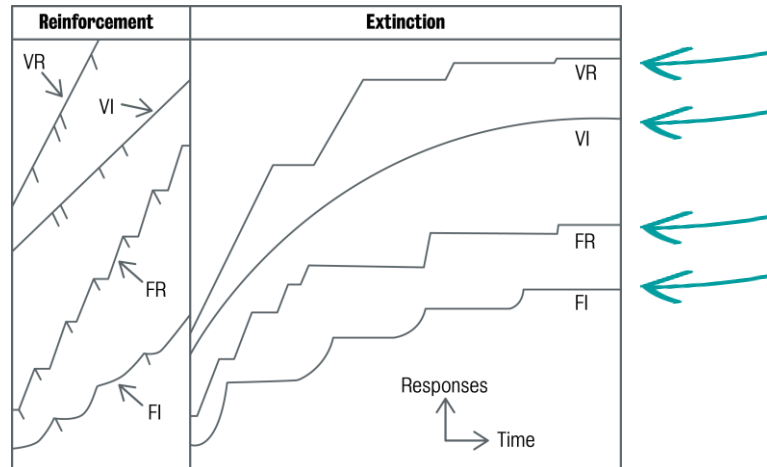


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Extinction

What happens when the response stops being reinforced?

- ✗ Forgotten?
- ✓ No longer useful?



Partial reinforcement extinction effect

Reynolds (1968)

Big Bang Theory - Sheldon uses operant methods to condition Penny's behaviour

SEARCH YOUTUBE FOR: Big Bang Theory, Season 3, Episode 3,
'The Gothowitz Deviation' © CBS

Try the Quiz

End of topic

References

- Kubaneck, J., Snyder, L.H. & Abrams, R.A. (2015). Reward and punishment act as distinct factors in guiding behavior. *Cognition*, 139: 154 -167.
- Reynolds, G.S. (1968). Induction, contrast, and resistance to extinction. *J Exp Anal Behav*. 11: 453-457.
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- Thorndike, E. L. (1911). *Animal intelligence*. New York: Macmillan.