

Module:
Psychological Foundations of Mental Health

Week 1:
Introduction to Cognitive Psychology



Professor Richard Brown

Topic 3:
The cognitive (r)evolution
Part 1 of 3

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This week, we will be looking at the following topics:

- Topic 1: Foundations of cognitive psychology from Plato to Pavlov
- Topic 2: The heyday of behaviourism: Operant Learning
- **Topic 3: The cognitive (r)evolution**

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Neobehavioural traditions of cognitive psychology



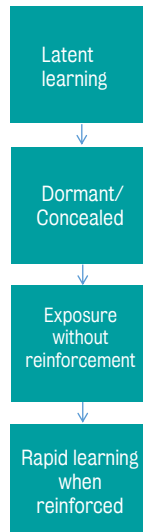
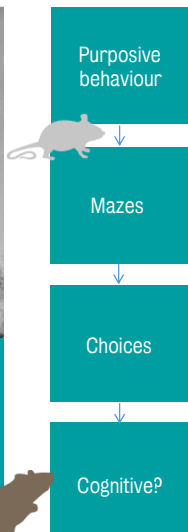
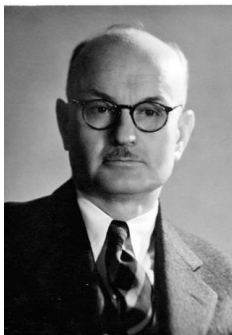
We will start by looking at some of the work coming out of behavioural research early in the 20th century that was already pointing to the limitations of radical behavioural theory.

This body of evidence, and schools of psychological thinking, existed at the same time as Skinner, and challenged some of the operant approaches. Some researchers argued for the necessity to consider the role of some unobservable and, for Skinner, unnecessary psychological constructs. These challenges did not all come from psychologists studying so-called higher human cognitive processes, but from animal behaviourists as well – sometimes called the neobehaviourists.

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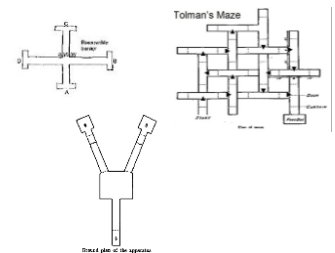
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Neobehaviourism



Latent learning
= Learning
without
reinforcement?

Challenge for
operant
conditioning
models



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Latent learning experiment (Tolman and Honzik 1930) (1)

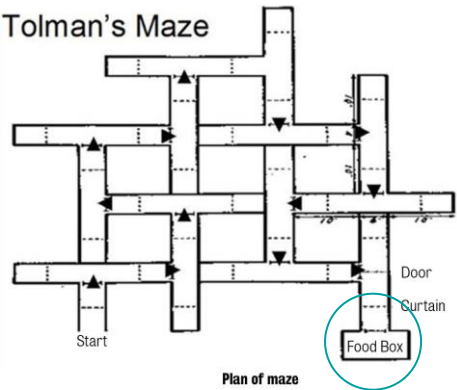
Support for idea of latent learning

3 groups of rats

Complex maze

Daily exposure for 17 days





Measure turns to reach food box (errors)



Tolman & Honzik (1930), Tolman (1948), Maguire, Woollett & Spiers (2006), Keller & Just (2015)

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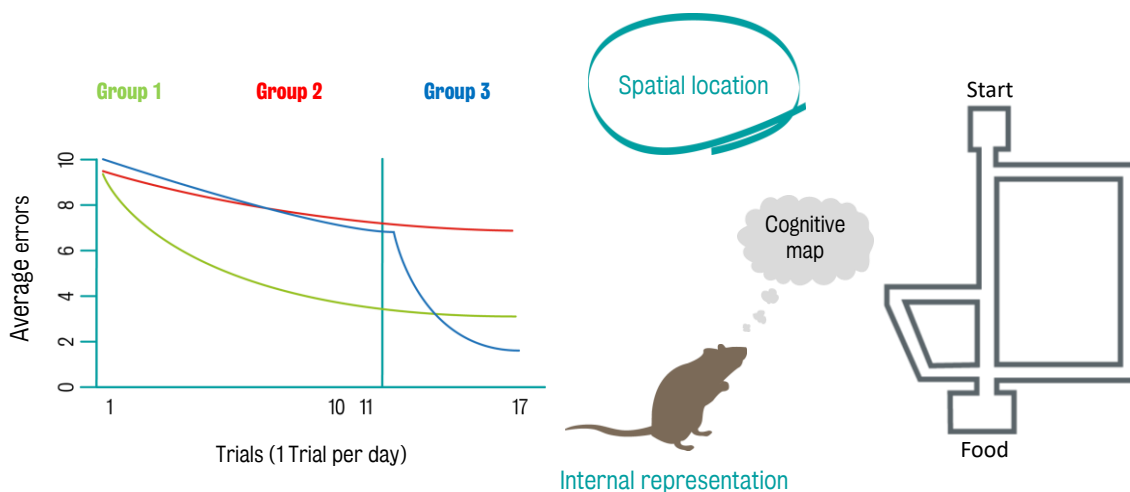
Latent learning experiment (Tolman and Honzik 1930) (2)

	INSIDE BOX	OUTSIDE BOX		
Group 1 (control group): Rewarded every time they reached the food box in the maze			“Standard operant learning” condition	Continuous reinforcement schedule
Group 2: Rewarded when removed from the maze			Reinforcement was not contingent on response	“No reward” condition
Group 3: Day 1-10: rewarded when removed from the maze Day 11-17: food in maze for rats to find	 Day 11-17	 Day 1-10	Main experimental group	“Delayed reward” condition

Tolman & Honzik (1930)

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Latent learning experiment (Tolman and Honzik 1930) (3)



Tolman & Honzik (1930)

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Cognitive maps in humans

Maguire et al (2006)

- Taxi drivers – learn to navigate
- Bus drivers – fixed route
- Larger hippocampus in taxi drivers

Keller & Just (2015)

- Structural changes in hippocampus after 45 mins learning
- Neuroplasticity

Tolman & Honzik (1930), Tolman (1948), Maguire, Woollett & Spiers (2006), Keller & Just (2015)

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Tolman's cognitive theory of learning

Skinner & Watson

Behaviourism

Tolman

Cognitivism

Wundt & Titchener

	Operant Model	Cognitive Model
What associations are learned in Latent learning?	S-R associations	S-S associations
What is role of reinforcement?	Establishing S-R associations	Expressing learned S-S association as behaviour
What is learned?	Response in sequence of S-R associations	Place of reward within 'Cognitive map'
Role of intervening variables	Incidental to model of learning	Central to model of learning

Input

Stimulus

Intervening variables

Input processes

Storage processes

Output processes

Response

Output

Transformation
Novel representation

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