

Week 4

Learning and Behaviour

The Nature of Learning

□ Learning

a relatively permanent change in
observable behaviour potential that results
from experience with the environment

Classical Conditioning

- ❑ Pavlov's dog experiments
- ❑ Unconditioned stimulus (US)
 - ❑ **food**
- ❑ Unconditioned response (UR)
 - ❑ **Salivation to food**
- ❑ Conditioned stimulus (CS)
 - ❑ **bell**
- ❑ Conditioned response (CR)
 - ❑ **Salivation to bell due to learned association with food.**

Classical Conditioning

□ Acquisition

- an *increase* in the intensity of the behaviour if the CS is presented alone

□ Extinction

- a *decrease* in the intensity of the behaviour if the CS is presented alone

Perceiving relationships Between Stimuli

Contingency

- the likelihood that the CS signals the US
- usually expressed in terms of a probability

Contiguity

- the timing of the CS and the US

Contingency and Contiguity Combined

- Forward conditioning
- Trace conditioning
- Simultaneous conditioning
- Backward conditioning
- Taste aversion

Extinguishing a Classically Conditioned Response

Extinction

the slow weakening and eventual disappearance of a conditioned response

Spontaneous recovery

Generalizing and Discriminating between Stimuli

- ❑ Stimulus generalization
- ❑ Stimulus discrimination
- ❑ “Little Albert”
- ❑ Generalization gradient
- ❑ Discrimination training

Applying the Principles of Classical Conditioning

Treatment of phobias

- counter conditioning
- systematic desensitization
- Treatment of drug addiction, bed-wetting, etc.

Operant Conditioning

□ Thorndike's Law of Effect

- responses that lead to positive outcomes are more likely to be repeated, while responses that lead to negative outcomes are less likely to be repeated

The Central Role of Rewards and Punishments

Reinforcement (Reward)

- a stimulus that increases the frequency of a response

Punishment

- a stimulus that decreases the frequency of a response

Positive and Negative Reinforcement

- Positive reinforcement

- operant is followed by the addition of some positive stimulus

- Negative reinforcement

- operant is reinforced by the removal of an unpleasant stimulus

Positive and Negative Reinforcement

Escape learning

- response removes an unpleasant stimulus

Avoidance learning

- response results in unpleasant stimulus not occurring

Positive and Negative Punishment

- Positive punishment

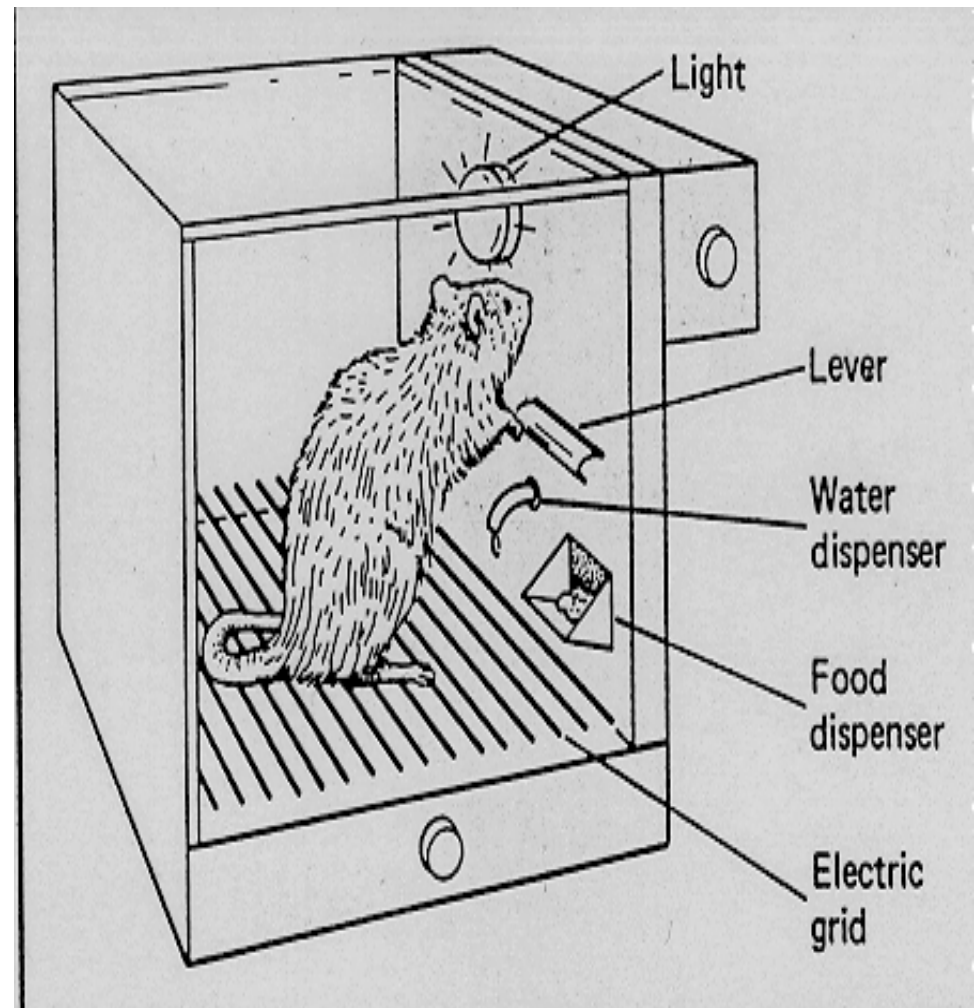
- emitted behaviour is followed with an unpleasant stimulus

- Negative punishment

- emitted behaviour is followed by the removal of some desired stimulus

Acquiring a Conditioned Operant Response

- Control the consequences of a behaviour by rewarding or punishing it
- Skinner Box



Acquiring a Conditioned Operant Response

Shaping

Successive Approximations

Extinguishing a Conditioned Operant Response

- ❑ A conditioned operant response that is no longer reinforced gradually decreases in frequency and eventually disappears
- ❑ Spontaneous recovery

Maintaining a conditioned Operant Response

- ❑ Schedules of reinforcement
 - ❑ fixed-ratio (FR) schedule
 - ❑ fixed-interval (FI) schedule
 - ❑ variable-ratio (VR) schedule
 - ❑ variable-interval (VI) schedule

Maintaining a conditioned Operant Response

- Stimulus control
- Discriminative stimulus
- Primary reinforcer
- Secondary reinforcer

Observational Learning

- ❑ Learning by observing others' behaviour
- ❑ Social learning theory
- ❑ Rewards and punishments in observational learning
 - ❑ vicarious reinforcement and punishment
 - ❑ intrinsic reinforcement and punishment

Practical Applications of Learning Principles

- Behaviour Modification
 - contingency management
 - token economies
- Aversive conditioning
- Punishment

Biological Considerations in Associative Learning

Prepared learning

learning what a particular kind of animal is biologically prepared to do

Instinctive drift

reversion to natural behaviours