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Lecture 6: The role of the discriminative stimulus in behaviour

S+ reinforces response

S- does not reinforce response

Discriminative stimuli

- usually discrete events e.g. lights, tones
- but can also be contexts, emotional states, the passage of time

Explanation of PREE

- CRF very distinguishable from extinction whereas PRF is less so
- CRF vs. extinction serve as distinguishable “markers”
- new learning facilitated by the different contexts

Extinction

- is not unlearning
- is new learning
- evidence for the original association re-emerges under some circumstances
- spontaneous recovery, reinstatement, rapid re-acquisition, renewal
- context plays a critical role - may act as a discriminative stimulus

Stimulus control

- discriminative stimuli control behaviour
- behaviour is observably different in the presence vs. the absence of a particular stimulus
- stimulus control is acquired through differential Rft
- a particular stimulus feature or stimulus dimension can control behaviour

Generalisation

- If Rft is delivered in the presence of a stimulus (S+) learning tends to generalise to similar stimuli
- response declines as stimulus gets less and less similar to the original stimulus

Discrimination

- discriminating between stimuli means behaving differently towards them
- applies in cases where the stimuli are easy to tell apart, as well as when the stimuli are confusable

Discrimination Learning

- organism cannot discriminate (sensory limitation)
- organism doesn't discriminate (lack of stimulus control)
- finer discriminations can be learned through Rft e.g. the difference between 2 shades of grey
- the content of what is learned is critical for generalisation and discrimination in similar situations

Transposition: Relational Learning

- evidence of learning a relationship between two stimuli
- preference for the darker shade of grey each time, even though the lighter shade in the next set is more similar to the original dark shade

Lecture 12: Choice and self control

Matching Law

$$\frac{B1}{(B1+B2)} = \frac{R1}{(R1+R2)}$$

B1, B2 - two behaviours performed at different rates

R1, R2 - rates behaviours are reinforced at

- the distribution of behaviour can be predicted by the history of the distribution of reinforcement

Reward Optimisation

- rational agents seeking to optimise long-term gains
- self control - delaying immediate gratification for a bigger longer-term reward
- impulsivity - forgoing a larger long-term reward for immediate gratification

Why do delayed rewards lose value?

1. Risk of losing reward
 - for each period of delay (D), there is a risk (r) that the reward (A) may be lost
 - this predicts an exponential curve
 - but behavioural data better fits a hyperbolic function
2. Expected transaction costs
3. Concave utility effects on reward

How can we increase self-control?

- make the immediate rewards less obvious
- distraction from the immediate rewards
- delay the immediate reward too
- make the longer term rewards or risks more salient

Environmental modification

- if your situation influences your behaviour, then modifying your environment will modify your future behaviour
- stimulus control
- distraction
- recommitment
- self-reinforcement

Paradox of choice 1

- we tend to focus on the immediate gratification of rewards rather than future rewards

Paradox of choice 2

- people believe that freedom of choice leads to happiness, but when put in situations people don't like making a choice
- people like being in a situation where they can make a choice but don't like choosing between an overwhelming amount of choices (choice paralysis)