PSY402
Theories of Learning

Chapter 11 – Cognitive Theories
Purposive Behaviorism

- **Tolman** – behavior is goal-oriented.
- Through experience we gain expectations about how to use paths and tools to achieve goals.
- We expect specific outcomes to follow specific behaviors.
- If unrewarded, we seek other ways to accomplish our goals.
Tolman’s View (Cont.)

- We do not have to be reinforced in order to learn.
- We must be motivated:
  - Motivation produces internal tension creating a demand for the goal.
  - Motivation determines what features of the environment will be noticed.
- Behavior is not fixed, automatic or stereotyped, but flexible.
Place-Learning Studies

- Demonstrate existence of spatial expectations.
- **T-Maze** – rat starts at different location but reward always in same end of maze.
  - Rats must turn different directions.
- **Alternate-path maze** – rats choose the shortest path after learning.
  - When blocked, take next shortest path.
Tolman’s Mazes

[Diagram of a maze with labeled sections and pathways]
Latent-Learning Studies

- Investigate whether reward is necessary for learning to occur.
- Three conditions:
  - R – always got reward at goal
  - NR – never got reward at goal
  - NR-R – rewarded only on last 10 days
- NR-R rats show rapid decrease in errors when rewarded -- motivation is needed for performance.
Latent Learning Results

The graph shows the average errors over days for two groups:

- Regularly rewarded
- No food reward until day 11
Problems with Latent-Learning

- Difficulty replicating results:
  - MacCorquodale & Meehl found 30 of 48 studies could reproduce the results.

- Motivation restricts attention to relevant cues. Irrelevant rewards are ignored.
  - No latent learning occurs when strong but irrelevant rewards are provided, even if they are relevant later.
Drive Response

- Consistent latent learning occurs when rats are not deprived initially.
  - Spence’s anticipatory goal response, \( r_G-s_G \) was created to explain this result.
  - The anticipatory goal response is formed but not apparent until there is deprivation to activate the goal.
- Handling animals may have been a reward for Tolman’s NR-group.
Expectancies

- **Expectancy** – mental representation of event contingencies.

- Dickinson – an expectancy contains two kinds of information:
  - **Associative link** between two events – classically conditioned, mechanistic.
  - **Behavior-reinforcer belief** – consequences of action, operant, intentional.
Testing Associative Links

- Two groups trained to bar press:
  - One group reinforced with sodium (Na)
  - Other group reinforced with potassium (K)
  - Both tested when deprived of sodium.

- Irrelevant incentive effect – sodium deprivation activated associative link for Na rats but not K rats.

- Could be due to beliefs not links.
Reinforcer devaluation effect – what happens if the reinforcer is diminished in value after training?

- One group got sucrose for bar-pressing and food regardless of behavior.
- Other group got food for bar-pressing and sucrose non-contingently.
- Sucrose devalued during testing.

Bar pressing was lower when the sucrose was behavior-contingent.
Importance of Disgust

- Devaluation is a two-stage process:
  - A disgust reaction is associated with the reinforcer (devalued by illness).
  - The reinforcer must be reexperienced.
- Devaluation of the reinforcer occurs when reexperience activates the associated disgust.
  - Studied using ondansetron – a strong anti-emetic (reduces nausea).
Importance of Habits

- Dickinson acknowledged that habits do exist and can control behavior.
- Expectancies (behavior-reinforcer beliefs) control actions before habits are established.
- **Behavioral autonomy** – control of responding by habit rather than expectancy.
  - Habit responds to devalued reinforcer.