Cognitive Factors in Learning
How/Why did Cognitive Learning Develop?

• Many behavioral psychologists could no longer ignore the thoughts, feelings, and expectations that existed in the mind
  – Why?
    • They (the thoughts, feelings, and expectations) affect observable behavior

• Important Figures: Edward Tolman, Wolfgang Kohler, and Martin Seligman
Tolman’s Rats

• 3 groups of rats, same maze
  – 1\textsuperscript{st} group: Each rat was placed in the maze and reinforced with food for making it out of the maze
  • This process was repeated until the rat could solve the maze with no errors
Toman’s Rats

• 2\textsuperscript{nd} group: Each rat was placed in the maze but not given reinforcement for completing the maze
• 3\textsuperscript{rd} group: Served as the control group (never reinforced)
Tolman’s Rats

- Until the 10th day, then the unrewarded rats (group 2) were given food rewards at the end of the maze.
- The unrewarded rats reached the end of the maze as quickly as the rats who had been getting reinforced for the entire 10 days!
Tolman’s Rats

- How did the happen?
  - Rats developed a cognitive map of the maze
  - While wandering for 9 days, the rats had learned the wrong turns, correct paths, and stored knowledge as a cognitive map
  - Knowledge was not demonstrated because there was no need to do so
  - Once the rats were reinforced, their understanding was evident
Latent Learning

• Tolman’s rats displayed Latent Learning
  – Learning (cognitive maps) that remains hidden until its application becomes useful…..until it needs to be demonstrated
Kohler’s Chimp

- Sultan (the chimp) had to get a banana that was placed just outside his reach when he was in his cage.
- Solved easily: tried to reach through the bars and then used a stick to rake in banana.
Kohler’s Chimp

• Problem was made more difficult
  – Banana was put out of reach of Sultan’s arm with the stick
• Another stick was placed in the cage that could fit together with the other stick to make a longer “pole” that could “rake in” the banana
Kohler’s Chimp

• Sultan realized the two sticks fit together after 30 minutes of staring….it just came to him

• This “Aha” moment is known as insight
  – The sudden perception of relationships among various parts of a problem, allowing the solution to the problem to come quickly
Seligman’s Dogs

• Seligman’s original intention was to study escape and avoidance learning
  – Tone was presented, followed by a harmless, but painful shock
  – Dogs were harnessed, so they were unable to escape the shock

• What would we assume from this experiment…..(think Classical Conditioning)
Seligman’s Dogs

- The dogs who had been conditioned were placed in a box with a low fence around it, along with another group of dogs who had not been shocked
  - Neither group was harnessed
  - Shock was administered

- Dogs who had not been conditioned jumped out of the box to escape the shock
- Dogs who had received the shock, however, didn’t even move when the shock began
Seligman’s Dogs

• Why would the dogs just sit there?
• Theory is called: Learned Helplessness
  – The tendency to fail to act to escape from a situation because of a history of repeated failures in the past