

Cognitive Psychology Exam 2 Study Guide Ch.7, 8,11,12 & intelligence

➤ Ch.11 Problem Solving

o **Components of problem solving:**

- Initial state
 - Describes the situation at the beginning of the problem
- Goal state
 - When you solve the problem
- Obstacles
 - The restrictions that make it difficult to proceed from the initial state to the goal state

Note: This is used when you want to reach a certain goal, but the solution is not immediately obvious. Requires you to go beyond the information you were given so you can reach a goal.

o **Problem-Solving Strategies:**

- Algorithm
 - Step by step procedure
 - Always produces a solution; sometimes inefficient
- Exhaustive Search
 - Try all possible answers; exhaust all possibilities
- Analogy approach
 - Using prior knowledge to see how current problem is similar to previous.
 - Using a solution to a similar, earlier problem to help in solving a new problem.
 - Example: Chess - compare board to previous experiences.
- Heuristic
 - General rule
 - Strategy in which you ignore some alternatives & explore only those that seem especially likely to produce a solution.
 - In other words, eliminate many absurd solutions to focus on those that make sense.
- Means-Ends Heuristic

- Divide the problem into sub-problems
- Try to reduce the difference between the initial state and the goal state for each of the sub-problems.
- Identify the “ends” you want and then figure out the “means” to reach them.
- Sometimes, you have to work backwards. Ex. Maze; chess.
- One of the most effective and flexible problem-solving strategies.

o **Insight Problem**

- Seems impossible until sudden solution appears; “aha”!
- Gets at ones ability to abandon their mental set to solve problem (example: 9 dot problem).
- Functional fixedness:
 - Due to overactive top-down processing
 - In many cases we have trouble coming up with a new way to use a tool.
- An insight test assesses one’s ability to overcome functional fixedness.
- Try to get you to think up a new/novel way to solve a problem- particularly with the unconventional use of tools.
 - Example: *Dunker’s Candle problem*

o **Creativity**

- Using novel solutions to problems.
- Example: Uses test
 - How many uses for a sock?
- Divergent thinking (production)
 - Another word for creativity
 - Measure in terms of number of different responses made to a test item
 - This is what the “uses test” measures

o **Motivation & Creativity**

- Intrinsic motivation
 - Motivation within ourselves
 - Work on a task for it’s own sake - interesting, exciting, personally challenging.

- People are more likely to be creative with this sort of motivation.
- Extrinsic motivation
 - External motives; rewards
 - Often produce less creative projects
 - Creativity can be enhanced if extrinsic factors provide useful feedback
- o **Persistence**
 - Expend effort on challenging situations despite failure
 - Effort in the face of frustration
 - Motivation in difficult or impossible situations

➤ Ch.12 Decision Making

- o **Decision Making**
 - Assessing and choosing among several alternatives.
 - Process of making a judgment based on prior knowledge.
 - We're not very good at making decisions.
- o **Dual Process Theory**
 - There are two types of processing to make a decision.
 - Type 1 processing:
 - Fast and automatic
 - Many people only use this type.
 - Type 2 processing:
 - Slow and controlled
- o **Heuristic**
 - General strategy we use in many cases to make decisions
 - Can be fraught with fallacies; subject to many biases
- o **Belief-Bias Effect**
 - Influence of prior knowledge.
 - When we make judgments based on beliefs & general knowledge rather than on the rules of logic.
 - People tend to make errors when the logic of a reasoning problem conflict with their prior knowledge.
 - *Example:* Feather & Window (scenario where feather breaks window doesn't make sense).