

## CSPB 3702 - Reckwerdt - Cognitive Science

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**Started on** Sunday, 24 September 2023, 10:24 PM

**State** Finished

**Completed on** Sunday, 24 September 2023, 10:35 PM

**Time taken** 11 mins 8 secs

### Question 1

Correct

Marked out of 1.00

Which of these situations most resembles the "\$300 bonus" scenario?

Select one:

- ☐ a. A man receives a bonus of \$100. He is then offered a gamble either to double his money or lose all of it based on the flip of a coin. He accepts the bet.
- ☐ b. A woman receives a bonus of \$100. She is then offered a gamble, based on the flip of a coin, either to win an additional \$10 or an additional \$20. She refuses the bet.
- ☒ c. A man refuses to pay more than \$200 for a ticket to a Broadway show. He acquires the ticket for \$200, and is then offered \$250 for the ticket. He turns down the offer. ✓
- ☐ d. A woman pays \$50 for a pair of gloves, finds she doesn't like them, and returns them for the promised money-back guarantee.

Your answer is correct.

### Question 2

Correct

Marked out of 1.00

In the reading on "prospect theory" from Kahneman's book, which feature of human valuation is most relevant to the \$300 bonus scenario?

Select one:

- ☐ a. People tend to be over-eager to engage in gambling scenarios.
- ☐ b. People are unpredictable when it comes to judgments about risk and reward.
- ☐ c. People place a higher value on small amounts of money than they do on large amounts of money.
- ☒ d. People's valuation function is asymmetric, placing a greater relative weight on loss than on gain. ✓

Your answer is correct.

## Question 3

Correct

Marked out of 1.00

Which of these sentences, referring to the distinction between judgment and problem-solving, is not true?

Select one:

- ☐ a. Problem-solving tends to involve effortful conscious search, whereas judgment is more reliant on (possibly unconscious) intuition.
- ☐ b. Problem-solving is an evolutionarily more recent task than judgment.
- ☒ c. People are in general exceptionally good at both problem-solving and judgment tasks. ✓
- ☐ d. Judgment tasks tend to involve more open-ended or common-sense scenarios than puzzle-like problem-solving tasks.

Your answer is correct.

## Question 4

Correct

Marked out of 1.00

The "\$300 bonus" scenario described in lecture illustrates which of the following properties of human judgment?

Select one:

- ☐ a. People, unlike computers, do not reason well with numbers.
- ☐ b. People tend to overvalue the true worth of a bonus.
- ☒ c. People are more reluctant to risk a loss than to gamble for a reward, even when the situations are objectively identical. ✓
- ☐ d. People tend to be over-eager to enter into situations involving gambling, regardless of whether they involve money or not.

Your answer is correct.

## Question 5

Correct

Marked out of 1.00

The "Economist subscription" example described in lecture illustrates which of the following properties of human judgment?

Select one:

- ☒ a. Human judgment can be manipulated by the way in which choices are presented. ✓
- ☐ b. Human judgment is unreliable when it comes to matters of assessing the attractiveness of people in photos.
- ☐ c. Human judgment is unreliable when it comes to matters of money.
- ☐ d. Human judgment obeys straightforward mathematical rules.

Your answer is correct.

## Question 6

Correct

Marked out of 1.00

Consider again the "\$300 bonus" scenario. In what important sense are the two alternative choices (one with a \$300 bonus, and one with a \$500 bonus) identical?

Select one:

- ☒ a. They both involve a choice between a sure \$400 and an even-money gamble between \$300 and \$500. ✓
- ☐ b. They both involve making a choice between a sure thing and a gamble.
- ☐ c. They both begin with the chooser receiving a bonus.
- ☐ d. They both involve gambling with money.

Your answer is correct.

## Question 7

Correct

Marked out of 1.00

Let's see if you can recognize another (famous) example of the "conjunction fallacy". Here's a description of Linda:

Linda is thirty-one years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear demonstrations.

Here are your choices – your job is to rank order them in terms of probability:

- Linda is a teacher in an elementary school.
- Linda works in a bookstore and takes yoga classes.
- Linda is active in the feminist movement.
- Linda is a psychiatric social worker.
- Linda is a member of the League of Women Voters.
- Linda is a bank teller.
- Linda is an insurance salesperson.
- Linda is a bank teller and is active in the feminist movement.

Which of these statements is *true*?

Select one:

- ☐ a. Problem-solving tends to involve effortful conscious search, whereas judgment is more reliant on (possibly unconscious) intuition.
- ☐ b. There is no conclusion to be drawn from these choices.
- ☐ c. Linda is most likely to be a teacher.
- ☒ d. Linda is more likely to be a bank teller than a bank teller who is active in the feminist movement. ✓ Linda is more likely to be a bank teller active in the feminist movement than a bank teller.

Your answer is correct.

Question 8

Correct

Marked out of 1.00

Many more people die annually of stroke than as a result of tornadoes; yet many people might find this surprising, since they are more afraid of tornadoes (from watching the nightly news) than stroke. Of which judgment phenomenon is this an example?

Select one:

- ☐ a. Ignoring regression to the mean.
- ☐ b. Ignoring base rates
- ☐ c. Anchoring
- ☒ d. Availability



Your answer is correct.

Question 9

Correct

Marked out of 1.00

Which of the following is *not* true of the concept of probability?

Select one:

- ☐ a. Many of the examples from the heuristics-and-biases literature involve probability in some way.
- ☐ b. The mathematics of probability is a relatively recent concept in human history.
- ☒ c. Probability is an easy concept to master.
- ☐ d. The idea of "probability" can admit of more than one interpretation by philosophers and mathematicians.



Your answer is correct.

## Question 10

Correct

Marked out of 1.00

The “decouple the metal rings” problem is difficult to approach via the same methods as (say) Rubik’s Cube. Which of the following reasons is most relevant to this difficulty?

Select one:

- ☐ a. There are very few people who are capable of solving the metal rings problem.
- ☒ b. It is hard to know, on inspection, what constitute the distinct “states” of the problem space. ✓
- ☐ c. Solving the metal rings problem does not require conscious thought, the way that Rubik’s Cube does.
- ☐ d. There are very few steps required to solve the rings problem.

Your answer is correct.

## Question 11

Correct

Marked out of 1.00

What is the likely conclusion to draw from the “bartender” example shown in lecture?

Select one:

- ☐ a. It is always difficult to reason logically about everyday situations.
- ☐ b. It is hard to draw any conclusions at all about this experiment.
- ☐ c. Every time people are presented with a logically equivalent problem, they respond the exact same way regardless of context.
- ☒ d. It is easier for people to reason about meaningful situations (in human experience) than it is to reason about abstract symbols. ✓

Your answer is correct.

Question **12**

Correct

Marked out of 1.00

Consider the statement "If the battery is out, the radio will not work." Which of the following is an example of the "Affirmation of the Consequent" logical fallacy?

Select one:

- ☐ a. The battery is not out, and thus the radio will not work.
- ☐ b. The radio is working, and thus the battery is not out.
- ☒ c. The radio is not working, and thus the battery is out.
- ☐ d. The battery is not out, and thus the radio will work.



Your answer is correct.

Question **13**

Correct

Marked out of 1.00

Among Polya's problem-solving heuristics is the suggestion "Look for a related problem that you know." Why might this be an interesting or challenging suggestion for a computational problem solving system?

Select one:

- ☒ a. Pursuing this heuristic would involve tackling the notion of similarities or analogies between various (superficially distinct) problems.
- ☐ b. There is rarely enough computer memory available to create a "repository" of problems.
- ☐ c. Most problems are one-of-a-kind, and aren't, in fact, related to any other problems.
- ☐ d. People do not in fact use Polya's heuristic for problem-solving.



This would be an interesting research project!

Your answer is correct.

Question **14**

Correct

Marked out of 1.00

The “rotating-quarters” problem is difficult to approach via the same methods as (say) Rubik’s Cube. Which of the following reasons is most relevant to this difficulty?

Select one:

- ☐ a. The problem is not well-defined enough to have a clear solution.
- ☒ b. Finding a solution appears to involve elements of mental imagery or mental simulation. ✓
- ☐ c. There are many ways to solve the problem; it’s not clear which one to use.
- ☐ d. The behavior of coins on a table involves a great deal of “common-sense” knowledge.

Your answer is correct.

Question **15**

Correct

Marked out of 1.00

The “Teddy Roosevelt” problem is difficult to approach via the same methods as Rubik’s Cube. Which of the following reasons is most relevant to this difficulty?

Select one:

- ☐ a. We can only answer the problem with a statement of probability; we can’t be certain of the answer.
- ☐ b. The problem is not well-defined enough to have a clear solution.
- ☒ c. There is a potentially (extremely) wide range of real-world or common-sense knowledge involved in answering the question; so the problem is not self-contained as many puzzles are. ✓
- ☐ d. The problem is given in words rather than mathematical equations.

Your answer is correct.

Question **16**

Complete

Not graded

Consider the "10 coins in three cups" problem given at:

<https://www.youtube.com/watch?v=jR2q88fONrc>

What might make this difficult to solve with a computational system?

\*\*\*\*NOTE: previous link was broken. You can try it now however, this question will have zero point value.

Select one:

- ☐ a. This problem is not well-defined enough to have a clear solution.
- ☒ b. A "standard" search program assumes a particular representation of the problem, while this particular problem involves finding a creative reconsideration of the problem statement itself.
- ☐ c. There is a tremendous amount of common-sense knowledge about (e.g.) coins and cups required to solve this problem.
- ☐ d. Since the problem can't be solved, a computer program is bound to fail at it.

Your answer is correct.

Question **17**

Correct

Marked out of 1.00

Consider the "monkey climbing a rope" problem given at:

<https://activityworkshop.net/puzzlesgames/monkey/index.html>

What makes this problem difficult?

Select one:

- ☒ a. The problem involves elements of physics knowledge and (most likely) mental simulation and imagery. ✓
- ☐ b. There is no solution to the problem.
- ☐ c. The problem involves an unavoidable degree of probability or uncertainty.
- ☐ d. The problem has an astronomically large problem-space representation.

Your answer is correct.



Question **18**

Correct

Marked out of 1.00

Consider the “sand timers” problem (Problem 4) at the following website:

<https://www.analyticsvidhya.com/blog/2016/07/20-challenging-job-interview-puzzles-which-every-analyst-solve-atleast/>

What can you say about this problem?

Select one:

- ☒ a. This problem seems, in fact, amenable to a “standard” problem-space representation, and to solution via search. ✔ Occasionally our standard methods work, thank heavens 8-}
- ☐ b. This problem involves an unavoidable degree of probability or uncertainty in its solution.
- ☐ c. This problem requires way too much common-sense knowledge about the behavior of (e.g.) sand inside a bottle.
- ☐ d. This problem involves a high degree of mental imagery and thus would be difficult for a computer program to solve.

Your answer is correct.

Question **19**

Correct

Marked out of 1.00

Consider the bowling-ball-and-ping-pong-ball problem shown in lecture. What makes this problem interesting for our purposes?

Select one:

- ☐ a. It requires a tremendous amount of common-sense knowledge (e.g., about collisions) to solve.
- ☐ b. The problem is too ill-defined to come up with a solution.
- ☐ c. One cannot know with certainty what will happen after a collision between the two balls – there are too many possible outside sources of interference.
- ☒ d. One can get an exact solution by solving the physics equations, but it's much easier to visualize a rough solution by making a reasonable approximation first. ✔

Your answer is correct.

## Question 20

Correct

Marked out of 1.00

Consider the following propositional logic statements:

i. IF (P AND Q) THEN R

ii. P OR (NOT S)

iii. NOT P

Which of the following statements cannot be derived from these three statements?

Select one:

☒ a. NOT R

✓ We know that (P AND Q) is false, but that doesn't imply that R is false.

☐ b. (NOT P) OR (NOT Q)

☐ c. NOT S

☐ d. NOT (P AND Q)

Your answer is correct.

## Question 21

Correct

Marked out of 1.00

Why is it potentially surprising that people find modus ponens easier than modus tollens?

Select one:

☐ a. Because people have very little trouble with logical rules in general.

☒ b. Because from the logical standpoint, they're essentially the same rule.

✓

☐ c. Because it is extremely hard for people to reason logically in any situation.

☐ d. Because people generally have more practice with modus tollens than they do with modus ponens in everyday life.

Your answer is correct.

Question **22**

Correct

Marked out of 1.00

Which of the following best expresses the meaning of a symbol like "P" or "Q" in propositional calculus?

Select one:

- ☐ a. It represents a statement whose truth might be undetermined as of now (e.g., "There will be a hurricane in Florida next month.")
- ☐ b. It represents a statement of probability (e.g., "It is 95% probable that it will rain today.")
- ☐ c. It represents a request or order (e.g., "Please close the door.")
- ☒ d. It represents a true/false statement (e.g., "Eleven is a prime number.")



Your answer is correct.

Question **23**

Correct

Marked out of 1.00

Consider the following propositional logic statements:

- i. IF (P AND Q) THEN R
- ii. P AND S
- iii. Q AND V

Which of the following statements cannot be derived from these three statements?

Select one:

- ☐ a. P AND R
- ☒ b. (NOT P) OR (NOT Q)
- ☐ c. R
- ☐ d. S AND V



Your answer is correct.