

2. Dr. Jones was doing a formal research study of the effect of mental imagery on memory. She randomly assigned students in the psychology course she was teaching into two groups and required them to complete the task as part of their coursework. Forty students were in each group. Each group was presented the same list of thirty word pairs (e.g., tree/book, house/street, friend/cat). Group A was told to form a mental image for each pair. Group B was not given that instruction. Each group was given two minutes to memorize the pairs of words. Dr. Jones then tested their recall of the list by giving each group the first word and asking them to remember the second word. Dr. Jones recorded the number of words recalled by each group and then debriefed the participants. The results are presented in the table below.

| | Group A | Group B |
|-------------------------------|---------|---------|
| Mean Number of Words Recalled | 25 | 10 |
| Standard Deviation | 4 | 6 |

- Identify the independent variable presented in the study.
- Identify the control group.
- Explain why the type of research design being used is appropriate for this study.
- Explain what the different standard deviations indicate about the data from the two groups.
- Explain the ethical flaw that is explicitly presented in the scenario.
- Explain how the primacy effect could apply to this research.
- Explain how levels of processing are related to this research.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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- *Damian has been using the same strategy for every level, until level 9, where his strategy no longer seems to be working. He must adjust his mental set about his game play to defeat the level.*
 - *Damian thinks that the hammer tool can only be used in one way, but if he uses it in a new way, he can win the level faster.*

Unacceptable explanations include:

- *Damian is set in his ways of thinking about the game.*
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Part B Damian's parents are concerned because Damian has been missing meals, has lost weight, and has made no effort to complete his college applications.

Explain how Damian's parents could use a behavioral approach to get him to apply to college using a fixed-ratio schedule. **1 point**

The response must indicate that Damian's behavior will be reinforced after completing a specific number of application-related behaviors.

Acceptable explanations include:

- *Damian's parents let him game for 1 hour if he writes 3 essays for his college applications.*
- *Damian's parents reward him with playing video games for every college application that he finishes.*

Unacceptable explanations include:

Responses that refer to a variable or interval reinforcement schedule.

- *Damian is rewarded sometimes after completing an application and sometimes after saying he will complete it.*
 - *Damian's parents reward him at the end of each week that he completes a college application.*
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Question 2: Research Design**7 points****General Considerations**

1. Answers must be cogent enough for the student’s meaning to come through. Spelling and grammatical mistakes do not reduce a student’s score, but spelling must be close enough so that the reader is convinced of the word.
2. A student can earn points only if the student clearly conveys what part of the question is being answered. It is possible to infer the part of the question being answered if it is consistent with the order of the question.
3. The response must apply the concept to the prompt; a definition alone will not earn the point.
4. Examples provided in the Scoring Guidelines for each of the points are not to be considered exhaustive.
5. Within a bulleted question part, a student will not be penalized for misinformation unless it *directly contradicts* correct information that would otherwise have earned a point. For example, if a response applies a concept in two contradictory ways (such as identifying both the measured variables as the independent variable or describing proactive interference as interference from both older and newer information), the point is not earned.
6. Within a bulleted question part, if the response addresses details from a scenario other than the one in the prompt, the point is not earned.

Dr. Jones was doing a formal research study of the effect of mental imagery on memory. She randomly assigned students in the psychology course she was teaching into two groups and required them to complete the task as part of their coursework. Forty students were in each group. Each group was presented the same list of 30-word pairs (e.g., tree/book, house/street, friend/cat). Group A was told to form a mental image for each pair. Group B was not given that instruction. Each group was given two minutes to memorize the pairs of words. Dr. Jones then tested their recall of the list by giving each group the first word and asking them to remember the second word. Dr. Jones recorded the number of words recalled by each group and then debriefed the participants. The results are presented in the table below.

| | Group A | Group B |
|-------------------------------|---------|---------|
| Mean Number of Words Recalled | 25 | 10 |
| Standard Deviation | 4 | 6 |

Identify the independent variable presented in the study.**1 point**

The response must indicate that the independent variable is the use of mental imagery or the instruction to use mental imagery.

Acceptable explanations include:

- *The independent variable is the students being told to form a mental image.*
- *The independent variable is mental imagery.*

Unacceptable explanations include:

- *The independent variable is the students.*

Identify the control group**1 point**

The response must indicate that the control group is the group that was not told to use mental imagery.

OR

The response must indicate that the group that did not receive the independent variable was Group B.

Acceptable explanations include:

- *The control group is the group not being told to form a mental image.*
- *The control group is Group B.*

Unacceptable explanations include:

- *The control group is Group A.*

Explain why the type of research design being used is appropriate for the study.**1 point**

The response must indicate that the design is appropriate because it is an experiment.

AND

The response must indicate that the design is appropriate because it is trying to show cause and effect.

Acceptable explanations include:

- *The only research design that shows a cause-and-effect relationship is an experiment, so that is why the researcher chose this.*
- *This design uses the experimental method because you can manipulate one variable (type of instruction) to affect another (remembering the words).*

Unacceptable explanations include:

- *The study was appropriate because the researcher used double-blind techniques.*
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Explain what the different standard deviations indicate about the data from the two groups.

1 point

The response must indicate that the scores in Group B varied more than the scores in Group A.

OR

The response must indicate that the scores in Group A varied less than the scores in Group B.

Acceptable explanations include:

- *The standard deviation from Group B is higher than in Group A, so the scores in Group B were more different from each other than those in Group A.*
- *Group A had scores that were more similar to each other than Group B.*

Unacceptable explanations include:

- *The standard deviations were different because Group A had more scores than Group B.*

Explain the ethical flaw that is explicitly presented in the scenario.

1 point

The response must indicate that the researcher required the students to participate.

Acceptable explanations include:

- *Participation should be voluntary.*
- *The researcher failed to obtain informed consent.*

Unacceptable explanations include:

Responses that indicate any other ethical flaws do not score.

- *The researcher needed to guarantee that no harm would come to the students in this study.*
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Explain how the primacy effect could apply to this research.**1 point**

The response must indicate that if the primacy effect took place, the students would remember more of the words they heard at the beginning of the list than they did from other parts of the list.

Acceptable explanations include:

- *If students remember more words at the beginning of the list, then they have demonstrated the primacy effect.*

Unacceptable explanations include:

Describing serial position effect alone is not sufficient.

Describing primacy and recency without **accurately** identifying primacy does not score.

- *The students remembered the words better if they studied them earlier.*

Explain how levels of processing are related to this research.**1 point**

The response must indicate that students who did better/Group A used deep processing or that students who did worse/Group B used shallow processing.

OR

The response must correctly relate mental imagery to deep processing.

Acceptable explanations include:

- *Students used mental imagery which allowed them to process the words deeply.*
- *The students who had no instructions did worse because they used shallow processing.*

Unacceptable explanations include:

- *The researcher was interested in examining how mental imagery helps people.*
- *The mental imagery group used semantic encoding and did better.*

Total for question 2 7 points