2006 AP® PSYCHOLOGY FREE-RESPONSE QUESTIONS

PSYCHOLOGY
SECTION II
Time—50 minutes

Percent of total grade—$33\frac{1}{3}$

Directions: You have 50 minutes to answer BOTH of the following questions. It is not enough to answer a question by merely listing facts. You should present a cogent argument based on your critical analysis of the questions posed, using appropriate psychological terminology.

1. Psychologists use a variety of research methods to study behavior. Three of the main research methods used are

   - Case study
   - Correlational study, and
   - Experiment.

   A. Discuss one advantage of each research method listed above.

   B. Discuss one disadvantage of each research method listed above.

   Pretend you are a psychologist who will use each of the three research methods—case study, correlational study, and experiment—to determine the effect of taking vitamin J on improving memory.

   C. For each method listed above, explain a key characteristic of the basic approach you could use to reach a scientific conclusion about the relationship between taking vitamin J and improving memory. You need not design a complete study.

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AP® PSYCHOLOGY
2006 SCORING GUIDELINES

Question 1

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- Experiment.

A. Discuss one advantage of each research method listed above.
B. Discuss one disadvantage of each research methods listed above.

Pretend you are a psychologist who will use each of the three research methods—case study, correlational study, and experiment—to determine the effect of taking vitamin J on improving memory.

C. For each method listed above, explain a key characteristic of the basic approach you could use to reach a scientific conclusion about the relationship between taking vitamin J and improving memory. You need not design a complete study.

General Issues

1. Answers must be presented in sentences, and sentences 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. Within a point, a student will not be penalized for misinformation unless it *directly contradicts* correct information that would otherwise have scored a point.
3. A student can only score points if the information is presented in the *context* of the question. For example, it must be clear to the reader that the student is discussing an advantage of case studies to score Point 1, or a key characteristic of a correlational study to score Point 8. The best way for a student to establish context is to explicitly state it (for example, "A disadvantage of experiments is..."). In the absence of such language, the reader may infer context if the paragraph structure or order of the answers makes the context clear. A student may embed an advantage or disadvantage within a definition.
4. Lists of subpoints throughout these scoring guidelines represent typical responses of students, but they are not exhaustive. There may be other ways to earn a point.
5. Advantages and disadvantages (Point 1 through Point 6) do not need to be *exclusively true* or *always true* for a method.
6. The student must establish the context of both vitamin J and its effects to score the key characteristics (Point 7, Point 8, and Point 9).
7. The point order represents the most common way students answered the question. Several other organizational strategies are possible. They all should be scored.

POINT 1: Case Study Advantages

Typical advantages of case studies include:

a. They provide in-depth, detailed information about the *case, person,* or *functional unit of persons* (family, organization, etc.) being studied.
b. They provide an opportunity to study unusual cases.
c. An argument related to *time* or *money issues, biasing factors, ethical considerations, stimulating future research,* or *an application to an applied setting* if the student explains it as a reasonable advantage of case studies (for example, "Studying a preexisting case may avoid ethical problems.").

Question 1 (continued)

NOTE: Do not score the point if the study is of a *topic of information* (for example, schizophrenia) rather than a person or a unit of persons.

POINT 2: Case Study Disadvantages

Typical disadvantages of case studies include:

a. Their results cannot be generalized (specific term not required).
b. They are prone to inaccurate reporting from whatever source the data are gathered.
c. They cannot be used to establish cause-and-effect relationships.
d. An argument related to *time* or *money issues*, *biasing factors*, or *ethical considerations* if the student explains it as a reasonable disadvantage of case studies (for example, "The researcher's conclusions may be biased by his or her feelings about a person being studied.").

POINT 3: Correlation Advantages

Typical advantages of correlational studies include:

a. They examine, test, reveal, compare, or describe a relationship between two variables. Do not score if the student only indicates *cause-and-effect relationships*.
b. They can be efficient, allow the researcher to collect lots of data, or save time and money.
c. They provide a way to make predictions about the variables.
d. They can be used to dispel illusory correlations.
e. They can utilize preexisting or archival data (accept "Participants may not be needed.").
f. An argument related to *biasing factors*, *ethical considerations*, *stimulating future research*, or *an application to an applied setting* if the student explains it as a reasonable advantage of correlational studies.

POINT 4: Correlation Disadvantages

Typical disadvantages or correlational studies include:

a. They cannot be used to establish cause-and-effect relationships or the direction of causal influence.
b. They are prone to inaccurate reporting (for example, on surveys).
c. They make it hard to assess the impact of additional variables. Accept any word (for example, intervening, confounding, lurking, third) that conveys the idea of an additional variable.
d. They do not allow for the active manipulation of variables.
e. An argument related to *time* or *money issues*, *biasing factors*, or *ethical considerations* if the student explains it as a reasonable disadvantage of correlational studies.

POINT 5: Experiment Advantages

Typical advantages of experiments include:

a. They may establish cause-and-effect relationships.
b. They emphasize the operationalization of variables, or the active manipulation of the IV (accept "variables"), or the accurate measurement of the DV, or the use of groups to facilitate comparison.
c. They stress the control of variables or the random assignment of participants to group. Do not score the point if the student wrongly identifies *random assignment* as *random selection* or *random sampling*.
d. They allow for implementation of double-blind or blind procedures.
e. They have high internal validity, or increased confidence that the IV influences the DV.
f. They allow the researcher to distinguish between placebo and real effects.
g. They may be replicated.

Question 1 (continued)

h. An argument related to *biasing factors*, *ethical considerations*, *stimulating future research*, or *an application to an applied setting* if the student explains it as a reasonable advantage of experiments.

POINT 6: Experiment Disadvantages

Typical disadvantages of experiments include:

a. They reduce external validity (accept the idea that experiments may be artificial or contrived).
b. It may be difficult to establish adequate control conditions or eliminate confounding variables (specific term not required).
c. There is a statistical possibility of bias despite the use of appropriate procedures (for example, "Groups may differ in significant ways despite random assignment.").
d. An argument related to *time* or *money issues*, *biasing factors*, or *ethical considerations* if the student explains it as a reasonable disadvantage of experiments.

NOTE: Do not score overly vague arguments like, "It's hard to recruit participants for experiments" or "Results can be confounded."

POINT 7: Case Study Key Characteristics

The effect of vitamin J on memory is explored with a study that emphasizes at least one of the following characteristics:

a. A study of one person or functional unit (family, organization, etc.).
b. An in-depth or intensive examination (using, for example, an interview, test, or observation) of records or information related to the person or unit being studied. Do not score if the in-depth or intensive examination is only in the context of a different research method.

NOTE: Single-subject designs are accepted as case studies when scoring this point.

POINT 8: Correlation Key Characteristics

The effect of vitamin J on memory is explored with a study that emphasizes at least one of the following characteristics:

a. Discussion of the relationship or correlation between vitamin J and memory.
b. An appropriate description of the collection of correlational data regarding both vitamin J and memory (for example, using surveys, archival data, naturalistic observation). Do not score if the only mention of data collection involves a manipulation of variables.
c. Description of a scatterplot to show the relationship between vitamin J and memory. A correctly drawn sketch of a scatterplot can be used to support (but not replace) the student's written explanation.
d. Measurement of vitamin J and memory without manipulation of vitamin J.

Question 1 (continued)

POINT 9: Experiment Key Characteristics

The effect of vitamin J on memory is explored with a study that emphasizes how at least one of the following characteristics could be employed:

a. Administration of vitamin J or the manipulation of the vitamin J variable.
b. *Random assignment* of participants to conditions. Do not accept random sampling as a synonym for random assignment.
c. Establishment or use of vitamin J, control, or placebo control groups.
d. Use of a double-blind or blind procedure.
e. Use of other procedures that allow for a controlled comparison (for example, matching participants or equating environmental conditions for groups).

NOTE: Do not score a reference to the discovery of a cause-and-effect relationship unless the student links it to one of the above characteristics.

AP® PSYCHOLOGY
2006 SCORING COMMENTARY

Question 1

Overview

This question was designed to test students' in-depth knowledge of research strategies, regarded by most psychologists as the heart of critical thinking training in this course. Students had to describe three different research methods to study the effects of vitamin "J" on memory: experimentation, correlational study, and case study. Students had to explain the distinguishing features of the basic approach and offer an advantage and disadvantage of each method.

Sample: 1A
Score: 9

The student earned point 1 in the first paragraph by describing a case study as being an observation of a person over an extended period of time. Point 2 was awarded because the student says that the results may not be generalizable to the population at large. The essay earned point 3 in the second paragraph when the student argues that a correlation allows us to show a relationship between two variables. Point 4 was awarded because the student says that this is also a disadvantage because it does not allow us to demonstrate a cause-and-effect relationship. Point 5 was awarded because the student describes the notion of experimental control and manipulation of variables. The student earned point 6 by describing lack of external validity when he or she states that the experiment may not always show up in the natural environment. Point 7 was earned when the student describes the case study in the context of vitamin J, and point 8 was awarded when the student describes the idea of looking for a relationship between memory and vitamin J. Finally, point 9 was awarded when the student describes using an appropriate experimental device (two groups, etc.) and places this in the context of vitamin J and memory.

Sample: 1B
Score: 5

This is a good example of an essay not written in the order that the question was written. Point 1 was not awarded because the student does not provide a unique characteristic of a case study. Point 2 was earned because although the student does not adequately explain a case study in the first point, the student does convey that a case study does not allow us to generalize our results. Point 3 was not awarded because the description of a correlation does not adequately differentiate correlation from other forms of experimental procedures. Point 4 was not earned because the explanation does not describe the relationship between two variables. Point 5 was earned because the student argues that experiments can allow researchers to draw cause-and-effect conclusions. Point 6 was awarded because the student describes the notion of experimenter bias as a potential disadvantage of running an experiment. Point 7 was earned because the student describes a case study and appropriate data collection of the information from that study. Point 8 was not earned because the student does not distinguish adequately between a correlational study and an experiment. Point 9 was earned because the student describes appropriate experimental procedure within the context of vitamin J and memory.

AP® PSYCHOLOGY
2006 SCORING COMMENTARY

Question 1 (continued)

Sample: 1C
Score: 1

Point 1 was not awarded because the student does not describe a key characteristic of a case study as observing an individual or a group, or explain that observations need to take place over a period of time. Point 2 was not awarded because the disadvantage that the student describes is not appropriate for a case study. Point 3 was not earned because the student does not use appropriate language for a correlational design. Point 4 was not earned because calculating a correlational coefficient is not a key disadvantage of a correlational study. Point 5 was not earned because although the student describes the use of random sampling to control the outcome of an experiment, the explanation is not sufficient according to the scoring guidelines. Point 6 was not awarded because not being plausible is not a key disadvantage of an experiment. Point 7 was not awarded because the student does not indicate that the observations take place over a long period of time. Point 8 was not awarded because the student describes an experiment, not a correlational study. Finally, point 9 was awarded because the student describes an appropriate experimental procedure in the context of vitamin J and memory.

Write in the box the number of the question you are answering on this page as it is designated in the examination.

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A case study studies one person for a long period of time to study their behavior. An advantage of this is that you get a person's whole life worth of data, and get to see the behavior of the person change, making observations continuously, instead of in an individual follow-up sometime later. A disadvantage is that, though you have a large amount of data on one person, this data may not be applicable to other people or in other situations, and you don't have a spread of data to make comparisons and find patterns in a society.

A correlational study shows a relationship between to variables. An advantage of this is that it helps you to find patterns in behavior. For example, you may find a correlation between children playing violent video games and them actually being violent. However, this example also shows a disadvantage of a correlational study. It doesn't show a cause/effect relationship (the violent video games caused children to be violent.) It only shows that there is a correlation between them.

An experiment studies behavior in a more controlled environment, and will generally include a control

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1A continued

and specific defined variables to do research. This advantage is that because it is controlled, it can be more easily manipulated to provide different outcomes and shows a cause/effect relationship. However, it doesn't always show behavior in its natural environment, as you would with a case study, so its results on behavior may or may not be applicable outside the lab.

A case study would involve giving a person vitamin J and then following them for a long period of time, noting changes in memory of that individual person as they are taking the vitamin compared to before.

A correlational study would obtain data on people who do and don't take vitamin J's relative ~~intelligence~~ memory levels, and try to find a relationship between vitamin J and memory. An experiment would divide a random sampling into two groups and test their memories. Then one group would be the control group, possibly given a placebo, and an experimental group given vitamin J. It should be a double-blind experiment so neither the researcher nor the people know which group is which so this can't affect the results. Then changes in memory would be measured after taking the vitamin to see if memory change in the groups was different and could be related to the vitamin J.

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1B

The advantages of a case study are numerous in size. One main advantage is that with a case study, a psychologist has the ability to get close with the person(s) he/she is studying.

An advantage of a correlational study is that a psychologist can compare results to get a good understanding of his/her patients abilities and/or inabilities.

An advantage of an experiment is that it allows a psychologist to see a cause and effect result.

A disadvantage of a case study is that when only studying one or a few patients, the psychologist cannot make a generalization of the results to the entire population.

A disadvantage to a correlational study is that the results in comparison maybe to different an therefore cause a skewed correlation of data.

A disadvantage of an experiment is the factor of bias either from the experimenter or the patient(s).

When setting up either a case study, a correlational study, or an experiment, there are

many key characteristics that must be taken into account.

If I were setting up a case study to see the effects of Vitamin J on improving memory I would find a patient who has a disease in which he/she has trouble w/ memory, like Alzheimers disease. I would treat him/her w/ Vitamin J and record the results over a period of time.

If I were setting up a correlational study to test the same thing, I would have that same person be tested w/ tests testing short-term and long-term memory. Then give them the vitamin J and then test them again & evaluate the difference (If there happened to be any).

If I were setting up an experiment to test the same thing, I would have 2 groups of Alzheimers patients, one would get vitamin J and the other would get a placebo. Then they would be tested with the same two tests from above and I would analyze the results.

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1C

Psychologists use a variety of research methods to study behavior. Three of the main research methods used are Case Study, Correlational study, and an experiment. All of these research methods have advantages and disadvantages as well as key characteristics, that are used to reach a scientific conclusion

A case study can be described as research well noted and valid. An advantage of a case study is the validness of the research because the observations are recorded promptly and efficiently. A disadvantage of a case study is when studying behavior, the person reading the research doesn't get to witness what is going on in the study first hand. A correlational study is another type of research used to study behavior. An advantage of a correlation study is when observing people in a study, they can be compared accurately. A disadvantage would be the correlational study was not calculated correctly and therefore is not accurate. The last type of research method is an experiment. An advantage of this would be when the researcher can use random sampling in an experiment to observe its subjects and make the experiment accurate. A disadvantage would be the conclusion of the experiment might not be

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1C continued

plausable because of a variable.

There are key characteristics in each research method that researchers could use to determine the effect of taking Vitamin J on improving memory. A scientific conclusion for a case study would be, Vitamin J helped improve memory because in the case study, the subjects records were accurately recorded and they proved Vitamin J works in memory improvement. For a correlational study Vitamin J would could prove not to work because the ratio to the people taking Vitamin J, to the people not taking Vitamin J, was not equal equal, making the end result undeterminable, or wrong the result. In an experiment, you could say that a good scientific conclusion would be; because a control group and an experimental group were used, the experimental group taking the medicine and the control group not taking any medicine, that because the people taking the medicine (Vitamin J) improved their memory and people who didn't take Vitamin J didn't improve there memory, Vitamin J works in improving memory.