1996

AP PSYCH
MR. AIELLO

Free-Response Question 2

Professor Jackson believes that frustration increases the need for achievement. She decides to test her hypothesis with her introductory psychology class of about 100 students. The first 50 students who arrive for class one day are taken to a separate room and given a series of easy puzzles to complete. Professor Jackson then asks each student about his or her professional goals. She rates the statement on a 7-point scale for strength of achievement motivation.

When they arrive, the remaining students are taken to another room and given a series of difficult puzzles by Professor Jackson's teaching assistant, Jim. Jim also asks each student about his or her professional goals and, like Professor Jackson, then rates the statement of each on a 7-point scale.

The group given the difficult puzzles has, on the average, higher achievement motivation scores than the group given the easy puzzles. Professor Jackson concludes that her hypothesis is supported.

Show how each of the following aspects of Professor Jackson's experimental design is flawed. Indicate how you would correct each problem.

A. *Sampling*
B. *Assignment of participants*
C. *Dependent variable*
D. *Control for experimenter bias*
E. *Control of confounding variables (You need cite only one.)*

Question 2 Scoring Guide

GENERAL PRINCIPLES

1. To award points, information must be given in *context,* i.e., it must be presented in relation to the topic being discussed. Ideally, the writer will inform you of the topic being discussed, but this is often not the case. However, the reader may infer context from the order of the writer's response. For example, you may assume that the writer will discuss topics in the order of the question unless you have reason to believe otherwise.
2. In general, writers should connect their answers to the Professor Jackson example rather that discussing methodological issues in an abstract sense.
3. "Should have" statements (e.g., "Professor Jackson should have randomly assigned the participants to groups") are an acceptable way to propose correction for a flaw.
4. Answers must be in sentences. Answers presented as outlines, charts, lists, etc., should not be scored. When in doubt, ask your Table Leader.
5. Blank essays or essays with no relation to the question should be scored — (dash dash). Essays that attempt to answer the question but fail to earn any points should be scored 0 0 (zero zero).

that the individual must follows to conform with society. Often times what parents and family thinks on certain topics is the same interpretation the child adopts.

Alcoholism on the other hand is impacted by both biological and social factors. Alcoholism definitely is an inherited disease. Often children of alcoholics become alcoholics themselves. Social factors like peer pressure and beer commercials are the reasons why some, many people drink.

Extraversion is also impacted both socially and biologically. The way your family brings you up to be outgoing or shy has an impact but so does innate aspects of personality.

Finally schizophrenia is only biologically impacted. It is caused by imbalances in chemicals in the brain. To conclude there are many aspects of life that are impact by both biological and social factors. Together all the factors and aspects make up an individual. The combination of all the factors and aspects are all different in many ways. That is why all human beings are different, because of their experiences and their inborn characteristics

6. Terms (for example, blind procedure) used without explanation may earn credit if the context in which they are used indicates that the writer understands the concept.

SCORING

A. Sampling (key concept: ***representativeness/generalizability***)

Pt 1. Flaws:

a. Professor Jackson restricted her study to a small sample of participants drawn from a single class. Because of this, the sample is biased and does not represent larger populations (e.g., the university community at large, Americans, etc.) adequately.

b. The population for this experiment is not defined. One cannot determine the adequacy of sampling until one has defined the population.

c. The experiment does not involve a random sample (provided "random" is not being used in a shotgun approach to modify both sampling and assignment of participants with no further elaboration).

Pt 2. Corrections

a. The sample should represent the larger population better.

b. The population should be more clearly defined.

c. The experiment should be replicated with another sample.

d. The sample should include additional classes, groups, people, etc.

Do *not* award credit for:

a. Arguing that the sample is too small.

b. Discussing the need to diversify within Professor Jackson's psychology class without connecting it to the larger population.

B. Assignment of participants (key concept: ***randomness/equivalence***)

Pt 3. Flaw:

Assignment of participants was not random because students who arrive early to class are different from students who do not arrive early. It is enough to say that assigning the first 50 to one group and the rest to the second group is a flaw. It is also enough to state simply that the assignment of participants was not random *if* it is clear that the writer has separated the issue from sampling.

Pt 4. Corrections:

a. Participants should be randomly assigned to groups.

b. Participants should be matched across groups on significant variables, like gender or age.

Do *not* award credit for:

a. Pointing out that the groups may be of unequal size.

b. Mentioning the need for a control group.

c. Discussion of whether or not the participants freely volunteered for the experiment or had their rights as participants violated.

Note: Writers often mix the issue of sampling and assignment of subjects to groups. If a student has clearly demonstrated a knowledge of the flaws and corrections involved, full credit for sampling and assignment may be awarded even though the writer jumped from topic to topic in his or her treatment of these two issues.

C. Dependent variable (key concepts: ***reliability and validity***)

Pt 5. Flaws:

a. The rating scale may not have been established as reliable.
b. The rating scale may not be a valid measure of need for achievement.
c. The raters may not have comparable training or experience.
d. Subjective scoring may pose a problem for raters.

Pt 6. Corrections:

a. Suggestions that convey the intention of improving reliability, even though the suggestion may not be a perfect solution. For example, the writer might suggest that the same person do all the ratings to improve reliability, or that ratings of more than one rater be correlated to establish inter-rater reliability, or that raters be adequately trained in the use of the measure.
b. Suggestions for a potentially more valid method of measuring need for achievement.
c. The measure should be pretested *to establish reliability and/or validity.*
d. Suggested improvements in the scale or in the method of rating designed to reduce subjectivity.

Do *not* award credit for:

a. Suggesting that there should be some sort of pretesting done to establish what the participants' professional goals were before they were given the puzzles.
b. Making statements about the puzzles (the independent variable) instead of about the rating scale (the dependent variable).
c. Proposing that the participants rate themselves.
d. Mentioning the need for a control group.

D. Control for experimenter bias (key concept: ***blind procedures***)

Pt 7. Flaws:

a. Any knowledge (e.g., of the hypothesis, of individual participants, or of group assignment) on the part of the data collector that might influence the results of the experiment. Professor Jackson and/or Jim possessed knowledge that could bias their ratings.
b. Professor Jackson and/or Jim may provide clues (e.g., smiles) that could affect the behavior of participants.

Pt 8. Correction:

a. A blind procedure (can be explained without using term) should be utilized.
b. Make the test more objective so experimenter judgment has less influence.

c. Suggesting increased training of data collectors to eliminate their use of cues.

Do *not* award credit for:

a. Just adding data collectors or limiting the experiment to one data collector, unless the student expresses this in such a way that it is clearly linked to the key concept of blindness.
b. Mentioning that Professor Jackson and Jim may rate differently because they view the world differently. This argument would be appropriate to support flawed reliability of the DV, but it doesn't relate to the key concept of blindness.

E. Control of confounding variables (key concept: ***differences between groups other than produced by the independent variable***)

Pt 9. Flaws:

The key point here is that a difference must exist between the two groups that could explain the difference between groups on the dependent variable. The variable must be one that could logically be of concern in Professor Jackson's experiment.

Examples might include, but are limited to:

a. Gender or age of experimenter.
b. Rooms.
c. Arrival time.
d. Differences in instructions given to the two groups.

Pt 10. Corrections:

An appropriate control for the stated confounding variable should be discussed:

a. The experimenter should be the same for both groups.
b. The rooms should be the same or controlled for both groups.
c. The participants should be randomly assigned to control for subject variables like ability to solve puzzles.
d. The instructions should be uniform for both groups.

Do *not* award credit for:

a. Mention of anything that influences both groups in the same manner.

EXCELLENT ESSAY (10 points)

This experiment is full of flaws. The sampling is too small and not random enough to be considered a fair representation of the general population. To correct this I would randomly select students of all ages and classes. I would also need to include people who are not currently attending college. The assignment of participants was also not random enough. Arrival time at class could be the result of many factors, including the student's level of intrinsic ~~motivation~~ and extrinsic motivation. ~~St~~ Subjects should instead have been randomly assigned to groups after everyone had arrived. The dependent variable was not measured at all empirically. It was far too subjective. Furthermore, because Prof. Jackson measured one group and Jim the other, the results are not even based on the same subjective level. To correct this I would have one person rate the questions, or create a scale which in and of itself would have to be tested to establish norms and ranges. There was virtually no control for experimenter bias. The self-fulfilling prophecy could come into play here, with the Professor getting the results she expected due to her verbal and nonverbal cues and entirely subjective rating of the responses. I would correct this using a double-blind procedure, where the tester does not even know which group he/she is testing. There is also a problem because she has tested a correlation which does not guarantee causation. She also has no control over confounding variables. One problem is that the students are tested in two different rooms. Environment

can have a major impact. Students would need to be tested in the same or identical rooms (but not together). This experiment needs much revision, and also needs replication.

EXCELLENT ESSAY (9 points)

The sampling of Professor Jackson's is flawed because the group is a very peculiar one. A study based on the results from 100 psychology students will yield a possibly very different result than a random sample of the American population. To correct this problem a population must be picked and then a representative random sample must be taken. In this case the population could be all college students for example. In addition the 7 point scale is very subjective an improvement could be made in this area by taking surveys before and after the puzzle or an outside observer could determine "need for achievement." Assigning participants based on when they come to class will not ~~yield~~ yield a viable study. The people who come to class early could initially have different levels of need for achievement than those that came later.

The dependent variable in this study was the subjects response on the ~~the~~ statement of goals. In this study the dependent variable was ~~selected~~ determined by Professor Jackson's questioning. A subject who is intimidated by the Professor will respond differently than a student who is trying to earn points. An anonymous survey would be better.

The experimenter, Jackson, was very biased in this study. She wanted to prove that her hypothesis was correct and may have inadvertantly biased the students or ~~was~~ interpreted the results in a favorable fashion. To alleviate this problem a double blind

study should be used. The experimenter should not know the hypothesis to prevent bias.

A confounding variable in this study was the ~~difference~~ difference of experimenter for each group. One group had Jim ask the questions the other, Jackson. This creates the subject of the student's respect or view of the experimenter. To correct this problem both groups should be identically questioned, by the same person using the exact questions.

To actually provide a response to Professor Jackson's hypothesis a second study must be done that would clarify the role of experimenter and subject, represent a more general sample from a population, remove bias, and to provide for identical environments between the to groups, differing only by the independent variable the difficulty of the puzzles.

GOOD ESSAY (7 points)

Professor Jackson's inability to design her experiment correctly resulted in flaws with; sampling, assignment of participants, the dependent variable, control for experimenter bias, and control of confounding variables. First off, Professor Jackson should have chosen a more representative sample than her own class. By choosing a variety of students with differences in sex, race, age, and college major, she would have found subjects that better represented the population. ~~If Jackson would have~~ Since the students that arrive earliest for class usually have higher motivation than those who show up carelessly late, Jackson should have waited until all her students were together to assign them to groups. Random selection (either alphabetically or numerically) would help provide a representative sample. The dependent variable - which changes in response to the independent variable of "achievement" - is ~~the concept~~ of frustration. ~~Being the abstract~~ Since frustration is a feeling that humans experience, rather than an observable behavior, Jackson would have a difficult time measuring it. Perhaps Jackson could have chosen a more specific and testable hypothesis, with a more feasable dependent variable, if she wanted more decisive results. By using the interview method to evaluate the students achievement motivation, Jackson runs the risk of having experimenter bias affect

her experiment. Also using two different people as interviewers provides entirely different outlooks and prejudices towards the students. If Jackson would have instituted the questionare method, than she could have avoided experimenter bias.

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The probability of of an extraneous variable effecting the results is very high, ~~since~~ because Jackson designed her experiment so carelessly. Perhaps the students gave more socially acceptable answers to Jackson, rather than Jim the assistant, because Jackson was their professor. Fearing Jackson's reaction and judgement, the students may not have replied honestly. The factor of social desirability probably interfered with the other variables in the experiment.