

Chapter 02: Essay

1. Deepak desires to empirically test the physical existence of heaven. Explain why Deepak's research question is not appropriate for empirical research.

ANSWER: Appropriate and falsifiable research questions are empirical in nature. That means that they are able to be examined using direct or indirect observations or experiences. To take an empirical approach to testing a question, researchers must be able to make systematic observations that involve something that can be touched, tasted, heard, smelled, or seen. In Deepak's case, it is impossible to empirically examine whether there is a heaven. Given that there is no systematic way to measure his variables, this would not be a good research question.

2. Ariele developed a research hypothesis focused on the concept of unconscious resentment among siblings. Ariele conducts a research study examining children's self-reported unconscious resentment toward their sibling(s). The results of the study find that children report minimal resentment toward their sibling(s). Identify what is potentially problematic with Ariele's research hypothesis and demonstrate your understanding of empirical investigation by discussing the influence of these potential problems.

ANSWER: Ariele's research question is not empirical in nature. That means that she is not able to physically observe the variable of interest in order to test her hypothesis. She hypothesizes an unconscious, hidden resentment among siblings. Without children's awareness of this resentment, it becomes very difficult to measure. Further, Ariele's hypothesis does not appear to be falsifiable. That is, if children are unaware of their resentment, then failure of an explicit measure to document those feelings could either mean that they don't exist or that (just as she hypothesized) they exist outside of children's conscious awareness. Because her results cannot disprove her hypothesis, there is no way to verify that she is correct.

3. Explain why literature searches using general search engines like Google and Yahoo! are poor foundations for scientific investigations.

ANSWER: Web searches using general search engines have the potential to provide some important information for scientific investigations. However, they are often not a good place to start a literature search, because they present the researcher with a multitude of information, most of which is not scientifically validated or peer-reviewed. Further, these general searches often provide information for which it is difficult to disentangle scientific facts from personal opinions. General search engines are likely to return an unwieldy amount of information, but it will not be restricted to empirically sound research findings. Conversely, databases like PsycINFO and PsycARTICLES are specialized search engines to help target research on a particular topic. These databases provide abstracts and descriptive information to help scientists search a wide variety of scholarly publications in the behavioral and social sciences.

4. When conducting a literature review on the impact of adoption on the existing family dynamic, Felicity discovers conflicting and confusing information. How might Felicity problem-solve this dilemma as she continues to further explore her research question?

ANSWER: Development of a sound research hypothesis is important as it helps to narrow the search for related information. Felicity's original research question may have too many variables to consider in a single hypothesis or she may need to reframe keyword searches for her literature review to better apply to her question. Felicity may need to be more specific in her literature searches but maintain awareness of potential confirmation bias. Felicity will need to determine which retrieved information is peer-reviewed and is appropriate for the research question she is trying to answer. Contradictory information is okay under the circumstances, but it is also important to maintain an

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understanding of the variable under investigation.

5. Examine and discuss the differences between a theory and a hypothesis.

ANSWER: A hypothesis is an educated prediction that provides a testable explanation of a phenomenon. A scientific theory is a well-substantiated explanation of some aspect of the natural world confirmed through repeated observation and experimentation. Hypotheses that are supported by data can become theories.

6. List and describe two ways to generate a good research hypothesis.

ANSWER: There are many strategies for generating good hypotheses. Some include: introspection — self-observation or reflecting on one's own thoughts and experiences to generate ideas; finding the exception to the rule — crafting a hypothesis that looks at outcomes that contradict established outcomes; matter of degree — considering how the amount of a variable, either in quantity, intensity, strength, volume, number, force, persistence, or effort, can change the relationship between variables; and change the directionality — thinking about ideas from both directions such that one variable may cause the other or vice versa.

7. List and describe two characteristics of a good hypothesis.

ANSWER: Characteristics of a good hypothesis include: having a high correspondence with reality — a hypothesis should logically follow from previous results identified through a literature search; having parsimony — a hypothesis should be simple and direct rather than overly complex and unclear; being specific — not vague or broadly stated, but clear as to what exactly is being tested; and being falsifiable — it must be possible to show that the hypothesis is incorrect.

8. Demonstrate your understanding of the Barnum effect by identifying and discussing an applicable personal example.

ANSWER: Answers should specify that the Barnum effect is the tendency for people to believe that general descriptions of personality are highly accurate and tailored specifically for them. Students may have read and believed horoscopes or generalities associated with astrological signs. Horoscopes forecast a person's future, including information about a person's character and circumstances based upon the position of the planets and stars. Although there is no scientific evidence that horoscopes or personality descriptions based on astrological signs are true, people often accept and endorse them. The belief in horoscopes or astrological predictions demonstrates the power of the Barnum effect.

9. Jordyn wants to understand whether owning a sports car increases one's risk for reckless driving. Should he use an experimental or nonexperimental research design to investigate his research question and why?

ANSWER: Because Jordyn wants to investigate a causal relationship between variables, he needs to use an experimental design. Only when investigators manipulate the independent variable and establish experimental control can they make cause-and-effect statements about the relationship between two variables. If his hypothesis was merely that a relationship existed between the variables, he could use a nonexperimental research design. However, he has a directional (and causal) hypothesis, which necessitates an experimental design.

10. Marcy is a developmental psychologist interested in examining whether the number of presents a child

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receives for his/her birthday is related to how much the child misbehaves. Marcy's hypothesis is that children spoiled by too many birthday presents will be more likely to frequently act out negatively throughout the year. If she designs an experimental study, what would be her independent variable and her dependent variable?

ANSWER: The independent variable (IV) is the one that is believed to influence the dependent (or outcome) variable. The IV is the one that the researcher manipulates or controls. In this experiment, the independent variable would be the number of presents a child receives for his/her birthday. In designing this study, Marcy can assign some children to receive fewer presents (i.e., no more than two presents); whereas, other children are assigned to receive many (i.e., more than 10) presents. The dependent variable is the outcome or effect variable. It is measured to determine the impact of the independent variable. In this study, Marcy's dependent variable is the frequency of each child's misbehavior. This may be assessed by asking parents to report on each child's behavior, or through observation of the children's conduct by objective raters.

11. Clay believes the adage "An apple a day keeps the doctor away." If he is going to experimentally examine this saying, how would he operationally define the independent and dependent variables for this particular research question?

ANSWER: An operational definition is an explanation of how each variable will be used in a study. It tells researchers explicitly how each variable is quantified and measured. In Clay's study, the independent variable is the presence or absence of the apple, and the dependent variable is physical health. One possible way to operationalize the independent variable would be to assign how many apples participants eat during each day of the research study. Those in the experimental condition will likely be assigned to eat an apple each day. Participants in the control condition will likely be assigned to eat no apples. Clay may operationalize his dependent variable by measuring the number of times a participant goes to the doctor during the study period. At the end of the study period, he could also have participants self-report on symptoms of physical illness as a measure of their health/wellbeing.

12. Why might a researcher choose to use a nonexperimental design?

ANSWER: Nonexperimental designs are designs in which there is no control or manipulation of the independent variable. Rather, a researcher is examining a naturally occurring relationship. A scientist may choose to conduct a nonexperimental study for a number of reasons. For instance, if it would be impossible or unethical to manipulate the independent variable, then the researcher can only examine the phenomenon as it presents itself. Additionally, if the researcher is unsure of the direction of causation, he/she may choose to use a nonexperimental (or correlational) design.

13. Kaila is interested in studying whether participation in adult beauty pageants is related to an individual's level of intelligence. How might Kaila design a nonexperimental study to investigate this relationship?

ANSWER: A nonexperimental study (or correlation) examines naturally occurring relationships between variables. Kaila has many possibilities for designing a nonexperimental study. For instance, if Kaila hypothesizes an association between participation in adult beauty pageants and an individual's level of intelligence, she can ask two groups of adult women to take a standardized IQ test. One group of women would be those who have previously participated in beauty pageants. The other group of women would be those who have chosen (on their own) not to participate in beauty pageants. She would then compare the scores of these two groups using statistical analyses. A significant finding would suggest that these two variables are associated or connected in some way. This type of study would not be able to tell whether there is a causal relationship between the

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variables.

14. Martin wants to understand how academic performance may change as a student transitions from middle school to high school. How would he investigate this using a within-subjects research design?

ANSWER: A within-subjects design is a data collection method in which each participant is assessed on the dependent variable more than once. In this case, Martin is interested in understanding how students' academic performance changes from middle school to high school. If he is using a within-subjects research design he should assess his participants' academic performance when they are in middle school. He should then assess the academic performance of these same students once they enter high school. By conducting a longitudinal design, in which he follows the same participant sample for a predetermined period of time, he is able to compare each student with himself/herself at an earlier data collection time.

15. Professor McAdams is interested in examining the relationship between playing video games and engagement in aggressive behavior. Compare and contrast the differences in Professor McAdams's findings if she were to use a between-subjects research design instead of a within-subjects research design.

ANSWER: A between-subjects research design uses a data collection method in which each participant is only assessed on the dependent variable once. In this type of study, Professor McAdams would compare the results across participants, where some individuals would be assigned to play video games (experimental condition) and others not (control condition). This study design would reveal whether playing video games leads to a difference in violent behavior between the two groups of participants. A within-subjects design is a data collection method in which each participant is assessed on the dependent variable more than once. In this type of study, Professor McAdams would assess her participants at the start of the study to get their degree of aggressive behavior. Then have all participants play video games. At the end of the study period she would assess participants again to ascertain their level of aggressive behavior. This study design would reveal whether playing video games leads to a change in the aggressive behavior demonstrated in participants, controlling for their own baseline (or starting level of) aggression.

16. A research protocol includes both an informed consent and a debriefing. Discuss both the similarities and the differences between each of these aspects of a research protocol.

ANSWER: Informed consent is a part of the standard ethical procedure that takes place at the beginning of a research study. It is designed to inform the participant about what the study requires of them, as well as tell them about the risks and benefits of participation. The informed consent ensures that participants are making the choice to take part in the study freely and without manipulation or coercion. The debriefing generally takes place at the end of a research study. It is designed to explain the purpose of the study and disclose any deception used by the researcher. This is also the time for participants to ask questions about the hypothesis or procedure. The informed consent and debriefing are similar in that they are required components of a study aimed at ensuring adherence to ethical guidelines and standards. The two differ in the specific purpose and timing of delivery.

17. Why do psychologists emphasize the use of numerical or quantitative data?

ANSWER: Researchers use statistics to examine their hypotheses, because statistics (numerical analyses) help minimize bias in interpretation. They also help to accurately detect patterns in the data. Furthermore, quantitative data can be analyzed using probability testing. This allows the scientific

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community to set a rigorous standard for drawing conclusions. For psychologists, the probability of a study's findings being the result of random chance is set at an upper limit of 5%. That means that by using quantitative (numerical) data and a set significance level, psychologists have at least 95% confidence that their findings represents actual effects.

18. Why do researchers not use the term "prove" when discussing their significant results?

ANSWER: Research findings are based on probabilistic conclusions about the relationship between variables of interest. In psychology, scientists hold findings to a 95% certainty that results are not due to random chance. Because the threshold for significance is not set at 100%, statistically significant findings do not represent absolute truths. Accordingly, psychologists use words like "suggest" or "support" rather than "prove." Good scientists recognize the limitations in their research studies and avoid overstating the conclusions based on their results.

19. Why should individuals attend research conferences?

ANSWER: Attending a research conference is beneficial for a number of reasons. First, and foremost, research conferences provide access to cutting-edge research that has yet to be published in peer-reviewed journals. Second, researchers can engage in discourse with like-minded colleagues to expand their thinking on a particular topic of interest and/or develop hypotheses for a research question they are currently considering. Third, conferences provide an important opportunity for psychologists to practice communication skills through poster and paper presentations.

20. How do research psychologists share their findings with others in their discipline?

ANSWER: Researchers can share their findings in a number of ways, including at research conferences through research posters and paper presentations. A research poster is a visual research presentation. Posters summarize a study's methodology and findings in a concise manner that allows the researcher to informally discuss his/her work with others. A paper presentation is a more formal, oral presentation that takes place at a conference. Generally, it includes a PowerPoint presentation and allows the researcher to speak to a group of people about the study's key features and results. Questions are often posed in a group format following the presentation. Researchers also publish their findings in peer-reviewed journals. This format presents work that has been evaluated by experts within the field and has been determined to make a valid contribution to the area of study. It is worth noting that many research reports do not make it to the peer-reviewed publication stage, as the level of rigor required of the study, data analysis, and write-up of conclusions is kept high. Although less frequent, research psychologists can also write books, contribute chapters to edited books, and communicate their findings in more mainstream vehicles, like magazines, newspapers, and websites.