

# Research

[Psychology](#)



**ASSIGN  
BUSTER**

Use the reading materials to help you answer the first 9 questions. You may use other sources for assistance. Provide the answer beneath each question within this document and submit to the Assignment Drop box. Do not delete the questions.

1. Have any of your peers, colleagues, or instructors ever stated that a study “proves” something? If so, briefly describe what he or she said, and in light of reading the materials provided, would you be cautious about believing such a statement? Why? (answer in one-two paragraphs)

A teacher once said that research proves that smoking kills, he quoted research which said that every cigarette, on average, took out eleven minutes from the person’s life.

I would be cautious in believing this statement. This is because the results of such studies make conclusions rather than determine facts, and these conclusions are true only if the underlying assumptions were correct. Also, the interpretation of statistical results is often disputable, and varies between researchers.

2. According to the reading materials, what is the primary and secondary purpose for preparing a literature review?

The primary purpose is to summarize the results of various studies on a topic, which may have conflicting results, and, based on the entire amount of information available from all the studies, arrive at a defensible conclusion regarding the results that are most likely to be true.

The secondary purpose is to determine which areas regarding the topic should be the focus of further research in order to decrease the uncertainty of the tentative conclusions of the literature review.

3. What do quantitatively oriented researchers emphasize when sampling

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that qualitatively researchers do not emphasize?

Quantitatively-oriented researchers try to identify all the members of the population of interest, and then obtain a random sample from them. This is in order to obtain results that can be generalized to the entire population.

Qualitatively oriented researchers prefer purposive sampling, where they select the participants that are most likely to provide them with useful information, and are not concerned with producing results that can be generalized to populations.

4. Name two examples of common sampling flaws.

1. The study includes only volunteers who agree to participate, there is no information on what the results for the non-volunteers would be.

2. Most studies are done on college or university students due to limitations in resources; they do not have information on the results for the population not going to college or university.

5. Name a trait, other than the ones mentioned in this chapter that you think are inherently difficult to measure. Why?

Determining how strongly a participant's opinion will affect their action: their action will be affected by many other factors in addition to the strength of their opinion, such as recent life experiences, so that the influence of the opinion alone cannot be determined.

6. Briefly explain why a highly reliable measuring instrument can be invalid.

The instrument may be invalid due to imperfect circumstances, such as, for a highly valid test, the student may not be feeling well, and not perform his best on the test.

7. If a common well-known IQ scale is considered to have adequate reliability and validity, does this mean the scale has no flaws? If not, briefly explain

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why.

No, the scale can still have flaws: adequate does not mean 'absolute' reliability and validity, thus a small percentage of subjects will still be given inaccurate scores.

8. To study causality, what do researchers need to do? Why?

They need to carry out a case-control study to control extraneous variables and determine if the results are different in the treatment group from those of the control group.

Or, they need to do a detailed self-report of participants to determine the role of the causative factor.

9. If a difference is statistically significant, does this mean the difference is large? If not, what does the fact that a difference is statistically significant tell you? What else can you look at to indicate the magnitude of a difference?

No, it only means that the difference is reliable, it gives no information on how large the difference is. It only tells us that the difference is very likely due to some factor and not due to chance or random variations.

10. Provide examples of the following using variables and a made up correlation to illustrate your point:

a. Strong positive (direct) correlation

A strong positive correlation exists between high school GPA and college GPA ( $r = .83$ ). That is, the higher the high school GPA, higher the college GPA.

Construct your response like the example given here: A strong positive correlation exists between study time and GPA ( $r = .74$ ). That is, as study time increases so does GPA.

b. Weak positive correlation

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A weak positive correlation exists between a person's weight and number of hours watching television ( $r = 0.32$ ). That is, the higher the weight of a person, the higher the number of television hours the person is likely to watch.

c. Strong negative (inverse) correlation

A strong negative correlation exists between television watching hours and high school GPA ( $r = 0.91$ ). That is, the greater the number of television hours the person watches, the lower the high school GPA.

d. Weak negative correlation

A weak negative correlation exists between number of clothing and temperature ( $r = 0.34$ ). The lower the temperature, the higher the number of clothing worn by the person.

11. Considering a one-way ANOVA answer the following:

a. Name two assumptions

1. Each group in the study is normally distributed for the dependent variable values
2. Variances of different samples are homogeneous.

b. Define the terms

Variance: A measure of the average distance between each of a set of data points and their mean value; equal to the sum of the squares of the deviation from the mean value.

Homogenous: of the same or a similar kind or nature.

c. Why would a violation of these assumptions affect your results?

The calculations of the test are based on these assumptions. If the assumptions are violated, the p-value calculated may come to fall beyond the level of significance and ANOVA may give us a false positive or false

negative result.

12. The Huck text indicates several Warnings about Correlations. One of the warnings is called an Outlier. What is an outlier and describe how this concept can affect the results of a correlational analysis.

An outlier is an observation that lies outside the overall pattern of a distribution on the scatterplot, and has been erroneously included in the data set. An outlier outside the data set but which falls near the regression line would increase the size of the correlation coefficient. An outlier that falls some distance away from the original regression line would decrease the size of the correlation coefficient.

13. State the three most common Central Measures of Tendency and provide a definition for each.

Mean: the sum of all of the data values divided by the number of data values.

Median: the middle value of the data set when it has been arranged in ascending order.

Mode: the value(s) that occurs most often in the data set.

14. What does it mean to say all the scores in the class are Negatively Skewed? Provide an example to illustrate the point.

A distribution is skewed if one of its tails is longer than the other. The example means that the distribution of scores has a long tail in the negative direction, so most of the scores lie on the right of the mean. In a class of students, a negative skew means more students have more than 5 marks, a few have less than 5 (forming the tail), but a few students have extremely low marks, thus decreasing the class mean score. The mean score for the class at 4.5 is less than the median, which is 5.

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15. What does it mean when a researcher states the population or sample is considered to be Homogeneous?

A homogeneous population is one where all individuals can be regarded as the same type, resulting in a normal distribution.

16. What does it mean when a researcher states the population or sample is Heterogeneous?

A heterogeneous population is one containing subpopulations of different types. If the difference between the two different types is large enough, we may get a bimodal distribution.

17. What is the general difference between a non-parametric and a parametric statistical test?

Parametric tests are for studies done on a population with normal distribution and homogenous variance. If these criteria are not met, then non-parametric tests are used.

18. If a researcher wanted to determine the strength and direction between two variables, then what type of analysis would he or she use? Why?

She would use Pearson's correlation. The size of the correlation coefficient will tell the strength of association: the closer it is to 1, the stronger, while less than 0.5 means weak association. The sign of the calculated coefficient tells us the direction - positive if plus sign, negative if minus sign.

19. If a researcher was interested in determining the mean differences between three or more variables, then what type of analysis would he or she use? Why?

She would determine the mean of the differences between the values: calculate the sum of the difference between the samples, and divide it by the number of samples. This will tell the mean difference.

20. Define the following:

a. Null Hypothesis

A type of hypothesis used in statistics that proposes that no statistical significance exists in a set of given observations.

b. Alternate Hypothesis

The alternative hypothesis is one that is contrary to the null hypothesis.

21. What does  $r^2$  mean and why would a researcher be interested in this index?

$r^2$  is the coefficient of determination. It is most often used in linear regression, and is a statistical term describing how good one variable is at predicting another. Researchers use it to determine the relationship between several independent variables and a dependent variable.

22. What is Statistical power and why would a researcher conduct a power analysis prior to conducting a study?

Power is defined as the probability that a statistical test will reject the null hypothesis, or the ability of a statistical test to detect an effect.

All researchers starting quantitative studies should conduct a power analysis to ensure that certain conditions are met to correctly reject the null hypothesis.

23. Define Practical Significance.

Practical significance is an arbitrary limit whereby an observed difference is said to be of some practical use in the real world.

24. Focus groups are often used to collect data for program evaluations.

What are some common issues that a researcher should be aware of concerning focus groups?

Focus groups are conducted in an unnatural social setting. The presence and  
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direction of the moderator may influence responses of the subjects that might be different in a more natural setting.

When members do not express their personal opinions and conform to a popular opinion or acquiesce to a particular group member, the information gained from the focus group will be inaccurate.

25. In program evaluation there is a type of evaluation called Process evaluation. What is another name for Process evaluation?

Implementation Assessment

Assessment Of Program Process

Bonus Question: A researcher is looking at multiple explanatory variables (e. g., questions on a test) and he would like to determine the probability of inclusion each variable has in a specific category (i. e., easy, difficult, very difficult). The outcome variables or response variables are dichotomous (i. e., right or wrong). What is the most appropriate statistical technique?