

First Writing Assignment

Write a short paper (1-2 pages, double-spaced, typed) on the question assigned for your section. These are to be turned in by Noon on Friday, November 6. Papers should be submitted electronically to your TA in .doc or .rtf format. If this is not possible, you may deliver them to your TA's mailbox by Noon. The goal of this paper is to explain clearly the central concepts employed in the question you are to address. Assume that your audience is a fellow student not in this class. To explain the material to that person you cannot just use the concepts we have developed in class but must *explain* them. Present your answers totally in your own words—do not quote material either from the website, the lecture powerpoints, or anyone else.

A01: Your team wants to discover whether there exists any correlation between multi-tasking and memory performance. Before you begin your research, you need to provide operational definitions for your variables of interest. Provide TWO operational definitions for EACH variable, and give reasons in each case why a researcher might prefer one over the other, and whether one or the other exhibits greater construct validity. Discuss potential difficulties for such a study.

A02: You are investigating whether there is a difference in alcohol consumption between undergraduates at private colleges and those at public colleges. Of course, you cannot poll every undergraduate in the country, so you will have to poll suitable samples of the population. Explain what constitutes the null hypothesis and the research hypothesis in this scenario and how they relate to each other, as well as what are the possible Type I and Type II errors. Imagine you are sending your kid off to college and want her to avoid an environment with heavy drinking. Will you be more concerned with avoiding Type I error or Type II error? Why? How can you avoid this type of error?

A03: A friend of yours is a rabid Yankees fan. On any day where the Yankees play a game, she wears a "lucky" hat which she believes will enhance the Yankees' performance. The hat is filthy, unsightly, and pungent, since she insists that the hat cannot be washed – the more dirty the hat is, the more luck it brings. You know that you will never be able to convince your friend to stop wearing the hat – but you would very much like to convince her to wash it. You decide that you will determine whether or not there is a correlation between the dirtiness of hat and the performance of the Yankees. In order to do so, you must first provide operational definitions of your variables. Explain why this is necessary. Then provide two operational definitions for each variable (dirtiness of the hat, performance of the Yankees), noting the strengths and weakness of each one. These should be discussed in terms of construct validity. Keep in mind that both variables must be score variables, so you need operational definitions that allow you to render them numerically. If a positive correlation were found, would that confirm your friend's hypothesis that the dirtiness of the hat is a positive predictor of the Yankees' performance? Discuss the reasons that a study of this kind might confront serious difficulties.

A04: Suppose a research team has published a study in which they found that how early college students declare their major is correlated with financial stability later in life. The Pearson coefficient (r) is .99. They have achieved statistical significance of $p < .001$. You have been hired as a consultant in the loan department of a bank which is trying to determine which students are likely to be good risks for paying back their loans. (In other words, you are trying to predict which students will, in fact, pay back their loans later.) You propose using how early students declared their college major as a basis for making loans. The President of the bank has never heard of a Pearson coefficient or a p-value. Write a paper explaining to the bank President why, given this study, you think the bank should or should not use how early potential borrowers declared their college major as a basis for making loans. Make clear what the Pearson coefficient is, and what a p-value is. You may assume that the operational definitions the researchers used have excellent construct validity. Do not repeat this scenario in the paper, just get started on convincing the bank President of your recommendation.