**Prep-Guide 2**

Based on Heath, Chapter 6 (Correlational Designs)

**NAME:**

**IMPORTANT:** Deposit a Microsoft WORD document on Moodle in the space provided. We cannot read or accept ANYTHING else, not .pages, not pdfs, nothing else.

**Directions:** Please type your answers below each question. PLEASE leave the question in the document, spacing as needed. *Use your own words*. Recall, we are not as interested in “the correct answer” as we are in clear evidence of the *effort and thoughtfulness* of your attempt. You may be brief, yet still thorough. Try your best.

**1.** A researcher invited a sample of college students to a lab at 1:00 P.M. to take an attentional control test called the Stroop, in which color names are presented in different colors. After finishing the Stroop test, each student wrote down what foods he had consumed in the previous hour, and the researcher figured out how many calories each student had eaten. Make a scatterplot of the data in the table below. (You can hand draw it, take a phot0, and insert it below. Or if you know how to create a scatterplot using Excel or another software package, that’s fine too). What kind of association is this—positive, negative, or zero? Does the association seem strong or weak? Do you notice any outliers (i.e. data points well away from the others)?

|  |  |  |
| --- | --- | --- |
| Person | Stroop test score (seconds to complete) | Calories consumed at lunch |
| A | 100 | 550 |
| B | 120 | 200 |
| C | 150 | 210 |
| D | 80 | 600 |
| E | 85 | 750 |
| F | 90 | 400 |
| G | 60 | 575 |
| H | 120 | 325 |
| I | 110 | 350 |

**2.** For ONE of the following accounts of actual studies written in the media, (1) describe the type of correlation; (2) consider the issues of directionality (temporal precedence) and third-variable problem (internal validity). Make sure to explain *how* the third variable you select is independently related to *both* other variables. Choose either ONE you prefer. You may leave the other one blank (or try it if you like and have the time).

*A.* “To spoon or not to spoon? After-sex affection boosts sexual and relationship satisfaction.” In the first study, involving 335 participants (138 men and 197 women, all of whom were in romantic relationships and 90% of whom were heterosexual), people who reported a longer duration of after-sex affection were more satisfied with their sex lives and in turn, happier with their overall relationships. Although people varied in how long they reported cuddling after sex, the average amount of time spent being affection after sex was 15 minutes.

*B.* Chronic stomach pain in kids is linked to adult anxiety disorders in later life.” In this study, the researchers “followed 332 children between the ages of 8 and 17 who were diagnosed with functional abdominal pain and 147 with no pain for an average of eight years. . . . On follow-up, the researchers interviewed the volunteers—who were on average age 20 at that point—either in person or by phone. . . . Of adults who had abdominal pain as children, 51 percent had experienced an anxiety disorder during their lives, compared to 20 percent of those who didn’t experience tummy aches as children. (Carroll, 2013).

**4.** A researcher conducted a study of 34 scientists (Grim, 2008). He reported a correlation between the amount of beer each scientist drank per year and the likelihood of that scientist publishing a scientific paper. The correlation was reported as *r* = −.55, 95% CI [-.74, -.27].

*A.* What does a negative correlation mean in this example? Is this relationship strong or weak?

*B.* What does 95% CI [-.74, -.27] mean in this result? (You may not recall this, so no worries if you do not. Just give it a whirl.)

*C.* A popular media report about this article was headlined, “Suds seem to skew scientific success” (*San Diego Union-Tribune*, 2008). Is such a causal claim justified?

**5.** What can a multiple regression design and analysis tell you that a bivariate one cannot?

**BONUS: There is no need to actually do this one before class/the IT session. If your pair discussion ends earlier than others, this is good practice. Go ahead and give it a shot.**

“When it comes to college students, the belief that more is better may underlie their widely-held view that laptops in the classroom enhance their academic performance.  Laptops do in fact allow students to do more, like engage in online activities and demonstrations, collaborate more easily on papers and projects, access information from the internet, and take more notes.  Indeed, because students can type significantly faster than they can write, those who use laptops in the classroom tend to take more notes than those who write out their notes by hand.  Moreover, when students take notes using laptops they tend to take notes verbatim, writing down every last word uttered by their professor.

“But new research by Pam Mueller and Daniel Oppenheimer demonstrates that students who write out their notes on paper actually learn more.  Across three experiments, Mueller and Oppenheimer had about 70 students take notes (on TED talks) in a classroom setting and then tested students on their memory for factual detail, their conceptual understanding of the material, and their ability to synthesize and generalize the information.  Half of the students were randomly assigned to take notes with a laptop, and the other half were randomly assigned to write the notes out by hand.  … those who wrote out their notes by hand had a stronger conceptual understanding. They could integrate the material better than those who used took notes with their laptops.” [Source](http://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/): <https://www.scientificamerican.com/article/a-learning-secret-don-t-take-notes-with-a-laptop/>

a) What are the two main variables in this study?

b) What kind of study did the researchers do—a correlational study or an experimental study? How do you know?

c) Sketch a well-labeled graph of the result they describe. Can this study support the causal claim that "taking notes by hand causes you to have a stronger conceptual understanding?"  Apply the three causal criteria to this situation. (State whether the claim meets each criterion (name them) and if so, how and if not, why not.)

d) List the four big validities in the table below. Ask *a study-specific* question that would interrogate each of the validities (*you don’t have to answer the question, just ask it!*). Sue your class notes for this one.

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| **Name of Big Validity** | **How to ask about this validity in this particular study** |
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