Chapter 2: Discussion Questions

1. What are some of the advantages and disadvantages of field research and laboratory research? *[p. 28]*

2. What are a couple key differences between random assignment and random selection? *[p. 8]*

3. What kinds of research decisions need to be made in order to achieve internal validity? External validity?

4. What is the role of inferential statistics in research design and hypothesis testing?

5. You are conducting an experiment with group membership as your IV and attitudes toward Barack Obama as your DV, and you hypothesize that people in Group 1 will rate Obama higher than people in Group 2. In terms of the inferential statistical tests you would use to test your hypothesis, briefly explain the four possible outcomes that you could have regarding the correspondence between treatment effect and reality. In other words, use the variables above to describe the outcomes in each cell of the 2x2 matrix of treatment (effect/no effect) by reality (effect/no effect). (Be sure to label error types when appropriate). *[p. 11, lines 9–10, Figure 2.2]*

	Reality	
	Effect	No Effect
Effect	1	2
No Effect	3	4

a. You find that Group 1 rates Obama higher than Group 2, when in fact there was that effect present. This would be a correct conclusion, and the probability in which we will make this conclusion (given the presence of treatment and "real" effects) reflects the statistical power of the study.

b. 2. You find that Group 1 rates Obama higher than Group 2, but in fact there was no difference between groups in reality. This represents Type 1 error.

c. 3. You find that there was no difference in Obama's ratings between Groups 1 and 2 when in fact there was a difference present. This represents Type 2 error.

d. You find that there was no difference in Obama's ratings between Groups 1 and 2 when in fact there was no difference between groups. This would be a correct conclusion.

6. Briefly describe and compare internal and external validity. In your answer, be sure to include for each type: (a) a definition, (b) the critical issue it addresses, and (c) whether it is higher or lower in experimental versus nonexperimental (field) research. *[p. 8, lines 17–28]*

Internal validity: the extent to which causal inferences can legitimately be made about the nature of the relationship between predictor and outcome variables. Concerns the certainty with which we can attribute a research outcome to a predictor of interest. Discussion of internal validity primarily reserved for experiments, as they are the only

designs in which causal inferences can (appropriately) be made. All else being equal, internal validity is high in experimental research, and low in field research.

External validity: the extent to which results can be applied to other respondent groups, other settings, and to different ways of operationalizing the conceptual variables. Concerns the issue of generalizability. All else being equal, experimental research is low in external validity, and high in field research.

7.   Compare random selection and random assignment. In your response, be sure to define each term and an explanation for how they differ. *[p. 28, lines 15–17]*

Random assignment involves the research design after participants have been recruited, where participants in a study are equally likely to be "assigned" to the different experimental groups. Random assignment is primarily an issue of internal validity.

Random selection involves recruitment procedures prior to participating in a study, where all people in a given population are equally likely to be "selected" to participate. Random selection is primarily an issue of external validity.

Really Long Answer Question

1.   Hermione and Luna conducted a study on the effects of marijuana on academic performance, and the effect of school on marijuana usage. They recruited 50 people from a well-known group of potheads at school, and 50 people from a well-known group of abstainers. At the beginning of the 2014 school year, they administered three

measurements of key variables: (a) marijuana use – "how often do you smoke

marijuana?"; (b) grade point average – "what were your grades for the previous

semester"; and (c) relationship with their teachers – "in general, how good is your

relationship with your teachers?" At the end of the school year, the researchers

reassessed the three key variables: (a) marijuana use – "how often did you use

marijuana in the past year?"; (b) GPA – "what are your grades for the current

semester?"; and (c) relationship with teachers – obtained teachers' ratings of their

relationships with the students in the study. By the end of the school year, 25 percent of

potheads had dropped out of school (and thus out of the study), while none of the

abstainers dropped out. Overall, the researchers found that people who use marijuana

had significantly poorer GPAs and relationships with their teachers compared to non-

users. However, they also found that marijuana users decreased their usage by the end

of the school year, whereas a significant percentage of abstainers started using

marijuana by the end of the school year. Thus, they concluded that marijuana negatively

impacts people's scholastic achievements, and that school helps habitual users stop

using marijuana but simultaneously causes people who never used marijuana to start

using. Obviously, this study has many problems, particularly with its internal validity.

Please describe how *four* of the eight threats to internal validity may have influenced

the results of this study, and offer solutions for how to deal with these internal validity

threats. In your answer, be sure to (a) describe each threat, (b) identify how each threat

is present in the study, (c) explain how the threat would *specifically* impact the results of

the study, and (d) offer one suggestion for how to solve or prevent each threat. *[pp. 15–*

16]