Question 1. Media stories often repeat claims to increase their persuasive power. Brashier et al. (2020) hypothesized that repeated statements feel truer than new ones and conducted a study to test whether repetition would enhance the believability of potentially false information. In this study, researchers also tested the hypothesis that asking people to fact check the claims might make them less susceptible to the repetition effect by activating relevant fact knowledge.

Participants first read 60 statements like “the fastest land animal is the cheetah.” Half of the participants were asked to rate how interesting each statement was on a scale from 1 (very uninteresting) to 6 (very interesting), and the other half rated each statement for truthfulness on a scale from 1 (definitely false) to 6 (definitely true). After this first round of rating sentences, participants were then tested on 120 sentences, 60 repeated from the first part and 60 new. In this part, each sentence was rated on the 1-6 truthfulness scale.

1. What are the two independent variables (factors) in this study and what are the levels of those factors in this 2x2 design?
2. What is the dependent variable for this study? What construct is it a measured operational definition of?
3. Why are the rating of interest, the rating of truthfulness in both the initial and final ratings all done with the same scales from 1 to 6?
4. Below are some hypothetical data shown via graph and a subsequent report of a 2x2 ANOVA analysis. First, report the results of the two main effects in standard APA style (the interaction is the next question).

Chart, bar chart

Description automatically generated

Table

Description automatically generated with low confidence

1. Report the interaction reflected in the above data and provide an interpretation of this result.
2. Another researcher wants to do a new project following up on this report using only really obviously false statements like “the world is flat.” What concern would you warn them about related to the dependent variable in this case?
3. How might the age of the participants in this study affect the conclusions drawn from the results?

Question 2. Does a personal story change your attitudes? Inspired by Gustafson et al. (2019), researchers compared the influence of two different sources of information on participants’ attitudes about climate change. Participants heard one of two different narratives (randomly assigned), either a personal story that told the narrator’s sadness arising from seeing the impacts of climate change on the ecosystems in which he fishes, or a news report in which the narrator covered the latest data for impacts of climate change on fishery and ecosystems. After listening, participants were asked to indicate where they thought community spending should be increased locally deciding between “education” and “environmental protection.”

1. What are the operational definitions of the independent variable and the dependent variable in this design?

1. What type of statistical test would be used to establish a reliable effect of the independent variable on the dependent variable?
2. Describe two extraneous variables that need to be considered and controlled between the personal story and the news report when creating the stimuli.
3. If it was found that the design above produced a reliable effect in the laboratory, it might be tempting to look at whether this effect also worked in a field study. Suppose a politician who focused on environmental issues wanted to run a study measuring voting behavior affected by an experimenter telling a personal story about climate change effects outside a polling station. How would you organize a field study version of this experiment?
4. What are the ethical issues that would need to be considered when planning a field study like in (d).
5. Explain how you would approach a redesign of this study to do a factorial design aimed at looking at the effects of a personal story versus a general narrative and whether this effect was larger for participants who scored in the upper range on the personality variable of narcissism. Describe operational definitions of all variables that would need to be created or modified for this study.
6. Give a prediction for a reliable interaction between the independent variables in (f).

Question 3. In an effort to try to understand problems that college students might have with time management, researchers interviewed a student who reported having great difficulties in school due to persistent problems with excessive video game play. During the interview, the student noted substantial sleep disruption related to gaming and the researchers developed a hypothesis that these were related.

1. What kind of research is reflected in this approach? Can we infer that excessive video game play causes sleep disruption from these data?

To follow up on this idea, the researchers performed a survey of 236 college students and asked them about their gaming behaviors (e.g. how often they play video games, with seven possible responses ranging from “about once a year” to “every day”) and their typical sleep quality, scored as a function sleep duration, sleep depth, dreaming, etc. Results showed that the more time spent playing video games, the lower the sleep quality.

1. Is this follow-up study an experimental design? Why or why not?
2. When designing the questions for sleep quality, researchers decided not to include the following question. Is it a good idea to remove this question? Why or why not?

“*Are you satisfied with the duration and depth of your sleep?* Circle one: Yes / No”

1. When specifically looking at the relationship between the average amount of time spent gaming and sleep quality, what statistical tool would be used?
2. Give an alternate explanation consistent with the relationship observed in these data but leads to a different conclusion about what causes what.
3. Briefly outline how to carry out an experimental study to test this hypothesis. What is a potentially important ethical issue with an experimental approach to this question?