

1. Researchers recruited a sample of pregnant women from prenatal care practices in Connecticut for a study about chocolate intake during pregnancy. The women were interviewed during their first and third trimesters about risk factors for preeclampsia, an adverse pregnancy outcome, and their chocolate consumption. Women who reported regular chocolate consumption of one to three servings per week had a 50 percent reduced risk of preeclampsia.
 - a. Is the scenario described an observational study or an experiment? Explain.
 - b. Identify and classify the explanatory variable.
 - c. Identify and classify the response variable.
 - d. Can the researchers conclude that consuming chocolate during pregnancy will cause a reduced risk of preeclampsia? Explain.
2. Does reading books help you live longer? A study was conducted on a cohort of 3,635 participants who answered questions about their reading habits via a telephone survey. Researchers followed up with the participants twelve years later and concluded that book readers experienced a 20 percent reduction in risk of mortality over the 12 years of follow-up compared to non-book readers.
 - a. A retrospective study is when investigators examine past data for a sample of individuals. A prospective study is when investigators follow a sample of individuals into the future collecting data. Is the study described a retrospective study or a prospective study? Explain.
 - b. Identify the explanatory variable and the response variable.
 - c. Identify a potential confounding variable.
 - d. How is the confounding variable related to the explanatory variable?
 - e. How might the confounding variable influence the res

3. Does a Mediterranean diet during pregnancy improve child neurodevelopment at age 2 years? A study was conducted involving 1,221 pregnant women. The women were randomly assigned into three groups for four weeks during their pregnancies: a Mediterranean diet intervention, a stress reduction program, and usual prenatal care with no interventions. A total of 626 children were assessed at age 2 years and it was determined that children in the Mediterranean diet group had higher scores in the cognitive domain and social-emotional domain than in the usual care group.
- a. Is the study described an observational study or an experiment? Explain.
 - b. Based on the results, can the researchers conclude that the eating a Mediterranean diet during pregnancy caused higher scores? Explain.
 - c. About half of the mothers who initially participated in the study did not bring their children in for an assessment. Explain how this could affect the analysis of the results.
4. Does the wording of a request impact children's willingness to help? Researchers wondered if referring to a child as a "helper" or asking a child to "help" would affect their behavior. Participants were 51 four- and five-year old children who were randomly assigned to one of three groups. 17 children were assigned to the "verb condition" by asking them to help pick up toys, 17 children were assigned to the "noun condition" by asking them to be helpers when picking up toys, and the remaining 17 children were assigned to a baseline group (without using help or helper). Researchers then measured the number of toys children picked up after being given the directions. The children who were assigned the noun condition (helper) helped significantly more than the children in the other two groups.
- a. Draw an outline of the experiment.
 - b. Identify the experimental units.
 - c. Identify the treatments.
 - d. Identify the response variable.

5. To examine the efficacy of a speech pathology program, a group of 50 children was split into two groups. One group of children received speech services once a week for ten weeks and the other group received speech services twice a week for ten weeks. At the end of the ten weeks, each child was tested and the number of speech errors they made was recorded. Which of the following describes the type of study that was conducted and the response variable of the study?
- A) An observational study was conducted. The response variable is the frequency of speech services received per week.
 - B) An observational study was conducted. The response variable is the number of speech errors made during testing.
 - C) An experiment was conducted. The response variable is the frequency of speech services received per week.
 - D) An experiment was conducted. The response variable is the number of speech errors made during testing.
6. A restaurant manager wants to examine customer satisfaction with the waitstaff at his restaurant. The restaurant has two seating options: the sports bar where sporting events are displayed on large televisions, and the dining room which has no televisions. When customers arrive, they are asked which seating option they prefer. The manager randomly samples 20 customers from both seating options and asks them to complete a short survey. He compares the reported satisfaction level with the waitstaff and determines that customers report a higher satisfaction level with the waitstaff at the sports bar. Which of the following is an extraneous variable?
- A) The customers' preferred seating option
 - B) The manager did not ask all customers about their level of satisfaction
 - C) The fact that both seating options are in the same restaurant
 - D) The restaurant only has two seating options