HW 01 Written Work

● Graded

Student

Sangwon Ji

Total Points

21 / 26 pts

Question 1

Q1.1

6 / 6 pts

✔ **+ 3 pts** **Correct answer:** No, the claim is not supported

✔ **+ 3 pts** **Correct justification:** The time between Memorial Day and Labor day is around 25% of the year; 25% of burglaries happening in 25% of the year does not imply a higher rate during the summer.

+ 0 pts Incorrect/blank

Question 2

Q5.1

5 / 5 pts

✔ **+ 2.5 pts** **Correct answer:** It was observational.

✔ **+ 2.5 pts** **Correct justification:** The researchers didn't perform any intervention/sufficient explanation.

+ 0 pts Incorrect/blank

Question 3

Q5.2

Resolved **0** / 5 pts

+ 2.5 pts **Correct answer:** Yes

+ 2.5 pts **Correct justification:** There is a big difference in myopia rates.

✔ **+ 0 pts** Incorrect/blank

We cannot conclude causation due to the existence of confounding variables, but we can conclude association. Strong association ≠ causation. See common mistakes doc for more.

Regrade Request **Submitted on: Jul 03**

Hi, like the explanation you gave out, I do not believe that we can conclude causation between the variables. I said there can be found with partial relation, but due to reason that this study was done observation, there might be other reason causing the result so I did not say it was causation. Should I had to answer more clearly than partially?
Thank you, Sangwon

Hi Sangwon. Thanks for taking the time to submit a regrade request. Yes, in the future please avoid responding to questions with terms like partially or somewhat. The key takeaway from this question is that a strong association can be found even with just an observational study, and we do not need further studies to conclude that there is a strong association.

Reviewed on: Jul 03

Question 4

Q5.3 **5** / 5 pts

✔ **+ 5 pts** **Correct answer:** No

+ 0 pts Incorrect/blank

+ 2.5 pts Click here to replace this description.

Question 5

Q5.4 **5** / 5 pts

✔ **+ 2.5 pts** **Correct answer:** We see an association, but cannot determine causation.

✔ **+ 2.5 pts** **Correct justification:** Myopic parents are a confounding factor.

+ 0 pts Incorrect/blank

An ad for ADT Security Systems says,

> "When you go on vacation, burglars go to work [...] According to FBI statistics, over 25% of home burglaries occur between Memorial Day to Labor Day."

Do the data in the ad support the claim that burglars are more likely to go to work during the time between Memorial Day to Labor Day? Please explain your answer. **(6 Points)**

Note: You can assume that "over 25%" means only slightly over. Had it been much over, say closer to 30%, then the marketers would have said so.

Note: Memorial Day is observed on the last Monday of May and Labor Day is observed on the first Monday of September.

From Memorial Day to Labor Day is indicated between the last Monday of May to first Monday of September. Thinking how much that period could be in a year, it's approximately three months and a week or so. That's almost the quarter of the year, which is also 25 percent. WIth the numbers given, it might be slightly higher than other periods in the year, but I think it's not concentrated in this period and would be the similar for other periods that are given at three months or so. Therefore, there isn't causation found between these two, I think the data might look convincing but thinking of the real time, it isn't that much of a difference and the data in the ad isn't supporting the claim strongly.

Question 1. The data were gathered by the following procedure, reported in the study. "Between January and June 1998, parents of children aged 2-16 years [...] that were seen as outpatients in a university pediatric ophthalmology clinic completed a questionnaire on the child's light exposure both at present and before the age of 2 years." Was this study observational, or was it a controlled experiment? Explain. **(5 Points)**

This study is an observational study. Since it wasn't done at a lab or wasn't controlled by the ones who conducted the study, and was just done with observation of the changes that happened throughout with the questionnaire solved by the parents and the children, the study is an observational study.

Question 2. The study found that of the children who slept with a room light on before the age of 2, 55% were myopic. Of the children who slept with a night light on before the age of 2, 34% were myopic. Of the children who slept in the dark before the age of 2, 10% were myopic. The study concluded the following: "The prevalence of myopia [...] during childhood was strongly associated with ambient light exposure during sleep at night in the first two years after birth."

Do the data support this statement? Why or why not? You may interpret "strongly" in any reasonable qualitative way. **(5 Points)**

I believe the data supports this statement, but partially. Without any interfering, they had the three groups with the same age, exposed to different light sets. Just comparing the results, the difference between the percentages is significant and can easily relate the relation between prevalence of myopia and exposure to ambient light. However, there might be a confounding factor that the researchers might not have catched in the research. Other factors might have been included but since it's an observational study, they had only the information that they could observe. Therefore, I do see the relation but believe that the data does not strongly support the statement.

Question 3. On May 13, 1999, CNN reported the results of this study under the headline, "Night light may lead to nearsightedness." Does the conclusion of the study claim that night light causes nearsightedness? **(5 Points)**

Like the headline, I think nightlight "may" lead to nearsightedness. Similar answer to the previous one, the results look relevant, but the result of the study does not strongly supports the conclusion. So no, it doesn't claim that night light causes nearsightedness. There might be other confounding factor that worked in the relation between the results. However, through the results, we could see that it might be one of the factor that cause myopia.

Question 4. The final paragraph of the CNN report said that "several eye specialists" had pointed out that the study should have accounted for heredity.

Myopia is passed down from parents to children. Myopic parents are more likely to have myopic children, and may also be more likely to leave lights on habitually (since the parents have poor vision). In what way does the knowledge of this possible genetic link affect how we interpret the data from the study? Explain. **(5 Points)**

Unlike how the researchers have seen the relevance between myopia and exposure to light, the conclusion may come out completely different. That being said, that the myopic parents may habitually leave the lights on, and myopia has to do with the genetics reasons, myopia and light exposure may have no relevance after all. This certain data, we have to be aware of all the time. Just like this case, confounding variable could be existing in the observational study, and the results of the data might look convincing enough that could easily lead to an error. It would change the whole of how we interpret the data from the study.