**Chi-Square Test – Junk Food Study**

Dr. Alan R. Hirsch runs the Smell and Taste Treatment and Research Foundation in Chicago. He studied the relationship between food preferences and personality types. He conducted a study (n = 800) that compared preferences for different snack foods (some of which are on the survey you completed before class) and personality types.[[1]](#footnote-1) This activity will involve looking at the relationship between junk food preference and personality type.

**Discuss the Following Questions**

1. What would be an appropriate research question for this study?
2. What would be the null and alternative hypothesis statements that would be used to answer the research question?

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Fill in the data from the survey you completed. The teacher will provide you with the data.

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| --- | --- | --- | --- | --- | --- | --- |
|  |  | Personality Type | | | |  |
|  |  | Ambitious, successful, high achiever | Concerned about social issues/injustice | Lively and energetic, crave novelty, excited by challenge | Formal, proper, principled, conscientious | Totals |
| Snack Preferences | Potato Chips |  |  |  |  |  |
| Tortilla Chips |  |  |  |  |  |
| Pretzels |  |  |  |  |  |
| Cheese Curls |  |  |  |  |  |
|  | Totals |  |  |  |  |  |

* Use the statistical software of your choice (e.g., R, SAS, StatCrunch) to conduct a chi-square test.

1. Are the conditions needed to conduct a chi-square test met?
2. Calculate the *p*-value and provide an interpretation of the *p*-value.
3. Provide an answer to the research question. Was Hirsch correct in his identification of the different relationships between specific junk foods and specific personality types?

**EXTENSIONS**

1. What are the implications based on this study design? Can generalizations be made? Can cause-and-effect conclusions be made?
2. Hirsh does not state that he used the chi-square technique to analyze his data.  Why do you feel this technique would be appropriate to use in this situation?
3. Did the results of the chi-square analysis support Hirsch’s theory?  If not, do you think this is evidence that Hirsh’s theory is false?
4. Is there anything about Hirsch’s original study that leads you to question his findings?  If so, what?
5. How might you design a more convincing study that links food preferences to personality type? Do you think you could design an experiment in order to determine if there is a causal link between these two variables? Why or why not?
6. How are the hypothesis statements for the chi-square test different from the hypothesis statements for a *t*-test?

1. Filmore, C. (2009, March 7). What is your favorite snack food and why? *Helium*. Retrieved from <http://www.helium.com/items/1367610-snack-food-and-personality> [↑](#footnote-ref-1)