Student Handout: Memorathon Lab: Conducting a Hypothesis Test on Student Memory

Background:

Memory is the process of retaining and recalling knowledge or experiences. Human memory is very complex and can be tested in many ways. Serial recall, or memory span, is a measure of how many items a subject can remember in a specified order without an error. Memorathon is web-based game in which a person is expected to repeat a sequence of buttons. Each time you successfully repeat the given sequence of buttons, the sequence gets longer. The challenge is to remember as long a sequence as possible. You can go to the above site and leave all the variables blank when you are simply trying out the game. However, if you want to find your score in the database of results, a specific course and participant ID will be needed.

Go to the web site http://kuiper.pearsoncmg.com/memorathon/

- Speed: Medium
- Colors: Multicolor
- Sound: Standard
- Label: Standard
- # buttons: 8 buttons
- Check the Participant Info box
  - Participant ID: use a secret name, any combination of letters and numbers with no spaces. Do not use a name or term that will identify you.
  - Group ID: _____

Conduct a hypothesis test about students in our course

(e.g. on average can students recall more than ___ items?)

1. State the null and alternative hypotheses corresponding to the objective of this study.

2. All students in the class should play the game. Each student will be considered a subject in this study. In this test, we are simply conducting a test on the average number of items recalled. However, we want to make the conditions as similar as possible for all subjects. Determine the settings for each of the following variables on the Memorathon Game:

Speed:
Colors:
Sound:
Label:
buttons:

3. List any other conditions that should be controlled during this study.

4. Why is it important to attempt to ensure that all subjects play the game under the same conditions?

5. After all students complete the game, use the Recorded Data button to view all data from our study (use same Group ID as above). Copy and paste the data into Minitab, Excel, or other statistical software package. Create a histogram and box plot of your data. Are there any outliers or skewness shown in your plots? Are there any errors in the data? Correct or delete any data that is clearly wrong.

6. Use appropriate statistical techniques to calculate a p-value for your study.

7. What assumptions need to be checked before we can conclude the analysis in Question 6) is appropriate?

8. State your conclusions ***in context***. For example, explain whether we can use this data to conclude that our results hold for all students at our school.