

PSY 4180
(Phillips)
Assignment 3

This assignment requires you to come up with an original, creative, research question about the relationship between 2 dichotomous variables and to collect a small amount of data to test your hypothesized relationship. This question can emanate from any number of sources - a personal hunch you may harbor, something you observed in real life, something that you read about in the journal literature of a textbook, etc.

In writing your assignment, you should include the following headings following the Title Page (which should have your name, student number, course section, and TA and be formatted in APA Style):

1. **Introduction:** A brief description of your research question, it's rationale and your predictions. If your research question emanates directly from the literature, you may cite relevant studies in your introduction and then provide full information in a References section at the end of your paper (in APA style).
2. **Variables:** A description of your 2 dichotomous variables (e.g. male/female, smoker/non-smoker, over 25yrs./under 25yrs. etc). Indicate how these are labelled on your Chi Square Table (e.g. which variable is A, which one is B, and what the 2 levels of each variable are). If you have used a continuous variable and made it into a dichotomous variable (e.g. age), indicate where you made the cutoff point (e.g. older vs. younger).
3. **Subjects:** A description of your subjects. Who were they? (volunteers? people you watched in a public place ? people on FaceBook? data points from a published survey, etc.)
4. **Method:** A complete description of your method of data collection. (This section should contain sufficient information so that another researcher could replicate your study without difficulty). Precision and detail are very important in this section.
5. **Results:** This is where you show your data. You may simply fill out the tables provided below.
6. **Interpretation:** A statement concerning the value of the Chi Squared statistic and the statistical significance of the obtained Chi Squared statistic (i.e. your statistic is/isn't significant) and what this means about the probability of your findings. If you are rusty on how to do this, go back to your stats/research methods text.

**You will be graded on the following dimensions:

*Accuracy

*Organization

*Clarity of Writing, Level of precision and detail in description of material in above headings

*Creativity

Calculating a Chi Squared Test for Two Dichotomous Variables

1. Plot the data in a contingency table, as below:

		<u>Variable A</u>		Total
		A ¹	A ²	
<u>Variable B</u>	B ¹			
	B ²			
Total				

2. Then make a four column table, one column for each cell of the contingency table, as below:

	A ¹ B ¹	A ¹ B ²	A ² B ¹	A ² B ²
observed frequencies				
expected frequencies				
differences				
differences squared				
differences squared divided by expected frequencies				

Fill in the rows in this four column table, according to the following directions:

1. **Observed frequencies** refer to the number of cases in each cell.
 2. **Expected frequencies** for each cell are calculated by multiplying the total of the row containing the cell by the total of the column containing the cell and dividing by the grand total of all the cells.
 3. **Differences** for each cell refer to the differences between the observed and expected frequencies (regardless of sign).
 4. To obtain **differences squared**, square each difference.
 5. Finally, to obtain the figure for the **last row**, divide “differences squared” (row 4) by the expected frequency (row 2) for that cell.
3. Add the four numbers you obtained in the fifth row. This is the score for your Chi Squared test. If it is greater than 3.84, it is significant at the .05 level. If it is greater than 6.64, it is significant at the .01 level.