The Effects of Positivity and Negativity on Response Length

Abstract

The goal of this study was to determine whether positive or negative phrasing of inquiries would create an effect on response length. Responses were recorded from a random sample of 50 college students who were assigned a set of two related questions. One question was phrased in a positive way while the other was phrased in a negative way. The difference between the number of words used in the response to the two questions was analyzed using theory based and simulation-based methods. The analysis revealed that there was a statistically significant difference between the difference in response length of the first and the second question asked, regardless of phrasing. Simulation-based analysis resulted in ($p=0.0130$) and the theory-based analysis resulted in ($p=0.0308$). Causation and population generalization can be inferred due to the random nature of both sampling and assignment.

Background and Significance

Studies such as the one performed by Rugg (1941) have found that respondents are 21% more likely to respond "no" to negatively phrased questions than "yes" to the corresponding positively phrased question. Further supporting this concept, a study by Kamoen which examined the results of similar studies, concluded that the phrasing of a question was likely to affect the cognitive process of the respondent in differing ways (Kamoen (2013)). Taking into account these previous findings, this study seeks to test the hypothesis that the phrasing of questions will have a significant effect on the number of words used in response to either positive or negative questions.

Participants

This study consisted of 50 college students who were randomly asked to volunteer a response to a set of two questions. None of the participants was informed of the purpose of the study before or after completing the written response.

Experimental Design

Three aspects of the data were examined; (1) whether there was a significant difference between the mean number of words used to respond to a positive and negative question of the same topic. (2) Whether the phrasing of the first questions affected the number of words used to respond to a second question with the opposite phrasing. (3) Whether there was a difference in the mean number of words used in response to positive and negative question by males and females.

Procedure

Samples were collected from a random selection of students from our college. This was accomplished by establishing sampling points at two high foot-traffic areas in order to reduce sample homogeneity. Passing students were asked to respond to two written questions drawn from a shuffled pile of question sheets. Each sheet contained one positive and one negative question pertaining to the same subject i.e. "What are some good things about attending college?" and "What are some bad things about attending college?". The order of questions in regard to positivity or negativity were split in such a way that 25 question sets began with a positively phrased question and 25 began with a negatively phrased question. The number of words used in response to each question was recorded in accordance to their literal verbal meaning: for example the symbol "@" was considered the word "at" and abbreviations such as "IDK" were considered "I don't know" while contractions were counted as singular words.

Data Analysis

Samples were recorded in two columns per sample, one containing word count response to the positive question and one containing the word count response to the negative question. Due to fact that each individual responded to both a negative and a positive question for each sample, the difference between word count was quantified by subtracting the word count for the negative question from the word count of the positive question regardless of question order. To address question (1), the differences in response length from all 50 samples were examined via two-sided normal theory-based "One mean" inference. In order to analyze question (2) the difference values were split into two groups of n=25 according to the phrasing of the first question. These two groups were analysed via the "multiple mean" simulation-based applet and because the data was not too skewed, normal theory-based analysis was implemented as well. Finally question (3) was subjected to a "multiple mean" simulation based analysis where the samples were split into male (n=14) and female (n=36). Normal theory-based analysis was not used due to the small sample size of the male group. For each of these analyses, a relevant 95% confidence interval was computed.

Results

As previously stated, the data utilized was the difference between (Positive-Negative) word count for each respondent. Question (1) resulted in a p-value (p=0.4381) and a 95% confidence interval of (-0.7225, 1.6425). Question (2) resulted in a simulation based (p=0.0100) and a theory based (p=0.0308) in addition to a 95% confidence interval of (0.2415, 4.7985) and an F value of 4.995. The analysis of question (3) resulted in a simulation based (p=0.3080) and a 95% confidence interval of (-3.52, 1.84).

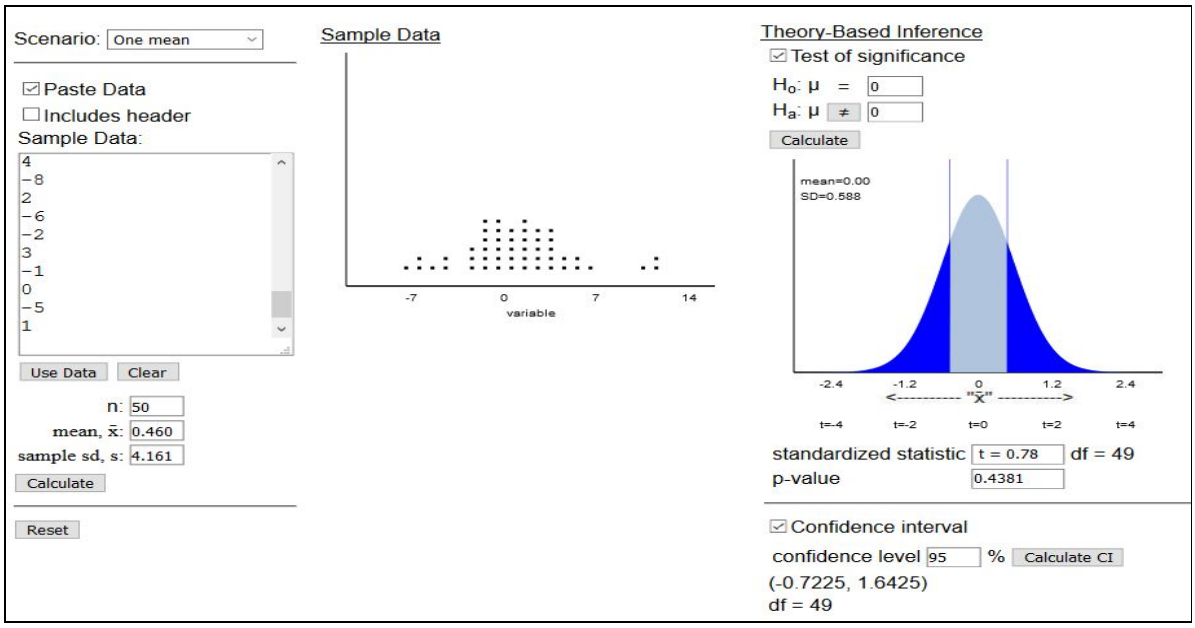

Figure 1. One mean analysis of the difference between mean word-count used to respond to a positive and negative question. The observed mean of the sample was 0.460 with a sample standard deviation of 4.161.

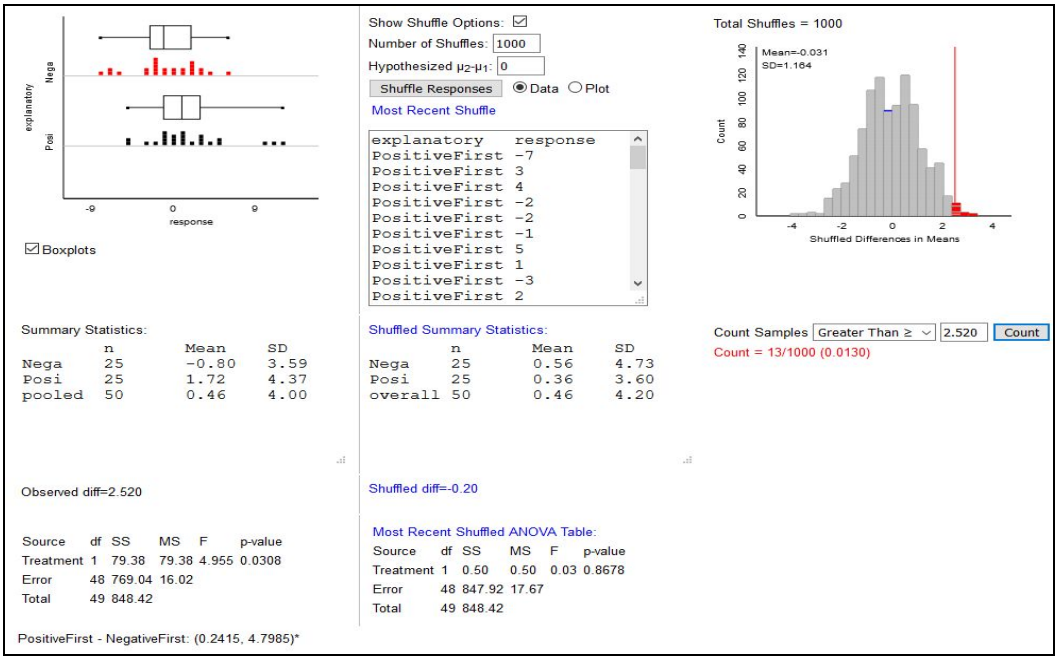

Figure 2. The multiple-mean analysis of the difference in mean word-count used to respond to positive and negative questions. This analysis resulted in pooled standard deviation of 4.00 and and observed difference of 2.520.

Conclusion

Question (1) sought to determine if there was a significant difference between the mean number of words used when responding to negative and positive questions. It was determined that there is no evidence to reject the null in this case. The mean difference between the number of words used when responding to a positive question and a negative question was not significant ($p=0.4381$). Question (3) considered the possibility that males and females might respond differently to positive and negative questions. The results determined that there was no evidence to reject the null hypothesis ($p=0.3080$). This indicates that males and females generally use the same number of words to respond to negative and positive questions on average. Question (2) sought to determine whether the phrasing of the first question could affect the word count of the second, opposingly phrased question. The results indicated that there was significant evidence to reject the null hypothesis, with a simulation-based p-value of 0.0130 and theory-based p-value of 0.0308. Due to the form in which the data was analysed (*see data analysis*) two possible explanations for this pattern arose, one was that the the first question, set the tone for the second i.e. a negative first question would result in less writing for a positive question. Taken into context with the other data found in the study, a second more pleasurable explanation was uncovered. This explanation considers that respondents are likely to lose interest as a study as it progresses, always writing less words on average in response to the first question than the second, regardless of the phrasing of either. As a result, we can be 95% confident that on average respondents answers to the first question will include 0.2415 to 4.7985 more words than the second. Due to the random assignment and sampling used in this study, it is possible to establish both causation and to generalize the results to a larger population. Limitations of the study derived mostly from small sample size, so future studies should seek to include a larger sample. Additionally, future studies could examine the extent of the correlation between the number of a question (i.e. the position of a question on a survey) and the difference in word count compared to the first question.

References

Reuneker, A. (2013). Naomi Kamoen. *Positive versus Negative. A cognitive perspective on wording effects for contrastive questions in attitude surveys*. - Utrecht: LOT, 2012. XVIII 175 pages. ISBN 978 94 6093 083 6. EUR 19,36. *Nederlandse Taalkunde, 18*(3), 350-355. doi:10.5117/nedtaa2013.3.reun

Rugg, D. (1941). Experiments in Wording Questions: II. *Public Opinion Quarterly, 5*(1), 91. doi:10.1086/265467