VR for Exposure Therapy

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Statistical Approach

The aim of the study was to determine whether virtual reality (VR) would be an effective tool for exposure therapy. To answer the question, we have developed three subquestions. The first question was to determine whether VR reduced anxiety levels in participants. We did a statistical analysis to help us understand the distribution of the data. We looked at the mean, median, range, and quartile. We made a boxplot to help show the spread and central tendency of the values within the data. For the second question, we wanted to examine whether people without acrophobia scored lower on anxiety level. We used a one sample t-test to compare the average anxiety level compared to the average population. We looked at the p-values and the confidence interval. The results were presented in a histogram, which compares the pulse of people with and without acrophobia. Following this, we examined whether there was a difference in the level of anxiety between people with and without acrophobia. We conducted a two sample t-test because we had two independent variables (people with acrophobia and people without acrophobia). We looked at the p-values and confidence intervals.We made two boxplots to represent the independent variables. This allows us to compare the heart rate of the two groups.

Results

In Figure 1, it tells us that after the participants received the treatment, the pulse rate of the participant ranged from 60 to 94. The first quartile was 70, which indicates that 25% of the data fall below 70 mmHg. About half of that data fall below 84 mmHg. About 75% of the data fall below 80.37 mmHg. The average pulse was 80.37 mmHg. These results indicate that the participant had a normal heart rate. However, measuring anxiety by pulse pressure is not enough.

Similarly, the results from the State-Trait Anxiety Intervention (STAI) shows that people reported their level of anxiety as low (see Figure 2).

Through the one-sample t-test, we observe that the p-value (1) is greater than our alpha value of 0.05. This means that our data was not statistically significant. There is not enough support to reject the null hypothesis that people without acrophobia scored lower in anxiety. We have a confidence interval of -inf and 82.63. This tells us that we are 95% confident that the true difference between the population mean falls between -inf and 82.63.

Through the two sample t-tests, it also shows that our data was not statistically significant. The p-value of 0.4187 was greater than 0.05. Therefore, there is no significant difference in the average level of anxiety between the people with and without acrophobia (see Figure 3). We have a confidence interval of -3.21 and 7.62. This tells us that we are 95% confident that the true difference between the population mean falls between -3.21 and 7.62.

Figure 1

Heart Rate After VR

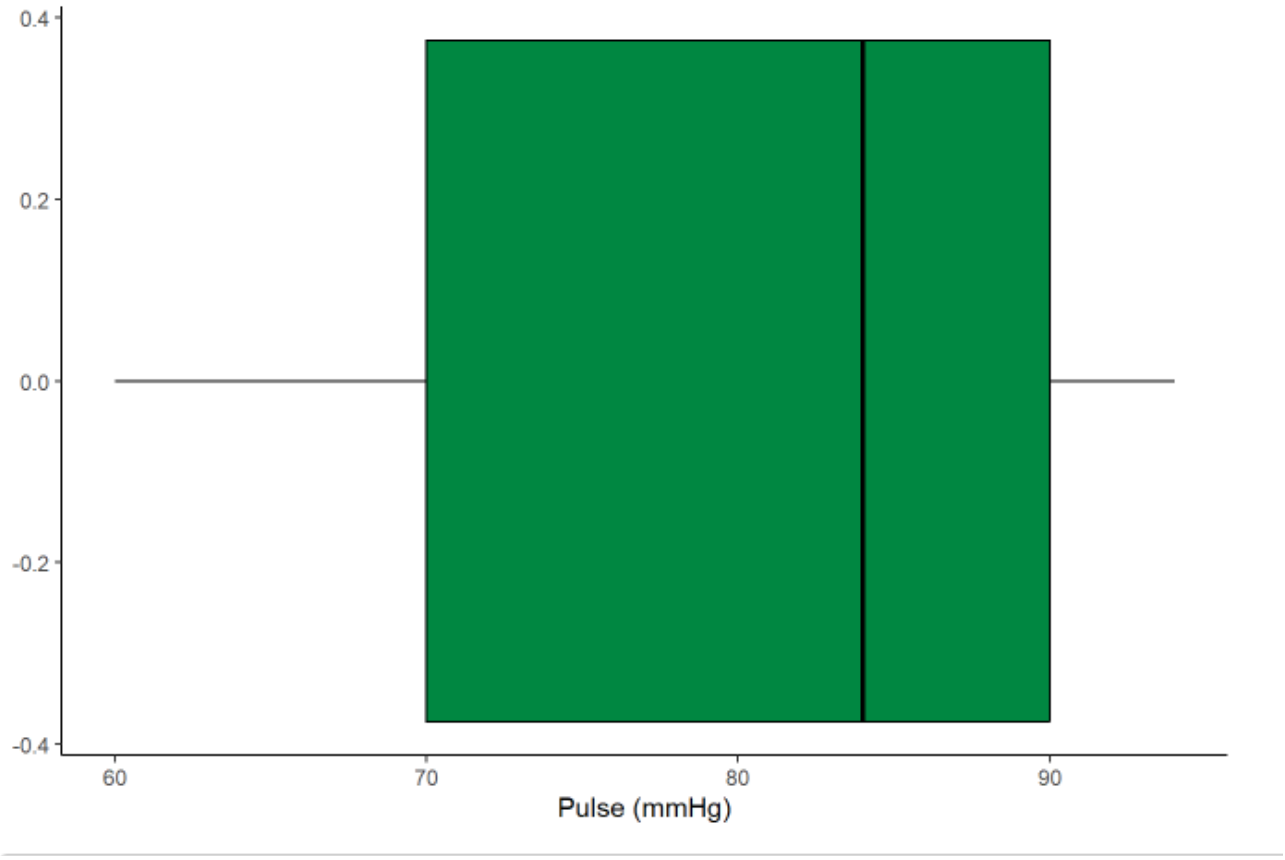

Figure 2

Anxiety Trait Score of Participants

Notes. State-Trait Anxiety Intervention is a 20 questions questionnaire that asks individuals about their state and anxiety level on a scale of 1 to 5. A score of 1 represents “not at all” and a score of 4 represents “very much”.

Figure 3

Heart Rate of Participants

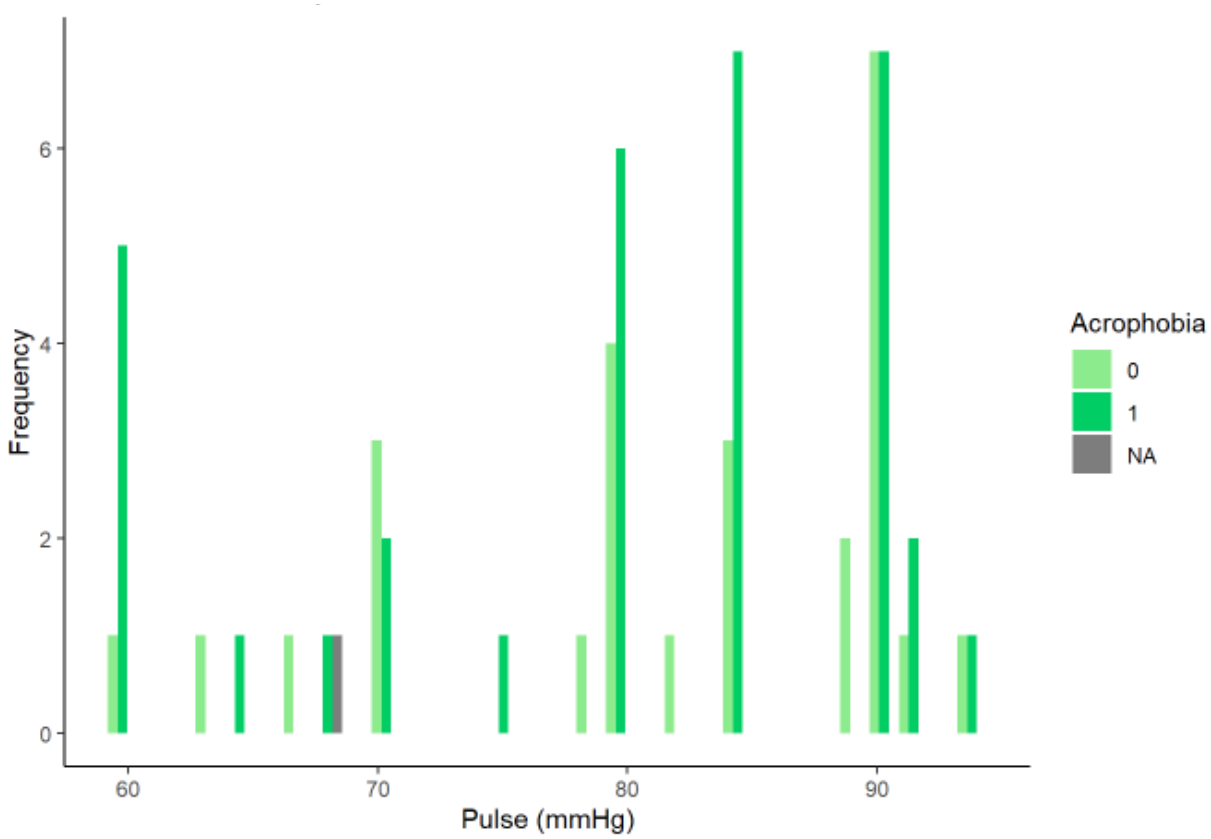

Figure 4

Heart Rate of People With and Without Acrophobia