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Statistics: Music and Resting Heart Rate

Paper citation: Sills D, Todd A (2015). Does Music Directly Affect a Person's Heart Rate?. J Emerging Investigators *43*: 1-4

Paper questions

In reading through the assigned paper, please answer the following questions:

1. What did you learn from reading the introduction?

   The introduction provides all of the relevant background information needed to understand the paper. In doing so, it also provides a range of references one can look up to learn more about a particular topic. Finally, the introduction states what question is being answered by the paper. In this paper, the introduction introduces previous work done on links between music and heart rate.

2. What was the question being investigated by the researchers?

   The authors wanted to see if there is a positive correlation between heart rate and the tempo of music.

3. What are the null and alternate hypotheses for the case of rock music?

   H_0: There is no change in heart rate after listening to rock music compared to before listening to rock music.

   H_a: There is a change in heart rate after listening to rock music compared to before listening to rock music.

4. Which statistical test was used by the researchers to analyze their data when comparing heart rates before and after listening to music?

   The authors used a paired t-test.

5. For rock music, what was the p-value? Is it statistically significant? Was the null hypothesis supported?

   The p-value was 0.0097. A general threshold for significance is 0.05. Since their calculated p-value is lower than 0.05, the measurements are statistically significant. The null hypothesis was therefore not supported.

6. In terms of experimental design, what are some things you would have done differently?

   Choose a larger sample size. The order of music selections could have been randomized in replicates of the same individual to make sure heart rate patterns remain consistent.

7. What are some shortcomings of this paper?

   The sample size is relatively small, which makes it difficult to interpret data. The study is also not able to be much more specific than saying music has an effect on heart rate. These two shortcoming go hand in hand as a larger sample size would allow one to dig deeper in statistical analysis.