

Brain Teasers

Math 5

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Yifat Amir

David Anderson

Kaylie Dienelt

Mirelle Phillips

Goal:

Getting admitted to Dartmouth College requires the combination of high SAT scores, strong grades, and involvement in extra-curricular activities. It can be assumed that most students at Dartmouth are not only intelligent, but also test well and are highly motivated. Performing well on a test such as the SAT correlates with an ability to maintain high performance under time pressure. Our group is curious to find out whether adding time pressure to a testing environment hinders or enhances the time that Dartmouth students take to perform a task. Adding time pressure might add anxiety, thus increasing the time it takes a student to perform a task, or it might increase intrinsic motivation, thus decreasing the time it takes a student to perform a task. Our goal is to investigate the effect of time pressure on the time it takes a student to complete a brain teaser task.

We have decided to use two experimental groups. Our control group will perform the cognitive task under no time limit, and our experimental group will perform the cognitive task with the added variable of a time limit corresponding to the average time that it took the subjects in the control group to complete the task. With this simple experiment, we hope to at least shed some indicative light on the following question: Does time pressure help or hinder cognitive performance?

Null Hypothesis:

$$x_1 = x_2$$

There will be no difference in the mean amount of time it takes for each group to complete the task.

Alternate Hypothesis:

$$x_1 \text{ does not } = x_2$$

There will be a difference in the mean amount of time it takes for each group to complete the task.

Parameter:

The parameter we will be testing is the difference between the mean times in the two test groups. We believe that there may be a difference caused by taking the test under a time pressure. We will call this probability, p . Under the null hypothesis, all subjects will perform similarly and there will be no difference between the mean time