



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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Project Title Effects of Transient Emotions on Short Term Memory	
<p style="text-align: center;">Abstract</p> <p>Objectives School environments are noticed to be stressful. We recalled times we became distracted by the stress given by teachers rather than paying attention to the lesson. We began to wonder if transient emotions, such as stress, might impact memory.</p> <p>Methods 15 common words were selected to test 125 students in grades 5 through 8. We gave the test subjects 30 seconds to memorize the words. We also found and created two short videos that we believed elicited either positive emotions or stress. After the students examined the common words for 30 seconds, the words list was taken away and the students were shown a video. Both videos were equal in length. The control group viewed the positive video while the experimental group viewed the stressful video. When the video was done playing, the participants were given a response form to list the words they recalled. The response forms were collected and recorded and the results were analyzed and compared.</p> <p>Results We tested experimental and control groups for grades five, six, seven, and eight. The fifth grade experimental (stress exposure) group recalled 33.2% fewer words than the control group (positive video). The sixth grade experimental group averaged 47.8% fewer words retained than the control group. For seventh grade, the experimental group recalled 28.7% fewer words on average. In eighth grade, the experimental group on average retained 30% fewer words than the control group. On average, the percent decrease from the control group to the experimental group was 35.6%. For our two-way t-test to determine whether the differences between the control and experimental group were significant, the P values were 0.004 for fifth grade, 0.00001 for sixth grade, 0.0035 for the seventh grade groups, and 0.003 for the eighth grade groups. The t-test results for gender differences found no significant results.</p> <p>Conclusions Our hypothesis stated that stress would impact the test subjects ability to recall information. The results strongly supported our hypothesis. In the first t-test, all the values were far less than 0.05, and confirmed that the experimental group recalled significantly fewer words than the control group. The results suggest that there is a statistically significant correlation between transient emotion and memory. We recommend further studies be performed to learn more about the impacts of emotion on memory.</p>	
Summary Statement Our project tests whether positive reinforcement and positive transient emotions (such as compliments) before a test is effective compared to negative transient emotions such as stress and anxiety.	
Help Received Our science teacher helped us understand the process of executing a test and eliminating confounding variables.	