



## Project ID: 111

SR - Behavioral and Social Sciences

**Cameron Ramirez**

Grade 10

Central Union High School, Imperial County

Advisor: Lourdes Rueda



### *Effectiveness of Students' Time Management on GPA*

Time management and environmental factors correspond in the GPA level of students. These two elements are essential in predicting how the student is going to perform in school. Poor time management leads to rapid increase in stress levels (which could be pre existing from other causes). This project has been designed to identify the correlation between effectiveness of time management and GPA. My experimental procedure involved creating a survey and response point system to assist in measuring effectiveness of time management on GPA levels. From the data collection, responses from 25 random students in each grade (9th-12th) was used to draw conclusions on my findings. Data collected from this experiment indicate higher scores in time management (30 points or higher, which reflects time spent on other endeavors) did not yield a great number of GPA scores below 3.0. It seems that factors such as time spent using social media, watching television, participating in extracurricular activities, working after school jobs, and completing chores did not negatively impact GPA standings. Possible errors that may have skewed the results of this experiment are students not answering the survey correctly regarding their classes and grades. Feelings of embarrassment and peer pressure may have caused them not to answer truthfully, even though the survey was to have been completed anonymously. Ultimately, the data collected reflected time spent on non school endeavors did not greatly affect GPA levels in a negative fashion.



## Project ID: 112

### SR - Behavioral and Social Sciences

#### Spencer Foss

Grade 10

San Diego Jewish Academy

Advisor: Patrick Hagarman



### *The Sunk Cost Fallacy and the Applications of Priming*

Priming is discreet throughout daily lives, but could it be utilized to improve society? This experiment tested if priming can influence the time people wait in line in order to better understand the applications of priming.

It was hypothesized that there would be a difference of 15-20% in between the control and experimental groups.

People were told to wait in a line for a reward and were aware of their option to leave. They were not informed of how long they would wait, which was a total of 15 minutes. The primed groups were told the wait would be three minutes, informed via a visual or auditory explanation.

The control group waited for an average of 10.8 minutes (72% of total time), the visual group waited for an average of 9.4 minutes (62.6%), and the auditory group waited for an average of 7.54 minutes (50.2%). The visual group was not statistically different from the control group whilst the auditory group was statistically different from the control group.

The results are in favor of my hypothesis as the auditory group differed by 21.8%. This may have been due to the trust in the person presenting the information, resulting in many leaving due to the fact that the wait was longer than three minutes. The visual group was not statistically different from the control as it may have been the paper was read, but not comprehended.

**Project ID: 113****SR - Behavioral and Social Sciences****NS****Nolan Kuemmerle**

Grade 12

Bonita Vista High School

Advisor: Michelle Mardahl

*To What Extent is There a Correlation Between Age and Reaction Time?*

The overall objective of the research and experiment is to come up with an answer in terms of how age affects reaction time and whether a correlation exists between the two. This information will be used in order to assess whether there should be an age limit for drivers in order to keep roads safe and minimize the risks of accidents. Based on previous research and my scientific reasoning I predict that if the participant is above a certain age, then their reaction time will be significantly slower (more milliseconds) than the younger participants because of the effect that aging has had on the human brain, thus impacting reaction time negatively. The procedure consists of an experiment conducted with individual participants where they are faced with a timed visual reaction test. The data is taken using the unit of seconds to measure how long each participant takes to react to the digital screen. The overall results indicated a very low positive correlation between the variables (0.308). Meanwhile, conducting a T-Test revealed a value of 0.00000334 thus serving as a near-certain indicator for an existing statistical significance between the varying ages of participants (not due to random chance). While this experiment (in support of the hypothesis) does lead to the conclusion that individuals over the age of 50 have a significantly slower reaction time than individuals between the ages of 14 and 18, whether elderly drivers are a greater safety hazard to public streets is a different question. Thus, more elaboration was required for a clear answer regarding the real-world context.



## Project ID: 115

### SR - Behavioral and Social Sciences

**Aarushi Garg**

Grade 10

Canyon Crest Academy

Advisor: Ed Gerstin



### *Silent Epidemic in the U.S.: Sleeplessness Amongst Teens*

1 in 3 American teens have mental health issues. CDC claims that there are never-before-seen levels of hopelessness and suicidal thoughts among high school students. Secondary research correlates mental health issues to sleeplessness, where around 87% high schoolers are sleep deprived. To help, California high schools now start later, and middle schools start earlier. I predict that this solution is missing the root cause of the problem, which arises in middle school, and escalates in high school.

I distributed my survey to students at xMS and xHS. I got a total of 517 responses. The questions focused on hours of sleep, and potential reasons for sleeplessness. To avoid fatigue and bias, the questionnaire had <20 questions and was designed so that there were no right or wrong answers. I compared hours of sleep based on gender, middle school versus high school, and other factors.

In my study, 72.24% middle schoolers and 87% high schoolers were sleep deprived. Girls were consistently getting less sleep than boys, but the disparity was more prominent in middle school. Also, 80% students didn't know the health implications of inadequate sleep, and 30% students claimed that sleep was not important.

While the time change in high school may be a short term solution, it doesn't address the root cause of the issue. I recommend that a sleep section be added to the health curriculum to educate students about the effects of puberty on sleep, health implications of inadequate sleep, and ways to cope with these issues. This would address the problem in middle school and remove the health inequity by giving girls ways to overcome these challenges, which arise much earlier than they do for boys.



## Project ID: 116

SR - Behavioral and Social Sciences

**Safwa Khan**

Grade 11

Bright Horizons Academy

Advisor: Najwan Nasereldin



### *Learned Helplessness on Academic Performance across Different Age Groups*

My project aims to understand learned helplessness across different age groups as well as the effect it has in a group environment. Personally, I struggle with giving up quickly when faced with a seemingly unbeatable obstacle, especially when it seems that my peers are doing well with the task. To improve not only myself, but others who struggle with the same problem as me as well, I decided to research the topic of learned helplessness. By analyzing the reactions of different age groups presented with a problem in an environment where it seemed their classmates and colleagues had no problem with, I am able to understand their differences in reaction and use that to understand my own struggles. I found that the middle school group scored higher than the elementary in both the solvable and unsolvable anagrams. Both sides showed that they each tried, even though it was impossible for some of them. I noticed a pattern in both elementary and middle school that, when seeing their peers finish early, they felt anxious and began to wonder if they were less intelligent than them. From this, I was able to conclude that learned helplessness manifests itself in the minds of many, and is emphasized when one compares themselves to others.

**Project ID: 117****SR - Behavioral and Social Sciences****Grace Na**

Grade 11

Bonita Vista High School

Advisor: Jennifer Ekstein

*The Effects of Religion on BVH Students' Environmental Philosophies*

Climate change is an ongoing global issue that everyone is facing. Moreover, people are continuing to practice their religion. Through this, I will be finding whether or not there is a correlation between climate change and the different types of religion people practice. My hypothesis is that religion can affect a student's environmental philosophies.

Procedure: To find how many Bonita Vista High (BVH) students are religious, I used a poll from Google Forms to collect data. The Google poll included questions focusing on whether or not the students' beliefs would support a specific legislation to help the environment and whether or not their religion contributes to reducing climate change. After collecting data, I used the average calculations, percentage change and the Pearson Correlation Coefficient to figure out if there is a correlation between religion and the environment.

Results: There is no correlation in terms of how religion affects the way a person views the environment. The r-value for "To what extent does your religion/belief take action to fight for the environment?" is 0.1007, meaning the correlation is weak. Moreover the r-value for "To what extent does your religion or belief value or find importance in the environment?" the r-value came out to be 0.2296. This also means that there is no strong correlation.

Conclusion: It was predicted that religion would influence how people viewed the environment. However, based on the results, there is not strong correlation between the views of the environment and the different types of religion.



## Project ID: 118

### SR - Behavioral and Social Sciences

#### Eiffel Sunga

Grade 12

Bonita Vista High School

Advisor: Jennifer Ekstein



### *The Effect of Income on BVH Students' Ability to Live Sustainably*

The upfront cost of eco-friendly products are more expensive than generic products. This includes everything from electric vehicles to food products. This project examines the effect of income on the ability of people in Bonita Vista High to use sustainable resources.

It is hypothesized that the lowest income individuals will be least able to live sustainably because it is too expensive to buy sustainably, eat sustainably, and use energy sustainably.

Participants completed a google form asking about their buying habits, eating habits, and energy/appliance use. Answers were based on a 5 point scale: 1 (strongly agree) to 5 (strongly disagree), 1 (never) to 5 (always), or 1(no effect) to 5 (significant effect). The form was sent out to all BVH science teachers who were asked to administer the survey to their students. Pearson's correlation coefficient ( $r$ ) was used to determine the correlation between income and these three variables.

Results did not support the initial hypothesis. The highest correlation between income and sustainable living was appliance use. There was a  $r = 0.112$  correlation between income and environmentally friendly appliance use, showing a very weak positive correlation. All other measures of sustainability: purchasing eco-friendly goods, eating a plant based diet, and using eco-friendly transportation had a correlation coefficient of  $r = 0$ ,  $r = 0.042$ , and  $r = 0.085$  respectively. Almost all measures of sustainability showed very weak positive ( $r < 0.1$ ) or no correlation ( $r = 0$ ) to income. Therefore, income cannot be attributed to any differences in sustainable living.



## Project ID: 119

### SR - Behavioral and Social Sciences

**Jialu Wu**

Grade 10

La Jolla Country Day School

Advisor: Daniel Lenzen



### *Text-to-Image to Increase Reading Comprehension in Lower and Middle School Students*

Visual cues are common tools used for the education of younger students. For educators, it is not always convenient to find or create a precise image to assist the comprehension of their students, what would be a feasible alternative in generating an image? The hypothesis for a successful prototype would be an AI generating an precise image uniquely according to the inputted text.

Procedure: A questionnaire is carried out with Lower and Middle School teachers at XXXXXXXX School and online research was conducted to ensure the validity of the assumption of images being able to enhance reading comprehension in younger children and to establish the targeted age group. Google Colab is then used to train machine learning models using birds dataset and coco dataset. The model would then be tested using the validation set and the loss value, accuracy value, and IS value would be noted. The dataset will be adjusted and the model will be optimized until ideal.

Results: After multiple trials, the AI was able to generate a realistic display of the inputted text with minimal distortion of the image.

Conclusion: It was predicted for the AI to generate images capable of serving as visual cues to enhance reading comprehension in middle and lower school students. This goal is achieved using text-to-image.



**Project ID: 120****SR - Behavioral and Social Sciences****Isaac McGreevy****Alex Park**

Grade 11

La Jolla High School

Advisor: Kerry Dill

*Determining the Effects of Intense Focus on Auditory Memory*

Our project focused primarily on testing the ability to remember sounds while focusing intensely. We hypothesized that people who are not focusing would have better memory recall of background sounds than people who are focused on a task. To test our theory, we created three groups of test subjects: a control group, a mentally focused group, and a physically focused group. Every group had an obscure soundtrack playing in the background of the test room. Each group was told to perform their tasks to the best of their ability. The control group did nothing, the mental group was given a math problem to be solved mentally, and the physical group was given a drawing to recreate on their own paper. So far, with around eleven participants in each group, our results are as follows: the control group had two participants that remembered, the math group had two participants that remembered, and the art group had two participants that remembered. There was very little variance between each group and we believe that more testing is necessary for a different result. From the evidence that we have currently gathered, the focus variable has changed very little about the auditory recall of our music.

**Project ID: 121****SR - Behavioral and Social Sciences****Nupur Bhalla**

Grade 9

Del Norte High School

Advisor: Andrea Callicott

*Correlation Between Suicides and Mental Health, Substance Abuse, HDI, Marriages, Life Satisfaction*

Suicide is a serious public health problem that can negatively affect individuals, families, and communities. As I got more interested in the subject of mental health and its impact on human well-being, research was done to find potential reasons behind the rise in suicide rates and determine if there is a statistical correlation between suicide rates and factors such as HDI, marriage, mental health status, and substance use disorders. My hypothesis suggests that in 2017, suicide rates had a positive correlation and were statistically significant with mental health and substance abuse disorders, HDI, marriage, and life satisfaction. For this project, these factors were all compared to suicide deaths using a chi-squared test for independence to determine if there is a correlation and its possible strength. First, various datasets using R Console were analyzed to obtain each variable's p-values, dF, and  $\chi^2$  values by performing a chi-square test for independence. Once these values were obtained, they were graphed and analyzed for a correlation. The results showed that mental health and substance abuse disorders have a strong positive relationship with suicide, life satisfaction has a strong negative association with suicide, HDI has a moderate positive relationship with suicide, and marital status has a weak negative correlation with suicide. Overall, these findings suggest that increasing awareness and providing effective treatments for mental health and substance abuse disorders, promoting life satisfaction, and improving the basic aspects of development and marital status may help prevent suicide.