



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Shruti Aggarwal	Project Number J0601
Project Title Do You See What I See?	
Abstract Objectives/Goals My objective was to determine whether changing the symbols used on an eye chart would affect the vision testing results. Methods/Materials I used 4 different Snellen Eye charts and tested the vision of 80+ participants in different age groups. My tests compared the vision acuity across two different eye charts in three cycles. I carried out the tests using 3 controls keeping the lighting, testing distance and chart height constant within each cycle. I recorded visual acuity and age. Results In cycle 1, most participants had higher visual acuity with the Tumbling-E chart as compared to a language chart (English or Hebrew). In Cycle 2, participants, occasionally, had a higher visual acuity with the Symbol chart, but on average the results for both charts were the same. In Cycle 3, pre-school kids ages 4 and 5 were tested on the Symbol chart and the English chart. Most pre-schoolers had the same visual acuity on both the charts, the difference being that the English chart was easier to read than the Symbol chart. Conclusions/Discussion After analysis of Cycle 1 results, I realized that there was an additional variable, namely, the different number of unique letters/symbols on each chart. The English/ Hebrew charts have 9 letters, but the Tumbling E chart has 4 symbols. Comparison of the results from Cycle 1 with Cycle 2 showed that as the number of symbols on the Symbol chart (12), came closer to the number of letters on the language charts (9), the difference in visual acuity reduced. Based on this, my conclusion was that changing the symbols used on an eye chart would not affect the vision testing results. Next, in Cycle 3, I tried to determine whether #Familiarity# with symbols is another variable by testing pre-schoolers, who I considered less accomplished readers. I observed that they were often unable to explain what they saw on the Symbols chart, but were familiar with the English alphabet. I would like to do further work to devise a method to test 'Familiarity'. This experiment confirmed that the DMV can use a symbols-based eye-chart for vision testing without any significant difference in results, instead of the current language chart. This would help to overcome the limitations associated with the ability to read any particular language.	
Summary Statement My project confirms that changing the symbols used on an eye chart will not affect the vision testing results, thereby assisting the DMV in replacing their current language eye-charts with symbol charts for eye-testing.	
Help Received My teacher Ms. Ligeti guided and encouraged me throughout my project. My Dad helped with creating the graphs. My Mom and my little brother for always being there for me.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Reiley A. Akkari	Project Number J0602
Project Title What's Your Reaction?	
Abstract Objectives/Goals My objective was to find out if colored paper, as a background, affects the speed of kindergartners' identification of pictures on the paper. Methods/Materials I drew pictures on 4 different colored papers (white, sky blue, red and neon green). Then, I timed 70 kindergartners' reactions on each colored sheet and recorded their time. I did 3 trials on each student (4 sheets, 3 trials and 70 kindergartners) totaling 840 recordings. I used a stopwatch, a table, a graph sheet, pencil, a quiet room and 2 chairs. Results I found that white (my control) was the fastest in the students' reaction times. Sky blue was next fastest, then red then neon green was the slowest. Conclusions/Discussion My hypothesis was incorrect. The background colored paper did affect the speed of the kindergartners' reaction. I found in my research that neon green and red were the slowest because they are both distracting colors. Sky blue was not the fastest either because it is a relaxing color. White was my control, and I compared the other colors to it. Now, I know why teachers use white paper for worksheets.	
Summary Statement My project is about how background colored paper affects kindergartners' speed in identifying pictures.	
Help Received My mom helped me by getting signatures and the use of her students and classroom.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Arjun D. Boddu	Project Number J0603
Project Title Exercise Balls: The Search for Cognitive Enhancers in the Classroom	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Will using an exercise ball instead of a standard school chair help students have better short term memory?</p> <p>Methods/Materials I recruited 20 4th grade students and divided them into two groups: a control group who were seated on standard school chairs and a test group who were seated on exercise balls. I arranged four desks with two standard chairs and two exercise balls. I seated students at the four desks. I placed a sheet of paper with many objects pictured face down on the desk. I instructed each student to turn over the sheet. Using a stopwatch I gave each student 15 seconds to memorize the objects pictured on the sheet. After 15 seconds I removed the sheet and asked each student to note what objects he or she remembered. I recorded the results. I brought in 4 more students and repeated steps 2 to 7 until all twenty students completed the task.</p> <p>Results The data proved my hypothesis that students seated on exercise balls had better short term memory than students seated in standard school chairs.</p> <p>Conclusions/Discussion The data proved my hypothesis that students seated on exercise balls had better short term memory than students seated in standard school chairs. Seating the children on exercise balls helped the students' memory on the test because they were making movements that stimulated their brains to help them stay focused. The students sat up straighter on the balls in order to stay balanced and this may have helped blood flow to the brain. I found that since the students enjoyed sitting on the balls they had improved attention span as demonstrated on the test results. For reliable results, I limited the age range of my subjects to the fourth grade, 9 and 10 year olds. I used a simple memory test that wasn't influenced by their level of knowledge. I used a stopwatch for timing, enlisted the aid of an assistant, and conducted all parts of the the experiment in the same environment.</p>	
Summary Statement Will students who are seated on exercise balls have better short term memory than students seated on standard school chairs?	
Help Received Parents for helping me proofread my work, a classmate for helping me conduct the experiment and a 4th grade teacher for letting me use his students for the experiments.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Aidan P. Chandless	Project Number J0604
Project Title The Impact of Eye Dominance on the Interpretation of Optical Illusions	
Abstract Objectives/Goals This study analyzes the impact of people's eye dominance on their perception of optical illusions. This study is intended to answer the question, "Do people with a dominant left eye perceive optical illusions differently than people who have a dominant right eye?" Methods/Materials 69 individuals were given the same optical illusion test. Test participants were shown 12 different illusions and asked a specific question about each one. The questions captured the participant's perception of each illusion. This data was recorded and compared. Participants were tested for eye dominance. Participants varied in age from 6 to 73. Although mostly located in California, participants were also located in New York, Massachusetts, and North Carolina. Participants were both male and female. Independent Variable: different individuals were given the test. Dependent Variable: the results of what the participants saw in the illusions Constant: the same illusions were given to every participant. Number of Trials: the test was given 69 times to 69 different individuals Results The first pattern I saw in the data proved my hypothesis wrong. I found that there was no significant difference in how people perceived the illusions even if they had different dominant eyes. For example, in chart #1 and chart #2 on my display board you will see that for all images the results were very similar for respondents with right eye dominance or left eye dominance. In image #1 on my display board, 80% of people with a right dominant eye saw response one, and 90% of people with a left dominant eye saw response one, not a significant difference. We also tested the percentage of participants, broken down by eye dominance that saw the most common response for each image. Each of the analyzed illusions has two basic interpretations. We wanted to see what percentage of people saw one interpretation versus the other. The results show that there was no significant difference between the perceptions of people with a right dominant eye versus people with a left dominant eye. Conclusions/Discussion My hypothesis was that people who have a left dominant eye perceive optical illusions differently than people who have a right dominant eye. My hypothesis was incorrect. There was no significant difference in how people with a right dominant eye and with a left dominant eye perceive optical illusions.	
Summary Statement My project is about the effect of eye dominance on the perception of optical illusions.	
Help Received My father taught me how to use Excel for my results.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Brian A. Clark	Project Number J0605
Project Title Driven to Distraction	
Abstract Objectives/Goals The objective of this project was to determine which of the following common distractions had the greatest effect on a driver's reaction time: eating, talking on a hands held cell phone, talking on a hands free cell phone, using hygiene products, listening to a crying baby, and texting. The hypothesis was that texting while driving had the greatest effect on a driver's reaction time. Methods/Materials Each subject sat in front of a computer running a driving simulation program written in Multimedia Fusion 2. At random intervals during the program, an object entered the frame window and the subject stepped on a brake to stop the simulated vehicle. The program would then accurately record a subject's reaction time from when the object entered the frame window to when the subject pressed on the brake. Each driver repeated the simulated driving test eight times: twice with no distractions and one test for each distraction. Results Texting consistently had the greatest effect on the subjects' reaction time, slowing them down 30%. Hygiene products slowed down subjects 13%, hands held cell phones slowed them down 3%, eating slowed them down 2%, listening to a baby cry and talking on a hands held cell phone both made them 2% faster. Conclusions/Discussion The hypothesis was proven correct because texting had the greatest effect on a driver's reaction time. Texting and using hygiene products both have a large effect on a driver's reaction time and if used, can potentially lead to a car crash. Additionally, the standard deviation among texting subjects was much higher than other types of distractions. My results agreed with the California Department of Motor Vehicles statement that drivers should not text while driving.	
Summary Statement This project determined which of several common distractions had the greatest effect on a driver's reaction time.	
Help Received My mother helped me install software to run video in the simulator, Dad helped solder the brake together	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Bryn E. Cloud	Project Number J0606
Project Title Licorice Learning! Does Offering a Candy Incentive Improve Academic Achievement?	
Abstract Objectives/Goals The objective is to determine if offering a candy incentive to 6th grade students will improve their achievement on spelling test scores. Methods/Materials Informed consent was obtained from 50 selected students from two 6th grade classrooms. The experimental test variables that were used was a licorice incentive prior to studying for the test, and no licorice incentive provided. When testing the variables, each student was given 10 minutes to study their spelling lists and were informed that a licorice reward would be given to each student scoring at least an 80% on the spelling test. When testing the control group on alternating weeks, the same 50 students were given the same amount of study time with no licorice incentive. Each student was tested twenty times, ten times with a candy incentive and ten without. In addition to calculating the scoring average for each student, the total scoring average for each test variable was determined. Results When provided a licorice incentive, 92% of the student's test scores increased. The average test score was 92.1% from a total of 500 trials. For the control group with no licorice incentive, 8% of the student's test scores increased. The average test score was 83.85% from a total of 500 trials. Conclusions/Discussion Providing a candy incentive prior to studying improves student motivation and increases their academic achievement.	
Summary Statement The purpose of my project is to determine if offering a candy incentive to 6th grade students will improve their achievement on spelling test scores.	
Help Received Teacher helped distribute the spelling tests and consent forms	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Christina Cook; Daisy Villegas	Project Number J0607
Project Title Right Brain, Left Brain, and the Stroop Effect Test	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our objective was to determine whether being right- or left-brained affects performance on the Stroop Effect Test. The Stroop Effect Test consists of a list of color names printed in an ink color that does not match the word. The subjects must say the name of the ink color, not the word. Our hypothesis was that right-brained people would perform better because they would focus more on the colors and more easily ignore the letters. We based our hypothesis on the fact that the right brain is more involved in creative activities (e.g. art appreciation, music and dance) while the left brain is more involved in logical activities (e.g. problem solving, language, science and math).</p> <p>Methods/Materials First, we did research to find a Hemispheric Dominance Test that would be suitable for our project. We had fifty subjects from the sixth, seventh, and eighth grades take this test to indicate whether their right or left brain was more dominant. Then we tested them one at a time to see how long it took them to complete a one-page Stroop Effect Test. We then analyzed the data we collected to determine if there was a significant difference between the times of the right- and left-brained subjects.</p> <p>Results Because we were testing for right- and left-brained performance only, we excluded the subjects that tested neutrally, scoring equally left- and right-brained on our test. The average time of the right-brained subjects was 20.7 seconds and the average time of the left-brained subjects was 22.4 seconds. To further illustrate our results, we also analyzed the top ten most left- and right-brained subjects. The average time of the top right-brained subjects was 20.3 seconds, while the average time of the top left-brained subjects was 23.3 seconds.</p> <p>Conclusions/Discussion Our results seem to indicate that right-brained subjects did better on the Stroop Effect Test than left-brained subjects. These results support our hypothesis because the right-brained people may have focused more on the colors and less on the words. The human brain is extremely complex and our experiment helps clarify how the left and right hemispheres work. Furthermore, this information can be used to devise further experiments on the human brain.</p>	
Summary Statement The goal of our project was to determine whether being right- or left-brained affects performance on the Stroop Effect Test.	
Help Received Advisor provided guidance	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Rachel B. Dobrin	Project Number J0608
Project Title Did Dear Aunt Sally Just Serve Us Nine Pizzas?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project is to prove that if people use mnemonic devices, they will have an easier time learning information in the field of memory. My goal is to make educators more aware that they need to come up with creative methods of helping students memorize certain facts or concepts.</p> <p>Methods/Materials The materials that i used were: Ten 12-14 year old subject, Paper with information to be memorized using a mnemonic device, Paper with information to be memorized not using a mnemonic device, Paper to complete answers on when subjects are tested on what they learned, Pencils, Stopwatch to time the subjects My procedure was: 1. Divide subjects into two groups of 10 people each. One group will be the control (group 1), which will not have the mnemonic device, and the other group (2) will be the experimental group with a mnemonic device. 2. Give group 1 a list of words with 10 words that are printed on a piece of paper. 3. Have each member of group 1 study the list for 5 minutes. 4. After 5 minutes has passed, excuse them from the room, do not let them take the list with them. They will have a 30 minute break to talk, watch TV or listen to music. 5. After 30 minutes, test each member of the group individually and have them recall the list, record data, including the number of words they recalled correctly. 6. Show the same list of words to group 2, this time with the mnemonic devices. Let group 2 examine list for 5 minutes and then excuse them for 30 minutes to relax, watch TV, or listen to music. 7. Repeat step 5 and record data and results.</p> <p>Results In the end my results were that the subjects that were given the mnemonic devices did better than the students without the mnemonic devices.</p> <p>Conclusions/Discussion My project is important because mnemonic devices are used everywhere and if people use them more, they can expand their intelligence with things to help their memory. It is great when people use mnemonic devices because it can really help them. With this information, I can conclude that if you use mnemonic devices, you can have a higher intelligence and excel at tasks having to do with memory.</p>	
Summary Statement My project is about determining if mnemonic devices are effective in helping students remember certain concepts.	
Help Received Mother helped me with procedures; Dr. Dunn helped me improve my project greatly; Mrs. Dwork helped me write my report. Subjects helped me in participating in my project.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Mary A. Flemming	Project Number J0609
Project Title Does Rearranging the Letters in a Word Affect a Reader's Fluency and Accuracy?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective is to see if rearranging the letters in a word affects the readers fluency and accuracy.</p> <p>Methods/Materials Human subjects were randomly picked in two age groups, Minors (7-17) and Adults (18+). 50 subjects were tested in each age group, for a total of 100 trials. The reader was asked to read a paragraph where the letters were rearranged. The subjects accuracy and fluency were measured.</p> <p>Results 100% of the Adults age group (18+) and 90% of Minors age group (7-17) could read the test material. The Minors age group (7-17) achieved an average amount of 10 mistakes, while the Adults age group (18+) had an average of 4 mistakes. The Minors age group (7-17) had an average time of 1 minute and 09 seconds while reading the test material, while the Adults age group (18+) had an average time of 1 minute and 04 seconds.</p> <p>Conclusions/Discussion The Adults age group (18+) achieved the 100% of the people who could read the test material, the least amount of mistakes and the least average amount of time. The Minors age group (7-17) was not as successful as the adults.</p>	
Summary Statement The Adults age group (18+) achieved the 100% of the people who could read the test material, the least amount of mistakes and the least average amount of time. The Minors age group (7-17) was not as successful as the adults.	
Help Received Mrs. Luckin to proofread my work and mom and dad to help me gather the subjects I needed to complete my project.	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Julie A. Fukunaga	Project Number J0610
Project Title The Effects of Multitasking on Human Memory	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals More and more people multitask or perform more than one task at a time thinking it would make them more efficient. It made me wonder, " Does multitasking really save time? Does multitasking make us more efficient? How does it affect our ability to memorize things?"</p> <p>Methods/Materials I designed a website with 3 different experiments using the software Apple IWeb. I tested these experiments on 76 volunteers from 8 to 72 years old. All participants had 1 minute and 30 seconds to memorize 15 objects with varying amounts of multitasking. The first experiment required no multitasking. The second and third experiments required more multitasking abilities. I measured how many items were correctly memorized in the 3 experiments among different age groups and gender.</p> <p>Results The data collected from the 3 experiments show a general trend: the average number of objects correctly memorized dropped by 30% from the 1st experiment (which required no multitasking) to the 3rd experiment (which required the most multitasking). Female participants performed better than males in every experiment especially the ones that involved multitasking (memorized 9.4% more objects). The age group that multitasks the most efficiently out of the 6 groups was the 41-50 year olds. The group with the lowest score was the 10 and under group.</p> <p>Conclusions/Discussion I found that volunteers memorized more objects when they were not multitasking. Overall, females did better than males. The 10 and under and 60+ groups didn't multitask as well. Surprisingly, the 11-18 year old group who multitasks all the time and was the most confident in their abilities didn't outperform the 40-50 year old group who memorized the most objects. This experiment can help students by showing that multitasking while doing homework is not the most efficient way to study.</p>	
Summary Statement The purpose of this experiment was to determine whether multitasking affects human memory and efficiency and find out if age and gender matter.	
Help Received Mother helped with the board display; The Apple Summer Camp coaches taught me how to use Numbers spreadsheet and IWeb software to create a website; My teacher and mentor, Mrs. Elizabeth Daniel, explained how the brain works; Volunteers, from around the world , took the experiment online.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Peter A. Haist	Project Number J0611
Project Title The Relationship Between the Approximate Number System and Formal Mathematics	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment was to find if there is a relationship between the approximate number system (the ability to tell more from less without counting) and formal mathematics skills.</p> <p>Methods/Materials The participants were 80 8th graders. Each subject completed an arithmetic test, a geometry test, and the computerized dots test (a measure of the approximate number system). Half the subjects received the mathematics tests first and half received the dots test first.</p> <p>Results There was not a significant correlation between performance on the dots test and the arithmetic test or between the dots test and the geometry test. Performance on the dots test was not different between student who were in an Algebra class or the more advanced Geometry class. Students in a Geometry class performed significantly better on the arithmetic and geometry tests than the students enrolled in an Algebra class.</p> <p>Conclusions/Discussion Contrary to the hypothesis there was not a significant correlation between the results from the dots test and the two mathematics tests in the 8th grade students. This experiment still leaves open the question if helping young students with approximate number skills will have an impact on their ability to do better in math classes.</p>	
Summary Statement The experiment tested to see if there is a relation between the approximate number system and formal mathematics.	
Help Received Dr. Halberda at Johns Hopkins provided the computer task and offered suggestions about how to analyze the data; my advisor, Mrs. Gillum, provided her computer lab and assistance with testing the subjects at school; my mother helped create the arithmetic and geometry tests.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Mifrah Hayath	Project Number J0612
Project Title Cna Yuo Raed Tihs?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To prove or disprove the hypothesis that the human mind does not read every letter by itself but the word as a whole. Hypothesis to be proven if at least 50% of the people surveyed read at least 50% of the words in which only the first and last letters are in place and the remaining letters are jumbled up.</p> <p>Methods/Materials Survey 100 males and females randomly in public places. Have them read 5 jumbled words separately first then together with 55 more such words within a paragraph. Give a negative point for each incorrectly read word. Calculate percentage of people and percentage of words they read correctly to arrive at results. Materials used include survey forms, copies of paragraph, writing boards and pencils.</p> <p>Results 79% people read at least 60% of words correctly. 19% read jumbled words given separately and 44% read jumbled words given in a paragraph with 100% accuracy. 158 wrong answers given when jumbled words read separately but only 8 wrong answers given when read within the paragraph. Females, under 20 years of age, with high school education, living in Moreno Valley and speaking English at home scored best in the survey. 83.33% females versus 73.91% males read 50% or more words correctly on the survey.</p> <p>Conclusions/Discussion Hypothesis proven that the human mind does not read every letter by itself but the word as a whole. Also concluded that it is easier to read jumbled words within a paragraph than separately. Profile of a person who is likely to read jumbled words better is a female, under 20 years of age, with high school level of education, who lives in Moreno Valley and whose primary language spoken at home is English. Lastly, it was concluded that females are better at reading jumbled words than males.</p>	
Summary Statement My project is about the ability of the human mind to read words as a whole and not every letter by itself.	
Help Received Received help from Dad who taught me enough Excel in Vista to enable me to make the graphs.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Greg J. Hudgens	Project Number J0613
Project Title Can "Wii" Make You Smarter?	
Abstract Objectives/Goals The purpose of the performed experiment was to prove or disprove the statement that exercise could help people remember objects on a cognitive test, and to help educators understand that exercise and learning go hand-in-hand. Methods/Materials 25 objects were placed on each of two trays. Volunteers walked in to take the test. All tests were taken in a constant environment. The first tray of objects was uncovered, and volunteers had 20 seconds to memorize as many objects as they could. After writing down all recalled items, subjects exercised on Wii Fit for 5 minutes. Following this exercise, the subjects had 20 seconds to memorize the objects the objects on Tray 2, then wrote down all they could remember from this tray as well. Results In the end, the scientist was amazed to find that 74% of volunteers improved after exercising. Test subjects remembered up to 5 more objects on the second test, after exercise. Although some did not improve, the difference shown between tests was usually +2 or +3 on the post-exercise test. Additionally, when the number of correct responses on the first test was divided by the number of correct responses on the second test, a number with two decimal places at the end was the answer. By moving the decimal place to the right, the scientist found the percentage of cognitive gain or loss. One of the volunteers had a 66% cognitive gain. Conclusions/Discussion The hypothesis stated that if volunteers took two cognitive tests, one before and one after exercising on Wii Fit, then they will perform better on the test after exercise. After examining the results, the scientist found that the hypothesis was proven, and with mountains of evidence. This finding helps educators know that exercising is helpful to students, and students should have an opportunity to do so. That way, they can not only have fun, but reach their full potential as scholars.	
Summary Statement Physical exercise improves one's ability to succeed on a cognitive test.	
Help Received used teacher's room for tests	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Morgan N. Johnson	Project Number J0614
Project Title Drive 2 Stay Alive	
Abstract Objectives/Goals My experiment was to determine the effect of Fatal Vision Goggles on a person's Wii score. The Fatal Vision Goggles that I used replicated a blood alcohol level of .07-.10+. A Wii is an interactive video game that requires balance, coordination, and movement. Methods/Materials My first collection of data was a direct comparison involving three trials without the goggles then three with the goggles. My second collection was using a control and a test group, matching each person from the control to an equally experience Wii user in the tested group to compare the data. I used the Wii Fit and the Fatal Vision Goggles during this experiment. Results I found my data collection in the direct comparison depended on the person's Wii experience. The more experience the person had, the more consistent their data. The people with more experience did prove my hypothesis by earning higher scores with out the goggles than with. The control/test group data was also inconsistent. Conclusions/Discussion If I were to do this experiment again I would do one trial without the goggles than one trial with so if the person did not have experience they would not be given the chance to improve their scores as they gain more experience. Although my data did not reflect my hypothesis, my subjects' comments did validate my hypothesis. While wearing the goggles they felt dizzy, had trouble concentrating, and found it difficult to maintain focus.	
Summary Statement The purpose of Drive 2 Stay Alive is to find out the effects of Fatal Vision Goggles, which simulate a blood alcohol level of .07-.10, on a person's Wii score.	
Help Received Science teachers reviewed board; Eureka High School students helped collect additional data	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Jeremy A. Kahan	Project Number J0615
Project Title Who Remembers Their Math and Science?	
Abstract Objectives/Goals The researcher wants to test adults on a math and science test and be able to decipher the results and their meanings. Methods/Materials Binder No. 2 Pencil Microsoft Excel TM Data Tables Stopwatch Ten question multiple choice test covering middle school math and science, which is half math and half science 100 Adult Subjects Table Clipboard Pen Answer key to test Consent form which has spaces for graduating year, years of college, occupation, gender, major, signature and name. Results Engineers scored the highest according to their occupation, male scored higher than females, science majors scored the highest out of all majors, adults who went to four years of college or more tended to do better than those who did less, and it did not matter whether you graduated college in nineteen fifty or whether you graduated in two thousand and nine. Conclusions/Discussion In the end this project was very succesful. The researcher got the results that he wanted to, he was able to explain them, and the results were valid.	
Summary Statement The researchers project tests adults on what they are able to recall of math and science from their middle school days.	
Help Received Professors at SDSU answered questions at an interview.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Alyssa Katich; Heather Vermilyea	Project Number J0616
Project Title Is There More to It than Meets the Eye?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our objective was to test and understand the accuracy of eyewitness testimony. The analysis included oral versus written, and accuracy over time.</p> <p>Methods/Materials In order to accomplish the experiment, we gathered two sixth grade classes as test subjects. In total, forty-eight students were tested after witnessing a simulated crime. Half of these were questioned orally and half, written. These tests were performed at the following time intervals: five minutes, five hours, four days, and one week.</p> <p>Results The data from test scores shows memory accuracy peaks at four days, and that written scores were higher than oral. Consistent results in both classes, proves the validity of the results.</p> <p>Conclusions/Discussion Based on our results, we concluded that prior to four days (five minutes after, five hours after), there was not enough time for the correct storage of a memory to take place. However, if more than four days passed (one week after), then the scores decreased. Therefore, we know that four days is the tested ideal amount of time for the memorization process. This contradicted our hypotheses, which stated that oral questioning would be more accurate and that scores would be highest immediately after the event.</p>	
Summary Statement We tested how the accuracy of eyewitness testimony differed based on the variables of time and written vs. oral questioning.	
Help Received Peabody Chararter School supplied the test subjects.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Hafsah A. Lakhany	Project Number J0617
Project Title To Remember, or Not to Remember, That Is the Question	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this experiment is to evaluate the effectiveness and impact of cognitive training aimed at improving memory functioning for people in the mild to moderate stages of AD (Alzheimer's Disease).</p> <p>Methods/Materials MATERIALS: Mini Mental State Examination (MMSE) (A test used to determine what stage of AD a person is in), California Verbal Learning Test (CVLT) (A list consisting of nine objects), AD Patients (18 subjects in the mild to moderate stages of AD) I initially tested 25 subjects who had been diagnosed with AD with a test called the MMSE to eliminate those who were in the advanced stages. Next, I tested all of the remaining subjects with the CVLT. I tested the experimental group with the CVLT every Saturday morning, and spent the exact same amount of time with each member of the control group, but did not train them. I did this procedure by conducting a total of twelve trials over a period of five months. After the series of twelve trials, I used the CVLT to test both groups as a comparison in order to see if the training was effective.</p> <p>Results For my overall result, I found that cognitive training is significantly effective at improving the memory of people in the mild to moderate stages of AD, which strongly supports my hypothesis.</p> <p>Conclusions/Discussion The purpose of my experiment was to evaluate the effectiveness and impact of cognitive training aimed at improving memory functioning for people in the mild to moderate stages of AD. I hypothesized that cognitive interventions would improve the memory of people with AD who are in the mild to moderate stages. After conducting my experiment, I found that cognitive training is significantly effective at improving memory functioning, thus proving my hypothesis to be true.</p>	
Summary Statement The main aim of this experiment is to evaluate the effectiveness and impact of cognitive training aimed at improving memory functioning for people in the mild to moderate stages of AD.	
Help Received My mom drove me to the Alzheimer's care facility every week and made several calls for me to different organizations and facilities. Dr. Claudia Kawas and Dr. Carrie Peltz provided me with the CVLT and the MMSE and gave me feedback about my experiment. My science teacher helped me make my graphs.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Claryce N. Lazerson	Project Number J0618
Project Title Brain-Teasing, Memory-Implanting, Mind-Melding	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective was to determine which age group and gender would be more susceptible to implanting a false memory as time elapses.</p> <p>Methods/Materials I found 30 volunteer subjects, 10 for each age group of six (6) to eight (8) year olds, 13 to 15 year olds, and 40 to 50 year olds, with five (5) females and five (5) males in each age group. Each person was tested three (3) times on three (3) separate word lists and asked to recall which words from the first list appeared in the second list. In each of the three (3) tests, the time was changed between each word list from one (1) minute to three (3) minutes and then to five (5) minutes. Responses were recorded on individual data sheets and in a journal. Overall results were then recorded.</p> <p>Results The experiment demonstrated that it was easier to implant a false memory in 13 to 15 year olds. This occurred because many of the six (6) to eight (8) year olds were a little confused at first and then were more easily implanted by the second and third tests. Males, rather than females, were also more easily implanted, according to the results. The three (3) minute time period proved to be the test which implanted the most false memories, though there was not a significant difference between the other time periods. Most volunteers used word association to recall the words from the first list. This actually resulted in the ability to more easily implant a false memory.</p> <p>Conclusions/Discussion Memory implanting has been used as a therapy technique to help people overcome certain traumatic events in their lives and to help the mentally disabled to learn to do simple tasks. It has also been misused by criminal investigators to persuade witnesses to testify falsely. Females are generally better than males at remembering word lists. Younger children have less developed brains and are more easily susceptible to memory implanting. As more time elapses it becomes harder for the working memory to recall information. This explains why younger males were easier to implant false memories over a relatively longer period of time than older males or females. Research such as this may help to raise awareness that memory implanting may be misused and may not always be easily avoided.</p>	
Summary Statement My project is about which age and gender may more easily be implanted with a false memory as time elapses.	
Help Received Mom helped with project idea, finding test subjects, creation of word lists, and graphs. My sister helped with board design. Science teacher gave suggestions.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kelly L. Luo	Project Number J0619
Project Title Warped Words and the Stroop Effect	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my project was to reduce or eliminate the Stroop Effect. My hypothesis was if there are manipulations of words, then it would reduce or eliminate the Stroop Effect.</p> <p>Methods/Materials Cards containing words of matching colored ink, words of non-matching colored ink, words printed clockwise in matching colored ink, words printed clockwise in non-matching colored ink, words printed counterclockwise in matching colored ink, words printed in counterclockwise in non-matching colored ink, and solid colored circles were created. 30 volunteers were asked to name the colors presented on each card as quickly as possible. Half of the volunteers were introduced the non-matching color cards first, and the other half were introduced the matching color cards first. Time was recorded and statistical analysis was executed.</p> <p>Results On average, the matching word set generated the quickest response, while the non-matching word set took twice as long to read through. The more the words were manipulated, the faster it took for my participants to read through. The time difference between matching and matching word sets progressively decreased as the words were manipulated. The time difference for the manipulated matching word sets took about the same time as the color only set (1 second difference) while the manipulated non-matching word sets took about 3 to 5 seconds longer than the color only set. Lastly, the time comparison between the first and last fifteen participants had about a second difference, and you can see a boredom effect taking place.</p> <p>Conclusions/Discussion My results supported my hypothesis in the sense that the Stroop Effect was significantly reduced; however it was not completely eliminated.</p>	
Summary Statement I attempted to eliminate or reduce the Stroop Effect, proving to have important implications in the fields of psychology and neurology.	
Help Received Mr. Cornell, my science teacher, helped me work out some of the details in my project; My parents bought the materials that were needed for my project.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Alix P. Mahon	Project Number J0620
Project Title How Do We Process Scrambled Words As We Read?	
Abstract Objectives/Goals The objective is to determine if context, word length or font affects the reading accuracy of scrambled words. Methods/Materials Test subjects were given six different paragraphs and fifteen flashcards with scrambled words. Three scrambling methods were used. Test Subjects read one paragraph or one flashcard at a time within a certain time limit. Results Changing font did not affect reading accuracy. Reading scrambled words in paragraphs was easier than reading scrambled words on flashcards. Overall, shorter words caused the most trouble while reading. Conclusions/Discussion The answer to my original question (How Do We Process Scrambled Words?) is that we can process words both by their shape and in the context of a paragraph. My hypothesis was that the test subjects will be more successful at reading a paragraph than the flashcards. The results from my testing prove my hypothesis correct.	
Summary Statement My project is to see how we process scrambled words as we read.	
Help Received Parents helped with grammar, Mom helped with research, Dad explained and gave examples of variables. Dad helped with calculations/graphs.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Alexandra Maloof	Project Number J0621
Project Title Are Ketone Bodies the Cure for Alzheimer's Disease?	
Abstract Objectives/Goals The objective of this project was to determine if medium chain triglycerides found in coconut oil could become an alternative fuel in bringing glucose to the dormant regions of the brain of Alzheimer's disease patients; therefore contributing to finding the cure of this disease. Methods/Materials Informed consent was obtained from eight diagnosed Alzheimer's disease (AD) patients ranging in ages between 70-90. The experiment was designed to monitor AD patients' progressions and responses to coconut oil by using the Mini Mental Status Examination (MMSE). This test was administrated on the following dates: 10/9/09, 10/13/09 and 11/13/09. Through the course of this experiment, the dosages of coconut oil were increased and the results were noted and studied. Results In the variable group patient #1, #2, #5, and #6 had 20% or greater increase in the MMSE along with positive observations. Patient #3 was not compliant in taking the coconut oil, patient #4 had severe Alzheimer's disease, and patient #7 did not want to finish the experiment after the second test, yet their results showed an improvement. All the patients involved in this experiment improved except the control patient which was taking cream of wheat as a substitute for coconut oil, therefore his results showed a 10% decrease in the MMSE. Conclusions/Discussion The results of this experiment suggest that medium chain triglycerides which convert to ketone bodies by the liver mitochondria have a profound effect to the brain of AD patients and their cognitive function. Ketone bodies found in coconut oil have the ability to increase mitochondrial efficiency, promote a 39% increase of cerebral blood flow, and give energy to compromised neurons. This project is the stepping stone to the discovery of the cure of Alzheimer's disease.	
Summary Statement Ketone bodies in coconut oil can be used as an alternative fuel to supplement the brain's normal reliance on glucose, thereby making this discovery the stepping stone for the cure to Alzheimer's disease.	
Help Received Experiment supervised by Dr. George John Jr.	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Patrick J. Manghera	Project Number J0622
Project Title Does Number Sense Develop with Age?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to learn if humans can improve their own automatic number sense, or if the ability is innate and set at birth. In addition, I wanted to determine if there is a gender difference in automatic number sense.</p> <p>Methods/Materials After researching characteristics of automatic number sense, I created a math test with problems testing estimating, logical reasoning, and proportional reasoning at a level that could be challenging but answerable at all age levels (if good number sense is present). I tested 52 2nd-grade students, 66 4th-graders, 56 6th-graders, 61 8th-graders, and 54 10-11th graders; using the same subjects, I also compared results of 146 males and 143 females. I analyzed the results for accuracy estimating items, answering logic and proportion questions, and time in completion.</p> <p>Results My results determined that number sense does improve with age and there is a difference in automatic number sense between males and females. The 8th grade average correct (57.83%) and 10-11 grade (58.33%) was significantly higher than the second grade average (32.5%). Fourth and 6th-grade averages were better than 2nd and similar in significance (44.83% and 49.64% respectively) to each other, but not as accurate as the older two subgroups. In addition, when comparing males to females (regardless of age), males did average higher at 49.25%, compared to females at 47.65%. Estimation abilities and time completion resulted in similar conclusions for age and gender.</p> <p>Conclusions/Discussion Researchers are currently debating the innate vs. learned issue with regards to automatic number sense. My experiment showed, using a significant number of students, that number sense does improve with age, and therefore can and is learned through academic and life experiences. The importance of this finding is in identifying children with a weak number sense early in development so activities can be structured to improve the child's skills and enhance his or her understanding quickly and easily. The experiment further indicates a natural difference in males vs. females, which validates one theory of brain differences in the genders set through the evolutionary process generations ago.</p>	
Summary Statement I tested 289 students to determine that automatic number sense can be taught and does improve with age.	
Help Received Mother helped edit my text and tested her 8th grade students. My sister tested high school students.	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Varsha Manjunath, IV	Project Number J0623
Project Title Detecting Image Forgeries	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project is about digital image forensics. I created a set of digitally manipulated images using Adobe Photoshop, a photo-editing software. The primary goal is to explore what factors influence human ability to detect such image forgeries. The four factors I tested were: (1) the order in which the pictures were presented (whether the original was shown first or the altered picture shown first), (2) the type of alteration (whether the original was altered by deleting some object or adding an object), (3) age of the subject, and (4) gender of the subject tested.</p> <p>Methods/Materials A total of 48 respondents were tested - 24 of which were children and 24 were adults. Adobe Photoshop was used to create six sets of pictures, each set containing one original picture and one altered picture. A stopwatch was used to time people to see how long they took to detect the forgeries and a notebook was used to record the data. The data was then entered into a spreadsheet. The spreadsheet was also used for data analysis</p> <p>Results The most surprising result I found was that female children are better at detecting forgeries compared to their male counterparts as well as the adults. My results also showed that the order in which the pictures were presented is not a statistically significant factor. As for the second factor I concluded that the respondents would do better in detecting forgeries only if a deletion was shown first. Overall, children were able to detect forgeries better than adults.</p> <p>Conclusions/Discussion Children on the average did better in detecting the forgeries, and did so in a shorter amount of time. Another surprise was that the detection rate did not improve significantly when the respondents were shown both original and altered pictures side by side. These observations are not supported by current research in image forensics and are good topics for further research. In real life scenarios we do not have two pictures to compare, which makes it even harder to detect the forgeries. Given the limited ability of the humans to detect image forgeries, it is important to develop robust computer methods to solve problems in image forensics.</p>	
Summary Statement My project tests to see what factors influence our ability to detect image forgeries.	
Help Received Mother helped paste slides; Family friend taught me the significance of Paired T-tests; Science teachers helped with many useful discussions.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Adam A. McDonald	Project Number J0624
Project Title What Is the Effect of Sugar on Memory?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals</p> <ol style="list-style-type: none">1) Identify the effects of sugar on memory2) Identify all the effects of sugar <p>Methods/Materials</p> <p>MATERIALS pens, 2 different laminated pictures, 2 different tests regarding the pictures, consent forms, water, 1 bag of sugar, 6 oz. cups, timer.</p> <p>PROCEDURE Prepare water and sugar water for testing. Have all subjects complete a consent form. Give each subject a cup of water (control sample) to drink. Randomly select one of the test pictures that will be used for the test. After 10 minutes, display the selected picture to the subjects for fifteen seconds. Have each subject complete the questionnaire which corresponds with the selected picture. When the questionnaires are complete, have each subject drink a cup of sugar water (test sample). After 10 minutes, display the second picture to the subjects for fifteen seconds. Have each subject complete the questionnaire which corresponds with the second picture. Score each test and log the results.</p> <p>Results The results of the study show that sugar does NOT improve memory. In fact, sugar appears to worsen memory. The test scores in nearly every gender and age group were lower after drinking sugar water. The only group with higher test results after drinking sugar water was people over 45 years of age. The 18 to 30 year old group showed the best memory overall before drinking sugar water. Ages 5 to 17 had the second best memory. The average test score for males was slightly higher than for females in both the test and control groups. The consumption of sugar had a slightly greater negative effect on males than on females. The test scores for males were on average 14.8% lower after drinking sugar water, while the test scores for females were on average 13.9% lower after drinking sugar water.</p> <p>Conclusions/Discussion The hypothesis of this experiment is, #Sugar improves memory.# Based upon the data, the hypothesis is rejected.</p>	
Summary Statement To determine the effects of sugar on memory.	
Help Received My mother helped with the organization. My father helped with the graphs. My Science teacher Mrs. Taylor guided me.	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Safa S. Moinuddin	Project Number J0625
Project Title Oh Say Can You See: Inattentional Blindness in Traffic Situations	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Inattentional Blindness is the inability to see something in plain view. Many times, after an accident, drivers will say that they never saw the unexpected object they collided with. The purpose of my project is to identify the extent of the problem of Inattentional Blindness especially as it relates to traffic situations in the hope that bringing attention to this problem will help to bring about better traffic safety rules.</p> <p>Methods/Materials</p> <ol style="list-style-type: none">1. Film a video of traffic on a 2-way street allowing a single unexpected event, in this case a leprechaun doing a jumping jack on the divider a few seconds into the video.2. Edit one version of the video to include a voice clearly pronouncing five unrelated words.3. Create a questionnaire for each version of the video including age, gender, number of cars counted, words remembered (dubbed video only), and a checklist of items seen.4. Gather participants of driving age by offering chocolate, and have them watch the video and complete the questionnaire. I was able to get 44 participants to watch my dubbed video, and 50 participants to watch my un-dubbed video. I disregarded the data of a few participants because they claimed to see objects that were not in the video leading me to believe that they were guessing.5. Analyze data using the 2-sample hypothesis test for proportions. <p>Results About 25% of my audience noticed the unexpected event in both versions of the video. People watching the un-dubbed video were generally more accurate in counting the cars. In both videos, people who counted correctly were less likely to notice the unexpected event. There is no correlation between the number of words remembered and noticing the unexpected event.</p> <p>Conclusions/Discussion The problem of inattentional blindness is quite extensive. Adding the extra task of trying to remember the words simulates the effect of audio distractions while driving. The added distraction had an effect on the participants ability to count cars correctly, but did not have an effect on the probability of experiencing inattentional blindness suggesting that audio and video processing happen independently in the brain. The fact that people who were better at counting cars experienced more inattentional blindness shows that the more focused a person is on a specific attention demanding task, the less likely that that person will notice an unexpected event.</p>	
Summary Statement My project shows that inattentional blindness, the inability to see objects in plain view, plays a significant role in people's awareness of traffic situations.	
Help Received Uncle helped with film editing; Brother appeared in video and explained statistical concepts; Dr. Simons (University of Illinois), Dr. Pani (University of Delaware), and Dr. Most (University of Louisville) answered my questions by email.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Sarah E. Mullen	Project Number J0626
Project Title Do You Comprehend?	
Objectives/Goals My project was to determine if reading captions on the television would increase one's comprehension.	
Abstract Methods/Materials The materials that I used in my experiment were: six video tapes, two televisions and VCRs, Three comprehension tests, 78 experimental subjects, a pencil and a sharpie. I had two parts in the procedure. The first part describes how I recorded the show with the auditory and caption conditions on to six videotapes, each being a five minute segment. I placed a videotape in to the VCR and record five minutes of a cooking show with captions and no auditory (volume). I would do this two more times with the same condition. Then I would put in another videotape into the VCR and record a five minute segment of the same show but just with the auditory stimulus. Then I compose three comprehension test for each of the three five minute segments of the show. Then I label the three caption videotapes the quotation mark experimental group the quotation mark and the three auditory videotapes the quotation mark control group the quotation mark. On the second part of my procedure, I describe how I test my experimental subjects. I had 37 test subjects watch the first segment of my video, the quotation mark experimental group/captions the quotation mark and gave them the comprehension pertaining to that section. I would do this two more times than average all there scores together to get there average score correct. I then continued to do this for the the quotation mark control group/auditory the quotation mark as well.	
Results The auditory condition had an average of 64.7 % of test questions correct while the caption condition had an average of 34.7% of test questions correct.	
Conclusions/Discussion My conclusion showed that of the 41 students tested through auditory and visual/caption conditions, the auditory condition helped students comprehend better.	
Summary Statement My project is about which condition: auditory or captions, will best help students comprehend material that is being show to them.	
Help Received Father helped record shows and set up board; Mother bought necessary supplies, provided me with a great problem,advice and helped set up my board; Mr. Graham's 2nd period and Mrs. Snow's 4th period classes were my experimental subjects; Mr.Graham and Mrs. Snow let me use their classes for my science fair	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Katy S. O'Brien	Project Number J0627
Project Title Font Frenzy	
Objectives/Goals Font Frenzy	
Abstract <p>My project was to determine if font styles affect a person's reading rate. I believe that the more ornate styles will slow a person's reading rate, while less complex styles will result with faster reading rates.</p>	
Methods/Materials Four font styles were selected to use in this study: two ornate (Brush Script and Edwardian Script) and two less complex (Bradley Hand and Arial). Five 201 word paragraphs were typed from each of the four font styles. All 20 paragraphs were selected with similar word difficulty from the fourth grade reading leveled book Dolphin Song by Lauren St. John. For five consecutive days, a student with 4th grade reading abilities was timed when he read one paragraph from each of the four font styles. Each day the data was recorded. On the final day, all data was compared to evaluate which font styles had the fastest reading rate.	
Results Bradley Hand had the fastest average reading rate at 2:12 minutes, Arial was second at 2:27 minutes, third was Edwardian Script resulting with 2:43 minutes, and Brush Script at 3:08 minutes. The two less complex fonts had faster reading rates than the two more ornate or fancier fonts.	
Conclusions/Discussion My conclusion is that font style does in fact affect a person's reading rate. This research is very important because the written word (type - font use) is the major form of communication in technology, advertising, books, research, and internet websites.	
Summary Statement Font styles affect a person's reading rate, which may impact the success of communication.	
Help Received I completed my project by myself.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Sasha B. Pines	Project Number J0628
Project Title Is Stroop Effect Stronger on Right or Left Brained Students?	
Abstract Methods/Materials First, get a volunteer of proper age. Give that volunteer the right/left brained test and get their results. Once you write down their results, give the volunteer the Stroop Effect worksheet 1 (normal sheet). Tell them to read it as fast as they can when you say go. Time them and write it down. Then give volunteer Stroop Effect worksheet 2 (Stroop Effect sheet). Tell them to read the color of the word when you say go. Time them and write it down. Results The purpose of this experiment is to see whether right brained or left brained students are more effected by the stroop effect. My result of the experiment was the right brained students are more effected. To get this, students from sixth, seventh, and eighth grade took a survey to determine whether they were right or left brained. Once this was determined, they were timed while reading the color of the words from a normal sheet and a stroop effect sheet. The average reading time for the left brained students from the original sheet was 8.68 seconds compared to 24.89 for the stroop effect sheet. The average reading time for the right brained students from the original sheet was 9.39 seconds compared to 27.45 seconds from the stroop effect sheet. As you can see, it took longer for the right brained students to read both the original and stroop effect sheet. The overall difference time from the original sheet compared to the stroop effect sheet for the right brained students was higher, having 18.06 seconds compared to the left brained students, having only 16.20 seconds. Conclusions/Discussion My results indicate that my first hypothesis is incorrect because the left brained students did better than the right. It was surprising to me to see that the left brain students had less interference than the right brained students because my research didn't lead me to believe this. Since the right brain dominates in creativity and drawing, I thought that the right brained students would be able to pay more attention to the color of the word rather than the meaning easier that the left brained students, who are known for being good at math and being more logical.	
Summary Statement My project is about whether being dominate left or right brain causes an effect on the Stroop Effect.	
Help Received None	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Paul A. Robaia	Project Number J0629
Project Title Do Visuals Impact Memory? Reveal vs. Conceal	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Throughout the entire world, many people suffer from loss of memory. Improving all human memory is imperative. I chose to test playing card recognition because I was trying to figure out if visuals impact memory. I hypothesize that within the three tests I'm performing, the covered corner indices known as pips will be hardest to remember, the covered suits will be second hardest to remember, and the regular playing cards will be easiest to remember. I believe this to be true because I believe visuals of a playing card impact memory. The problem that I'm attempting to solve is loss of memory. Loss of memory drastically changes a person's life directly at any age. My experiment will help prevent loss of memory because it will determine if visuals impact memory.</p> <p>All my tests were taken into a deep consideration through several different aspects. I witnessed several observations throughout my experiment. I noticed how many people created ingenious strategies to help them remember more playing cards in order. Also, I saw how many people closed their eyes to help them concentrate and imagine the name of each playing card. An intriguing fact I learned in my research was eating healthier can improve memory.</p> <p>Methods/Materials I used three decks of bicycle playing cards, 10 feet of silver duck tape, 34 students at Pershing Middle School including males and females in grades 6th, 7th, and 8th, one brown table borrowed from the school's cafeteria, and a stopwatch.</p> <p>Results My hypothesis was proven to be correct. 8.1 was the approximate average score with regular playing cards. 7.9 was the approximate average score with the covered suits. 5.8 was the approximate average score with the covered corner indices. I noticed distractions can make things harder to remember.</p> <p>Conclusions/Discussion Throughout this entire project, I learned many interesting things. While conducting my experiment, I learned about human behavior. For instance, I observed how students used concentration skills and applying strategies to help improve their test scores. Also, I learned about the history of playing cards and memory. Overall, changing the visuals of several playing cards for each test generally makes it harder to remember.</p> <p>I believe my test was a complete success. All my numbers are reliable and a 100% accurate. I also did not</p>	
Summary Statement My project is essentially a playing card recognition experiment to determine if visuals impact memory.	
Help Received My mother paid for all my funding expenses and drove me to the science fair.	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Sara K. Simpson	Project Number J0630
Project Title Musicians' Perceptions of a "Rhythmic" Variation on the McGurk Effect	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project uses the McGurk Effect and a new rhythmic variation on it to explore 1) whether young musicians favored audio information, visual information, or a combination of the two when presented with contrasting audio and visual information, to reveal a dominance of one of the two senses; 2) which theory of speech perception is most accurate: Motor Theory, Direct Realist, or FLMP; and 3) whether background affects perception of the McGurk Effect(s).</p> <p>Methods/Materials I created a possible "Rhythmic" McGurk Effect, which used rhythms instead of one-syllable words as stimuli. I used a video editing program to record myself lip-syncing a word or rhythm, and then voiced-over a different word or rhythm, to create the McGurk Effect and nine rhythmic patterns. The subjects, young musicians, first filled out a questionnaire revealing background differences, and then listened to the Regular McGurk Effect, writing down the sound they heard. Finally, they listened to the potential "Rhythmic" Effect, and I recorded them clapping back the rhythm they perceived. I then transcribed the recorded rhythms onto paper to compare to the original audio and visual rhythms.</p> <p>Results The results showed that 75% of the subjects perceived a combined audio/visual sound of the Regular McGurk Effect, proving that they were tricked by it. However, 75% reproduced the audio rhythm of the #Rhythmic# tests, proving that it did not create a McGurk-like Effect; instead, the visual was a distracting factor. Within the standard deviation, the instrument played by the subject did not appear to affect perception, but length of musical experience did. Differences between languages spoken hinted that it may affect perception, but the data was inconclusive as all subjects were English-influenced.</p> <p>Conclusions/Discussion The results support the Motor Theory, as a McGurk-type effect could not be created with rhythmic stimuli. The majority of the differences between subjects also appeared to affect perception, supporting that background affects perception. Last, when presented with contrasting audio and visual information, the subjects favored the audio information, as they attempted to block out the visual stimulus.</p>	
Summary Statement Young musicians, like the general public, combined the contrasting audio and visual stimuli in the McGurk Effect, but easily distinguished between contrasting audio and visual rhythmic stimuli.	
Help Received My father operated video camera during tests, as I needed to run the movie played for the subjects.	



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Tyler J. Stephens	Project Number J0631
Project Title The Effects of Classical and Rock Music on Memory	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To see if listening to Classical music helps improve memory and if hard rock music will be disruptive to learning and memory. To test this, I used a mouse model.</p> <p>Methods/Materials</p> <ol style="list-style-type: none">1. Separate mice into three cages, 12 per cage.2. Mark each mouse 1-12.3. Mark cages Control, Mozart, or Rock and Roll.4. Run mice through classic maze on day 1 as test run to get mice used to maze. Use food at end as incentive and clean maze with water between each mouse.5. Repeat Step 4 on day 4,6 and 11. Using stopwatch, record time mouse takes to complete maze in lab notebook.6. On Day 13 move each group into 3 separate rooms.7. Load iPod #1 (Mozart) with the following songs from iTunes: Sonata in B-flat major; Turkish March; Eine Kleine Nachtmusik; Symphony No. 33 in B-flat major; Symphony No.40 in G minor.8. Load iPod #2 (Rock and Roll) with the following songs from iTunes: Party Hard by Andrew W.K.; Welcome to the Jungle by Guns and Roses; Cyanide by Metallica; Master of Puppets by Metallica.9. Play Mozart music to Mozart group, Rock and Roll music to the Rock and Roll group and no music to the control group for 10 hours each day on level 10 of iPod player. Record time music is turned on and off each day in lab notebook.10. Repeat step 4 on day 16, 19, 22, 26, 29, 33 and 36. Record results.11. Feed (same amount) and water mice at the end of each day, after music is turned off. If it is a day they are running through the maze, feed and water after the maze run. <p>Results The results showed that the Mozart and Rock and Roll mice performed significantly better than mice that did not have music. Days 16-22, both groups performed over 50% better than the mice in silence, but then the Mozart mice began to outperform both groups and by day 36 the Mozart mice had an 80% increase in performance over the Control (silence) mice while the Rock and Roll mice only had a 45% increase over the Control.</p> <p>Conclusions/Discussion From these results it seems that listening to some form of music is better for your memory and learning than silence. However, the Mozart music has an advantage over the Rock and Roll with long term</p>	
Summary Statement The effects of Classical and Rock music on memory using female mice as a model.	
Help Received Mother helped type & charts and run some of mice through maze, also gave advice and oversaw mouse work	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Christopher R. Swenson	Project Number J0632
Project Title Matching Pitches: How Close Can You Come?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment examines the effect of age, gender, and musical experience on tonal memory and pitch matching. It seeks to determine whether the accuracy of pitch matching and tonal memory is dependent on the age of the subject. The hypothesis is that pitch matching ability will improve as the age of subjects increases to age 11, when hearing is most sensitive), and then will drop as subjects get older.</p> <p>Methods/Materials Using a computer with Internet access, a subject navigates to a web page to participate in the experiment - a series of three pitch-matching trials. He or she clicks on a button, which plays a random pitch for a short duration. The subject uses a slider control to raise or lower another tone until the tone matches the original one. In order to test tonal memory, the subject is not allowed to replay the original pitch. A short survey provides information on age, gender, as well as instrumental or vocal musical experience.</p> <p>Results The actual results of the experiment, however, show that pitch accuracy does not correlate to the subject's age. The collected data illustrates a slight correlation between gender and pitch matching ability, with males having a small advantage over females. Correlation is evident between the subject's stated musical experience and pitch-matching accuracy. In particular, vocal musical experience proves the best predictor of the ability to match pitches accurately. Because singing involves pitch matching when practicing with other singers or being accompanied by an instrument, development of vocal musical skill allows more accurate pitch matching in this experiment. A vocal student relies heavily on aural skills to produce an accurate pitch that blends with other singers or musical accompaniment. Subjects with instrumental experience, on the other hand, do not perform as accurately. One possible reason for this is that beginning students often have their instruments tuned for them, or receive help in tuning. In addition, playing a percussive instrument, such as the piano or drums, does not involve pitch matching to play the instrument accurately or even very skillfully.</p>	
Summary Statement This experiment examines the effect of age, gender, and musical experience on tonal memory and pitch matching.	
Help Received Father helped deploy finished application on Amazon Web Services (AWS).	



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kathryn S. Tovar	Project Number J0633
Project Title Advertising Effect of Color	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project investigated the effects of subliminal messaging by using color. I created three commercials advertising red licorice with three different color schemes (red, white, and brown). I wanted to see if the color scheme had a bearing on the amount of children that responded to my commercial clip. I anticipated that the white scheme would be the most effective in persuading students to get licorice, whereas the brown scheme would be the least effective.</p> <p>Methods/Materials Nine fourth period junior high classes were shown either a red, white, or brown color-schemed clip advertising licorice. All factors (spokesperson, film footage, music, etc.) were kept the same throughout each clip. During the clip, I told students to come to my science classroom at lunchtime and there they would receive a free piece of licorice. I recorded the number of students who saw the clip and came to the classroom in my logbook for further analysis.</p> <p>Results My results showed that my white clip had the largest effect on students, though brown came in as a close second with red trailing in last. Proportionally, 8% respondents came from the red category, 29% came from the brown category, and 30% came from the white category.</p> <p>Conclusions/Discussion When looking back over my project, I came to the realization that my results were inconclusive. As I planned my project, there were several factors I had not foreseen that tainted my results. A few were lack of teacher cooperation, word of mouth, and technical difficulties that resulted in me having to be present during the presentation of some of the clips.</p> <p>Despite of the mishaps, I am fully prepared to replicate this project in high school where I will make the necessary adjustments in order to prevent problems from arising that I encountered my first time around. I am also going to test a larger sample of people in order to disaggregate my data by gender and age. This data is important because it can be applied to twenty-first century technology considering that people today use more visual media than they do telephones or posted mail.</p>	
Summary Statement This project assesses how color influences the impact of advertising on teenagers.	
Help Received Father assisted in displaying data analysis; Teacher gave idea on where to begin research for project	