



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Chirag K. Akella</b>	<b>Project Number</b> <b>J0401</b>
<b>Project Title</b> <b>Do You Believe in Home Field Advantage?</b>	
<b>Objectives/Goals</b> I wanted to determine if teams benefit from a home field advantage in the four major professional sports (basketball, baseball, ice hockey, and football).	
<b>Abstract</b> <b>Methods/Materials</b> I went to several websites (e.g., espn.com) to gather data (regular season and playoffs) for the four sports across ten years. I, therefore, had 36 game-years of data for the regular season and 40 game-years for the playoffs. After I gathered this data, I calculated the mean of the win rate at home and the mean of the win rate on the road and used the Student's t-test (in Excel) to statistically determine if the two means were different. Next, I charted my data to visually share my results.	
<b>Results</b> From my data, I determined that home field advantage is present during the regular season. The difference between the win rate at home and on the road was 21% for basketball, 13.6% for football, 10.6% for ice hockey, and 8.8% for baseball - all statistically significant with $p < 0.01$ . In contrast, the benefit during the playoffs was not statistically significant except for basketball ( $p < 0.07$ ).	
<b>Conclusions/Discussion</b> Home teams, very reliably, win during the regular season - in agreement with my hypothesis. However, home teams do not always win during the playoffs, except for basketball.  Regular season: The reason I think basketball had a higher difference in win rates is because the fans make a difference. In ice hockey, there is a glass wall separating the fans from the players. But in basketball there is no separation; so the away players feel the tension and miss shots causing them to lose. The reason I think baseball had a low win rate is because of the game pattern which is where a team plays another team 2, 3, or 4 times in a row and the familiarity eliminates the home field advantage.  Playoffs: The playoff format (e.g., knockout), the fact that the teams are more evenly matched, and the fact that a lot depends on the outcome might explain the larger variability in the results.	
<b>Summary Statement</b> I used historical data to statistically determine if professional sports teams benefit from a home field advantage.	
<b>Help Received</b> Dad and my cousin Anjaney helped me understand how to use statistics; dad helped me with the analysis and poster; Mom with my poster and presentation	



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<b>Name(s)</b> <b>Ghazi E. Aryan</b>	<b>Project Number</b> <b>J0402</b>
<b>Project Title</b> <b>Stop It! Determination of Distractions that Have the Most Impact on Drivers' Ability to Focus</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my project is to determine which distractions have the most impact on drivers' ability to focus. <b>Methods/Materials</b> Ten subjects, ages 10 to 12 participated in this experiment. They were all familiar with the driving simulation game used as the basis for this project, had played it before, and knew how to play. They repeatedly executed the driving simulation while being exposed to a set of different conditions, such as background noise, in a random order.  The distractions implemented were Loud Music, Cell Phone Ringing, Talking, Screaming, and Baby Crying. They also executed a driving lap without any distractions. This #driving lap# served as the control. <b>Results</b> It was determined that their ability to focus was not affected. In fact, it was found that they performed better. This appeared to be counter intuitive to what you would expect, yet this is what the data shows. <b>Conclusions/Discussion</b> One possible explanation might be that this age group was less prone to being distracted than a different age group would be. Another might be that they focused more on the driving than the distraction in order to complete the activity quicker. This would motivate and propel them to speed to try to finish the game so as to be able to turn their attention to the source of the distraction sooner.	
<b>Summary Statement</b> Determination of distractions that have the most impact on drivers' ability to focus.	
<b>Help Received</b> My father helped me double-check my board and data. He also taught me a few different methods to use in Microsoft Excel.	



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<b>Name(s)</b> <b>James T. Bamford</b>	<b>Project Number</b> <b>J0403</b>
<b>Project Title</b> <b>Perfecting Smile Detecting</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project is to explore variables possibly affecting a person's ability to detect "Duchenne" and "non-Duchenne" smiles. In particular, the project examines whether age and gender affect a person's ability to accurately distinguish between genuine and fake smiles. Additionally, the project seeks to determine whether people socializing more through texting and computer use are generally less able to correctly detect smile types compared to people socializing more face-to-face.</p> <p><b>Methods/Materials</b> Forty subjects completed a survey developed by the student researcher. The survey included questions about age, gender, and social choices for interacting with others. Next, subjects watched 20 people smile in an online "Spot The Fake Smile Test" developed by British Broadcasting Corporation's Science division. Subjects then chose whether a smile was "genuine" or "fake." Results were recorded, compiled, and graphed. Statistical analysis was used to determine whether gender, age, and social choices make a significant difference in a person's ability to distinguish between smile types.</p> <p><b>Conclusions/Discussion</b> Older people are able to detect Duchenne and non-Duchenne smiles better than younger people. Similarly, people who spend more time socializing with other people face-to-face are better at accurately detecting smile types than people who spend more time socializing through texting or computer use. Finally, it is not clear from the data collected whether females are better than males at detecting smile differences, because the higher number of correct answers for females was not statistically significant given the data collected.</p>	
<b>Summary Statement</b> This project examines whether age, gender, or the amount a person socializes using texting or computers affects a person's ability to accurately detect genuine and fake smiles.	
<b>Help Received</b> Student researcher received help to (1) purchase materials (mom), (2) learn how to graph in PowerPoint (aunt), and (3) understand standard deviation and statistical significance (6th grade math teacher).	



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<b>Name(s)</b> <b>Emma R. Berns</b>	<b>Project Number</b> <b>J0404</b>
<b>Project Title</b> <b>Life and Death in the Fast Lane</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to determine how distractions while driving, including texting, cell phone use, and eating and drinking, increase the likelihood of both fatal and non-fatal accidents on the road. I believe that the most distractive activities, such as texting, will increase the percentage of fatal accidents. <b>Methods/Materials</b> Using a simulated driving game at a local arcade, I chose a common course and car type for eight participants in my study. I had each subject race the course five times, twice without distractions, and three more while texting a specific script, talking on the phone and while eating and drinking. Two judges compiled the number of what they believed to be fatal and non-fatal accidents. These numbers were averaged in both categories to calculate the driver's performance over the entire course. <b>Results</b> Texting while driving caused the most fatal accidents, while eating and drinking caused the most non-fatal accidents. Interestingly, the average increase in dangers from distractive driving in my study closely mirror the U.S. government's own studies. <b>Conclusions/Discussion</b> My conclusion is that the type of distraction while driving influences the severity of the accident, but all distractions behind the wheel can affect the ability of the driver to safely navigate roads.	
<b>Summary Statement</b> My project is about the dangers of distractive driving, and how different activities can influence the types of accidents incurred while behind the wheel.	
<b>Help Received</b> My parents helped with driving to the arcade and supplying money for the games. My sister helped me learn how to use Excel to create graphs for my project.	



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<b>Name(s)</b> <b>Zaineb L. Boulil</b>	<b>Project Number</b> <b>J0405</b>
<b>Project Title</b> <b>From Cradle to College: Which College Savings Plan Is Most Effective?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to help parents cope with the ever increasing tuition rates by determining which college savings plan--the aggressive, conservative, fixed income, or prepaid tuition - would result in the most earnings if they started saving while their child was young. It is also to determine which western state has the best plan. <b>Methods/Materials</b> Performance data of each of the western states' college savings plans was collected from collegesavings.org and inputted into Microsoft Excel. From each state, the various plans were separated by aggressive, conservative, and fixed income to find average earnings for each plan in each of the western states. A case study was created taking into account expenses from each state using an imaginary person who will save the same monthly amount in all five different plans for 10 years. Bar graphs were created to compare data. <b>Results</b> The aggressive plan in Arizona earned the most money, followed by the conservative plan in Idaho. This was followed by the fixed income plan in Arizona with prepaid being the less desirable of all and only offered in Washington. <b>Conclusions/Discussion</b> The hypothesis that the prepaid tuition plan would be the most effective was proven wrong, and it was even found out that only one western state offered it. Based on these results and the research information that one does not need to live in or attend a college in the state of their plan, a parent can understand that by enrolling in an aggressive plan in Arizona while their child is still young gives them the best chance of having enough tuition ready for their child by the time they are old enough to attend college.	
<b>Summary Statement</b> This project finds out which college savings plan and western state have the highest earnings.	
<b>Help Received</b> Computer teacher contacted bank for performance data of states not listing this information on the website.	



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<b>Name(s)</b> <b>D. Kyle Cartwright</b>	<b>Project Number</b> <b>J0406</b>
<b>Project Title</b> <b>Stop! Watch Out for Children Cursing</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My project was to determine if kids with parents and friends that curse and also watch movies or shows that have cursing in them, curse more than kids who do not. <b>Methods/Materials</b> I prepared a survey with fifteen questions titled, "Survey on the Use of Curse Words by Junior High Students". I contacted three schools in total, one public and two private schools to see if they would participate in my survey. The survey was completed by a private Christian school and private non-secular school and the public school declined. I copied and distributed 216 copies of the survey for Junior High students, 6th - 8th grade to complete. Upon completion of the surveys I collected them and calculated the responses. <b>Results</b> In my experiment I found that the kids with a background of cursing, cursed more than the ones who did not. Out of the 216 kids, 66% said they cursed and 70% said their parents cursed. My survey shows that parents have the strongest influence over their kid's use of profanity. <b>Conclusions/Discussion</b> My hypothesis was supported in my experiment. I concluded that children with parents that regularly use profanity will also use curse words more often than those with parents that do not. Kids with friends that swear and who watch movies with foul language will also have a greater tendency to use curse words. However, my study indicates that the strongest influence comes from cursing at home.  If I were to do this project in the future I would ask a wider variety of questions on my survey. I would ask questions on pop music, social media and cultural background.	
<b>Summary Statement</b> My project is about identifying the strongest influence over children cursing.	
<b>Help Received</b>	



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<b>Name(s)</b> <b>Jenna N. Dern</b>	<b>Project Number</b> <b>J0407</b>
<b>Project Title</b> <b>When Blue Means "Green"</b>	
<b>Objectives/Goals</b> The objective of the experiment is to determine which color (blue, green, red, orange) will attract the most recycling content due to color association and its behavioral effects on humans.	
<b>Abstract</b> Four recycling bins (blue, green, red, orange) were placed side by side in a populated area for trials 1A-7A in order to test the recyclable content attracted for each bin when humans were faced with a direct choice. Trials 1-7 tested the four bins and their recyclable content when they were set in four separate corners, rotating to a different area every trial.	
<b>Methods/Materials</b> Four recycling bins (blue, green, red, orange) were placed side by side in a populated area for trials 1A-7A in order to test the recyclable content attracted for each bin when humans were faced with a direct choice. Trials 1-7 tested the four bins and their recyclable content when they were set in four separate corners, rotating to a different area every trial.	
<b>Results</b> Blue collected a total of 64 recyclable items and 6 waste items. Green collected 59 recyclable items and 14 waste items. Red collected 46 recyclable items and 9 waste items. Lastly, orange collected 44 recyclable items and 9 waste items. As an average, blue collected 4.57 recyclables and 0.43 waste items. Green collected 4.21 recyclable items and 1.00 waste item. Red collected 3.29 recyclable items and 0.64 waste items. Finally, orange collected 3.14 recyclable items and 0.64 waste items.	
<b>Conclusions/Discussion</b> As an average, blue collected the most recyclable items, followed by green, red, and orange, respectively. This confirmed the hypothesis to be correct. When observing the trash content, blue collected the least amount of trash. Red and orange both collected the second least. However, green collected the most waste content in all. Blue is clearly the most effective color for recycling.	
<b>Summary Statement</b> On average, the blue recycling bin collected the most recyclable content (4.57 pieces) and the least trash content (0.43 pieces.)	
<b>Help Received</b> Guidance from my teacher, Mrs. Erin Schumacher and my parents	



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<b>Name(s)</b> <b>Iana Engel</b>	<b>Project Number</b> <b>J0408</b>
<b>Project Title</b> <b>Mario Says, "Don't Talk on the Phone while Driving!"</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective was to find out if talking on a phone impairs driving ability, and whether a hands-free-system improves driving performance as compared to using a hand-held cellphone. <b>Methods/Materials</b> A Mario kart Wii game was used to test 70 people, ranging from 9-75 years old. The Mario wheel controller was immobilized on a post to more closely simulate a driving wheel in an actual car. The subjects first practiced racing a specially selected course until their times became stable. They then completed four tests on the same course under each of the following conditions in a random order: 1) without distractions, 2) holding the phone without talking, 3) holding a conversation over a hand-held phone, and 4) holding a conversation through a speaker phone. I talked with the subjects using a phone in another room for the conversation tests. I recorded the times to complete the course under each condition. <b>Results</b> Talking on the phone while performing the driving task significantly slowed the performance of the population as a whole. Using the speakerphone did modestly improve the performance of the whole population, as compared to using the hand-held phone. However, when the population was divided into age and gender subgroups I found that only the boys did clearly better with the speakerphone than with the hand-held phone. Furthermore, the boys were also unique in that there was not a significant difference between their performance on the speakerphone as compared to driving without distractions. <b>Conclusions/Discussion</b> My conclusion is that talking on the phone while driving should not be allowed, even with a hands-free system, because the speakerphone only dramatically helped the driving ability of young males.	
<b>Summary Statement</b> My project examines the effect of holding phone conversations while driving.	
<b>Help Received</b> Mr. Bardo Escobedo designed the Wii wheel mount, my Mother and brother helped recruiting subjects, and my Father helped with statistical analysis.	





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<b>Name(s)</b> <b>Kishan M. Ghadiya</b>	<b>Project Number</b> <b>J0409</b>
<b>Project Title</b> <b>Now You See It, Now You Don't</b>	
<b>Abstract</b> <b>Objectives/Goals</b> To see if human behavior and sociology of analysis and perception or variables such as age and ability to perceive of Chromatic Adaptation makes a difference in how people can understand the objects or the pictures. <b>Methods/Materials</b> Materials: 1.Twenty humans as test subjects. 2.A stopwatch that measures the tenth of a second. 3.Three pictures with tinted sides. 4.A Computer. 5.Microsoft Spreadsheet/Word/Office Powerpoint. 6.One prepared survey to test on human subjects. Methods: Written consents were obtained from the volunteers. The method of the experiment was explained. The pictures with the two color tints regarding an airplane, baby, and dinosaur were shown. They were asked if they saw the color tint and recognized the true colors. They were told to hold the picture about 1 foot away from their eyes, and to just focus on the fixation point, and nowhere else. With the stop watch, I recorded the chromatic adaptation effect times for all three pictures of the twenty human subjects. The time of how long the chromatic adaptation effects lasted was recorded. The method was repeated twice to see if perception of chromatic adaptation was faster the second time, and to get accurate results. After that, the volunteer was asked which tinted side of the picture of the airplane looked real to them. <b>Results</b> Out of 120 tests, only 31 (26%) had the normal chromatic adaptation effect after 20 seconds and 89 (74%) tests had it before 20 seconds which is not normal.Younger people had more normal Chromatic Adaptation effects, but it was noted that the effect was different in different subjects. <b>Conclusions/Discussion</b> My hypothesis was correct. Chromatic adaptation normally occurs after 20 seconds and lasts up to one and a half minutes.In my research, it did not happen to most human surveys 89 out of 120 (74%). It happened earlier than 20 seconds which should not be the case. It should be 100%.Chromatic Adaptation was affected by psychological and other human factors such as a person's age and the ability to percept and understand the objects. Younger people may have understood the concept better then older people. Difference in human behavior and sociology of analysis and perception may have affected the outcome.	
<b>Summary Statement</b> Chromatic Adaptation, the physiologic phenomena, can be affected by behavior and sociology of subjects.	
<b>Help Received</b> General assistance from parents to help organize meetings with the subjects, put collected data in the spread sheet, and to put up the board.	



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<b>Name(s)</b> <b>Samantha L. Gonzales-Dyar</b>	<b>Project Number</b> <b>J0410</b>
<b>Project Title</b> <b>Does Prettier Packaging Effect Healthier Eating?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this project was to determine if more attractive packaging would promote healthier eating.</p> <p><b>Methods/Materials</b> Informed consent was obtained from 80 randomly selected first graders from six different classrooms. I tested the first graders by giving one class decorated colored bags with five carrots each, and I gave another first grade class plain brown bags with five carrots each. Students were given seven minutes to eat the carrots or not. They did not have to finish the snack. I conducted this test two more times with the other first grade classes.</p> <p><b>Results</b> The average for all three test was the students ate 51.8 carrots from the plain brown bags, and 68.3 carrots from the decorated, colored bags. I also separated the data by gender. Boys eating from the decorated bags ate approximately 30% more carrots the boys eating from the plain brown bags. Girls eating from the decorated, colored bags ate 33% more carrots than the girls wating from the plain brown bags.</p> <p><b>Conclusions/Discussion</b> My conclusion is that prettier packaging has a positive affect on children eating a healthy snack.</p>	
<b>Summary Statement</b> The purpose of this project was to determine if more attractive packaging would promote healthier eating.	
<b>Help Received</b> Mom bought the supplies, translated the permission slips into Spanish, and supervised the testing; Dad painted the board.	



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<b>Name(s)</b> <b>Emily P. Imfeld</b>	<b>Project Number</b> <b>J0411</b>
<b>Project Title</b> <b>Investigating if Different Classroom Temperatures Affect Student Test Scores</b>	
<b>Objectives/Goals</b> I hypothesize that the temperature of 67°F will result in having the highest test score because it is the most comfortable temperature. I also think that when the classroom temperature is 87°F, will negatively affect the students the most because it is hard to cool yourself off when it is hot and students may get sleepy.	
<b>Abstract</b>	
<b>Methods/Materials</b>	
<b>Method</b> Test One 67° 1. Get classroom to desired temperature. 2. 15 minutes into class, teacher hands out essay test. 3. Students are given 25 minutes to read the essay and answer 10 questions. 4. Collects tests. 5. Analyze results. Repeat Tests for temperatures at 77° and 87°	
<b>Materials</b> 1. 80 students between the age of 11-14. 2. Edusoft computer program to analyze test results. 3. Three different 800 word essay tests of equal difficulty. 4. Three sets of test papers for multiple choice answers—one for each essay. 5. Pencils, #2 Lead. 6. Temperature controlled classroom with thermostat. 7. Teacher.	
<b>Results</b> After completing my investigation, I found that my hypothesis was partially incorrect. My hypothesis stated that the temperature of 67°F, would have the highest test score because it is the most comfortable temperature. I also thought that when the classroom temperature was 87°F, it would result in the worst test scores, because it would be hardest for the students to cool themselves off in such heat.	
<b>Conclusions/Discussion</b> If the classroom is too hot, it can cause students to be uncomfortable and cause poor test results. After looking over my results, I think the weather outside the classroom played a role in determining the results. On the day when I conducted the test with the classroom temperature of 77°, the temperature outside was 56°, the hottest of all of the days on which I conducted the test. There was only a difference of 9 degrees from outside to inside. The day I conducted the test with the classroom temperature of 67°, the outside temperature was 49° and a difference of 18 degrees from inside to outside. The day I conducted the test of 87°, the temperature outside was 47°. A difference of 40 degrees from outside to inside. The temperature in the classroom, on both the days of the 67° test and 87° test, might have been what the students needed to warm themselves up due to the cold weather outside.	
<b>Summary Statement</b> If the temperature in a classroom affects student test scores.	
<b>Help Received</b> Mother helped my type report, Teacher helped me administer test, Teacher helped me compile and analyze data	



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<b>Name(s)</b> <b>Matthew C. Kanfer</b>	<b>Project Number</b> <b>J0412</b>
<b>Project Title</b> <b>Mind Blowing 3D: What Are the Side Effects of Watching 3D Stereo IMAX Movies?</b>	
<b>Objectives/Goals</b> The purpose of my experiment was to observe whether or not extended viewing of a 3D IMAX film causes any negative side effects. I chose to study levels of headache, eye strain, tiredness, dizziness and nausea.	
<b>Abstract</b> <b>Methods/Materials</b> I obtained permission from the management of my local theater (RAVE IMAX Cinema) to conduct a survey during one of the screenings of TRON Legacy. I prepared a survey form in advance that asked participants to rate their levels of discomfort in the categories named above on a scale of 1-10, 1 being no problem, 10 being maximum discomfort. The form also asked participants to enter their age, sex, and seating position, along with indicating at what point during the two hour screening they began to experience discomfort.  With the help of my parents, I distributed the survey before a screening of approx. 100 audience members, and collected 85 completed surveys. The gender breakdown was 50 males and 35 females. Average age was 32.35 years old.  I entered the data into the Apple Numbers spreadsheet application and created data tables and graphs of the results. These illustrations appear on this project board and are also included in my written report along with the master spreadsheet in my log book. The original survey forms are also included in a binder.	
<b>Results</b> Out of the five categories of discomfort, the one with the highest amount of problems was eye strain, reporting an average level of 2.24 out of 10. The least of the problems was nausea, with an average level of 1.14 out of 10. Contrary to what I had expected, the highest level of eye strain was reported in what is supposed to be the most comfortable area for 3D viewing, middle center (zone 8). The average level of eye strain discomfort for males was 2.18 compared to 2.22 for females.* (note that there were 40% more males in the audience)	
<b>Conclusions/Discussion</b> Based on these results, at worst, negative side effects were experienced by less than 23% of viewers. My conclusion: The extended 90 minute viewing period of 3D IMAX films is relatively safe and comfortable for the majority of people.	
<b>Summary Statement</b> To study and correlate any negative side effects such as headache, nausea, dizziness, and eye strain while watching 3D movies	
<b>Help Received</b> Father helped with photos. Manager of movie theater helped with coordinating audience survey	



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<b>Name(s)</b> <b>Alexandra Maya Kukoff</b>	<b>Project Number</b> <b>J0413</b>
<b>Project Title</b> <b>Hearing Impairment and Social Perception in Middle School</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To determine if typical hearing students treat hard-of-hearing students differently than their non-impaired peers.</p> <p><b>Methods/Materials</b> # Ten hard-of-hearing students from ages 11-13 # Ten typical hearing students from ages 11-13 # Two lists of questions-one for the typical students and the other for the hard-of-hearing students # Ten empty rooms</p> <p>Methods: I gathered ten typical hearing students and ten hard-of-hearing students. I made sure that half of the typical hearing students were aware of the hard-of-hearing students# hearing losses, and made sure that the other half were not. I organized the students into pairs, with one typical hearing student and one hard-of-hearing student in each pair. I had each of the groups talk in a five-minute conversation, then took each student aside and asked them questions.</p> <p><b>Results</b> I confirmed my hypothesis: that typical hearing students treat hard-of-hearing students differently (isolating them, alienating them, etc.) when they knew that the student was hard-of-hearing.</p> <p><b>Conclusions/Discussion</b> My hypothesis was proven correct. The majority of typical hearing students admitted that they would treat hard-of-hearing students differently if they had known if the student was hard-of-hearing or not. My experiment was not affected by uncontrolled events. I am extending my project by developing a curriculum that will teach typical hearing students how to better interact with hard-of-hearing students.</p> <p>Conclusion: The majority of typical hearing students (who had no knowledge of the hearing losses) admitted that they would treat hard-of-hearing students differently if having knowledge that the student was hard-of-hearing or not because they wouldn#t know how to interact with these students after this information was revealed. The majority of typical hearing students would treat hard-of-hearing students differently based on having no knowledge of their hearing losses because they would believe the hard-of-hearing students to be special needs based on the way they interact with others.</p>	
<b>Summary Statement</b> Do typical hearing students treat hearing impaired students differently (example: isolating them, alienating them, etc.) based on having knowledge if these students are hearing impaired or not?	
<b>Help Received</b>	



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<b>Name(s)</b> <b>Jennifer N. Lilly</b>	<b>Project Number</b> <b>J0414</b>
<b>Project Title</b> <b>Frustration Level Between Gender: Who Will Be the Biggest Offender?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> To find the frustration level between gender, Who will be the biggest offender? <b>Methods/Materials</b> Methods: Finding the human behavior by investigating the frustration and aggression levels between gender, male and female. Materials: Built a project that looks very simple for anybody (testers) to use from the outside. But hidden inside are electronic magnetic fields by using electrical current (from Batteries) that can reverse directions by using toggle switches. <b>Results</b> The results showed positive responses, laughing, frustration, apathy (giving up), sighing and total focus on trying to complete the task given to complete <b>Conclusions/Discussion</b> The majority of the males did respond to the test with a higher stress level and showed more symptoms with aggression behavior I have proved that 90% of the male gender showed signs of aggression and frustration. The female gender tested did not show any signs aggression but did show signs of a 40% frustration level	
<b>Summary Statement</b> To find the frustration level between gender, who will be the biggest offender?	
<b>Help Received</b> Research and learning from trial and error.	



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<b>Name(s)</b> <b>Dylan Lynch</b>	<b>Project Number</b> <b>J0415</b>
<b>Project Title</b> <b>The Space between Two People When They Meet</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My project was to determine how large is the space between two middle school girls, two middle school boys, and a middle school boy and girl, when they meet or start engaging in conversation. I have always wondered if people of the same or opposite gender stand close together or further apart when greeting one another. I noticed that the distance varies and I wanted to know by how much and why. <b>Methods/Materials</b> The space between two middle school students was measured with a ruler when they greeted each other. They were not told in advance so the measurement would not be a fake one in which they might have purposely stood far apart or close together to change the result. <b>Results</b> From my personal observations before this experiment, I believed that the space between two middle school girls will be the closest, then two boys a little further, and a boy and girl will be the furthest apart. As part of the background for my project I learned that hormones may have an affect on the decision to stand close together or further apart because they cause emotions and interactions between middle school students to vary and is portrayed when the comfort level rises or falls. My hypothesis was proven incorrect because the results showed that girls and boys stood the closest together not girls and girls. Then girls and girls not boys and boys stood a little closer, and finally boys and boys stood furthest from each other. <b>Conclusions/Discussion</b> While collecting my data, I noticed that the results were specific to an individual and their own personal comfort level no matter if they were a girl or a boy.	
<b>Summary Statement</b> What is the space between two middle school students when they meet.	
<b>Help Received</b> My mother reviewed my report for grammar.	



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<b>Name(s)</b> <b>Elizabeth T. Nevins</b>	<b>Project Number</b> <b>J0416</b>
<b>Project Title</b> <b>Reactions Based on Robert Plutchik's Wheel of Emotions</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The goal of this experiment was to test Robert Plutchik's psychoevolutionary theory of emotion, particularly the pairs of opposite emotions he depicts on his Emotions Wheel. Using my results, I was hoping to be able to understand people's emotional reactions. Ultimately, this would aid psychologists in developing a type of therapy that could help people refocus negative emotions.</p> <p><b>Methods/Materials</b> I used 110 identical surveys, a spare pencil, and 110 random people of varying genders, ethnicities, and ages in my experiment. First, I would approach a group of people or a singular person. Then, I would ask them to fill out a survey for my experiment. I wouldn't tell them what my experiment was, though. Once they were done, I would thank them and take the data home in a folder before typing it into a chart.</p> <p><b>Results</b> When I got my 110 survey results, I split them into gender and age based groups. I used a Pearson correlation, and the significance was found using a two-tailed test. I correlated the emotions on the opposite sides of Plutchik's Emotions Wheel. I then did the same with age group one and age group two as well as with the females' results versus the males' results. To summarize all those numbers, the females' correlations seemed to be weaker in general with small bursts of significant correlations. In the males' correlations, the correlations were average in questions one and three, but six out of eight were significant in questions two and four. In age group one, the correlations all tend to be on the weaker side, and the correlations were more defined in age group number two. There were also lots of significant correlations between happiness and sadness throughout the data.</p> <p><b>Conclusions/Discussion</b> The data did not support my hypothesis which said that if someone was exposed to an emotion on one side of the Emotions Wheel during a certain situation, then that same person would react to the opposite kind of situation with the emotion on the opposite side of the Emotions Wheel. Some of the correlations supported Plutchik's Emotions Wheel, but there weren't enough good, strong correlations to prove that the wheel was constructed correctly. There were surprising correlations between the age and gender groups that I tested. My data could be used to help other scientists formulate new types of therapy or medicine for people with mental illnesses.</p>	
<b>Summary Statement</b> My project tested Robert Plutchik's psychoevolutionary theory of emotion, particularly the pairs of opposite emotions he depicts on his Emotions Wheel.	
<b>Help Received</b> Dr. Mayer reviewed the survey; Mother helped glue on papers; Friends/Family helped pass out some surveys	





**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Peter S. Oh</b>	<b>Project Number</b> <b>J0417</b>
<b>Project Title</b> <b>Human Reaction Time</b>	
<b>Abstract</b>	
<b>Objectives/Goals</b> My goal was to find out which age group is the fastest age groups 10-12 year olds 20-30 year olds 40-50 year olds 60-70 year olds	
<b>Methods/Materials</b> -a yard stick -20 men - 5 people for 4 different age groups -recording sheets -a pencil	
<b>Results</b> 1st Place Fastest 20-30 2nd Place 40-50 3rd place 10-12 Last Place Slowest 60-70	
<b>Conclusions/Discussion</b> Conclusion: My hypothesis was kind of correct. I said that the oldest group would have the slowest reaction time. I also guessed that because my research says a brain works the best around 20 years old, I thought that the 20-30 year old group would have the fastest reaction time and they did. But I thought the youngest group would have been a little faster so I was shocked that it was slower than the 40-50 year old group. My results on average supported my hypothesis though. The average results were the youngest group was slow. The 2nd group was the fastest. The 3rd group was the next fastest. The oldest age group was the slowest. I said that the oldest group would be the slowest because their brain cells were lost as they got older, which slows down their brain. The 2nd group (20-30 year olds) was at the age where the brain is the strongest and best developed it made sense to me that they could be fast with their brain and reactions.	
<b>Summary Statement</b> How does age affect a humans reaction time?	
<b>Help Received</b> My sister helped me type my report.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Anthony J. Oliverio</b>	<b>Project Number</b> <b>J0418</b>
<b>Project Title</b> <b>Noise-Induced Hearing Loss: A Silent Crisis in Teens?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> To determine the reasons for noise-induced loss in teenagers, as well as determining junior high students' knowledge and practice of safe hearing behavior. If the reasons are found, then the youth of America can be appropriately educated as to how to protect themselves from hearing damage. <b>Methods/Materials</b> A 20-item survey was administered to 116 junior high school students. The questionnaire was designed to determine use of personal listening devices (PLDs), awareness of hearing health and safe hearing practice, and the need for education in junior high school students. Some survey questions used in 2 previous studies looking at high school and college students were also included. Major materials used included pencils, paper, and computers. <b>Results</b> The response rate was 98%. Results indicated that subjects were aware that loud PLDs could cause hearing loss, but many chose not to follow guidelines that would help protect their hearing. Cross survey analysis indicated that there was a 136% increase in college students who set unsafe volume levels compared to junior high students. <b>Conclusions/Discussion</b> Many of the junior high school students questioned need further education to increase their knowledge of how to protect their ears from loud environmental noise. Also, many of the junior high subjects in the study are aware of the potential of hearing damage by PLD use at high volumes. However, they choose not to follow guidelines, thus putting themselves at risk for noise-induced hearing loss.	
<b>Summary Statement</b> My project is about junior high students' use, awareness, and practice of personal listening devices.	
<b>Help Received</b> Mother helped assemble board; Professor provided info from other surveys.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Dania S. Pagarkar</b>	<b>Project Number</b> <b>J0419</b>
<b>Project Title</b> <b>Augmented Reality Enhances Learning</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My project was to determine if Augmented Reality (AR) can be used to enhance learning among various individuals.</p> <p><b>Methods/Materials</b> Informed consent was obtained from 36 randomly selected middle school students. With aid of style indicator test, students were divided into following three categories; (1) kinesthetic, (2) auditory &amp; (3) visual. Each group of student was taught a regular lesson on human anatomy, without Augmented Reality (AR), their learning was captured with simple test. Two weeks after the first test, same students were given lessons enhanced with Augmented Reality (AR), once again their learning was captured with simple test.</p> <p><b>Results</b> The Kinesthetic students benefited the most from the AR aided lesson. Their grade went up by 25% with the AR lesson. Grades of the Visual students improved by about 16%. The Auditory group benefitted the least, their grade improved by only 11%. Overall 17% grade improvement was observed on 36 volunteer students</p> <p><b>Conclusions/Discussion</b> The results agreed with the hypothesis. As expected kinesthetic people benefitted the most from the AR lesson. AR made the lesson interactive, creating similar stimulus produced by a hands-on activity, thus benefitting the kinesthetic people most. Although it didn't have any characteristic that could directly reach out to the auditory, the AR still brought reasonable improvement in their understanding by the virtue of the lesson delivery. Similarly visual students found it easy to understand.</p>	
<b>Summary Statement</b> Explore if Augmented Reality (AR) can be used to enhance learning among various individuals.	
<b>Help Received</b> self reliant	



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

<b>Name(s)</b> Axel A. Perez	<b>Project Number</b> <b>J0420</b>
<b>Project Title</b> <b>Cheering: Good or Bad?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My study was to determine if psychological reinforcement would affect the free throw accuracy of an individual. I also wanted to find out if psychological reinforcement would affect their intrinsic motivation or their psychological thoughts.</p> <p><b>Methods/Materials</b> 19 participants were selected and all were given consent forms so their parents and themselves could sign them. One at a time, they would come in to the gym and shoot 12 free throws for each reinforcement. For positive and negative reinforcement, a positive/negative statement would be read every time the ball was shot and the free throw accuracy would be recorded. After every 12 shots, this question would be read: "If you were to shoot 10 more times how many do you think you would make according to how you feel you have done thus far?" The results would be collected and studied.</p> <p><b>Results</b> The free throw accuracy of the control group was 28%, the free throw accuracy of the positive reinforcement group was 33%, and the free throw accuracy of the negative reinforcement group was a surprisingly 38%. The control group thought they would have a 45% free throw accuracy, the positive reinforcement group thought they would have a 42% free throw accuracy, and the negative reinforcement group thought they would have a 47% free throw accuracy. I researched on the people that 20% or better with either positive or negative reinforcement also. That made me think more about the individual and made things clearer in my mind.</p> <p><b>Conclusions/Discussion</b> The accuracy of shooting free throws is affected by psychological reinforcement. The negative reinforcement group did better than the control and positive reinforcement group. I believe that the negative reinforcement group had a better free throw accuracy than both other groups because when given negative reinforcement, the level of intrinsic motivation and competitiveness increased the performance. I also believe that when positive reinforcement is given, the individual would feel no need to improve so their level of intrinsic motivation wouldn't increase as much. I also measured the results for the participants that performed better with positive or negative reinforcement. That helped me see that some people are better with positive reinforcement and others with negative reinforcement. In conclusion the data collected in this experiment supports my hypothesis but more research can be done to reach further conclusions.</p>	
<b>Summary Statement</b> My project is about psychological reinforcement and how it can affect the intrinsic motivation and free throw accuracy of an individual by saying positive and negative statements.	
<b>Help Received</b> Mother and Grandfather helped correct spelling mistakes and brain storm ideas; Mr. Bauser helped reserve gym	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Heila Precel</b>	<b>Project Number</b> <b>J0421</b>
<b>Project Title</b> <b>The Science of Strategy: Does Information Affect Cooperation in the Prisoner's Dilemma?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment was to identify how information such as age, gender, familial status, and criminal record affected whether or not a "prisoner" in a Prisoner's Dilemma simulation would choose to cooperate with or betray the opposing "prisoner". <b>Methods/Materials</b> A survey was created describing an altered form of the classic Prisoner's Dilemma scenario. The questions asked a participant to either "cooperate" or "defect" and provided information regarding some of the opposing player's character traits, such as age, gender, familial status, income, and criminal record. The survey also asked the participant for demographics such as age, gender, and income. Answers from 146 respondents, aged 12-60+ were analyzed based on both the respondents' and other players' demographics. <b>Results</b> Overall, participants chose to cooperate about 65% of the time and defect the remaining 35%. Males were about 6% more likely than females to defect. Both genders were about 14% more likely to cooperate with females. Against criminals, females defected about 61% of the time while males defected only 54%. When the participant's children were with them, both genders defected about 45% of the time. <b>Conclusions/Discussion</b> The hypothesis was partially correct; although the impact of positive, negative, and neutral information was substantial, participants were not always more likely to cooperate with the same gender. Rather, both genders tended to trust the females more often. Because the Prisoner's Dilemma appears often in modern society, analyzing people's responses to it could help create ideal strategies for navigating such situations in ordinary circumstances.	
<b>Summary Statement</b> This project attempts to determine how certain information affects people's choices in a Prisoner's Dilemma situation.	
<b>Help Received</b> Teacher provided supervision and helped set up survey; Mother and Father helped distribute survey to older participants.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Erika C. Santos</b>	<b>Project Number</b> <b>J0422</b>
<b>Project Title</b> <b>Investigating Whether Kids Can Mistake Vitamins for Candy</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My objective is to determine if children from ages 5-8 can tell the difference between vitamins and candy. Vitamins can be harmful if too many are taken at once. <b>Methods/Materials</b> I went into the Kindergarten, 1st, and 2nd grade classrooms at my school. I had each student come to a back table and had them determine which product was vitamins, and which was candy. I placed the different products in plastic cups. They just had to tell me which one they thought was the candy. The products I used were: Candy - Sweet tarts, jolly rancher fruit chews, spice drops, sour patch, pez Vitamins - poly/vi/lor, toy story vitamins, jolly rancher vitamins, your life vitamins, Flinstone Complete <b>Results</b> Kindergarten - 29% could not determine candy from vitamins. more than 1/4 of the class First Grade - 22% could not determine candy from vitamins. Second Grade - 33% could not determine candy from vitamins. <b>Conclusions/Discussion</b> On average, about 1/4 of the kids could not determine the difference between candy and vitamins. This shows that kids can easily mistake this. Companies purposely try to get their vitamins to look appealing. If a child thinks it is candy and takes too many, they could have an allergic reaction, or a worse case scenario of an overdose. Parents need to put their daily vitamins out of reach of little kids. Do not leave them out.	
<b>Summary Statement</b> My project will determine if kids ages 5-9 can tell the difference between vitamins and candy.	
<b>Help Received</b> Teacher taught scientific method, provided classroom help with experiment. Parents helped in purchasing materials. They also helped put board together.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> Ella C. Stein	<b>Project Number</b> <b>J0423</b>
<b>Project Title</b> <b>We've Come a Long Way Since Brown vs. The Board of Education. Or Have We? A Study of Racial Bias in Students</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of the study was to determine the status of student's racial beliefs, attitudes and preferences. The researcher's hypothesis was that when given a questionnaire, students would assign more of the positive attributes to the lighter skinned man and more of the negative attributes to the darker skinned man.</p> <p><b>Methods/Materials</b> Permission for students to participate in the study was obtained with an opt-out form. A questionnaire was developed based on photographs of four men with different skin colors. 12 of the 14 questions were original questions written by the researcher. Two questions were taken from a 2010 CNN study. Teachers were given a script to go with the questionnaire. 231 students in grades 3 - 8, from two different schools, participated in the study. The results were categorized by positive attributes, negative attributes, skin color most people want, skin color most people don't want, blue collar jobs and white collar jobs.</p> <p><b>Results</b> The results of the collected data showed that there was not a significant difference between the light and dark skinned men for the positive and negative attribute questions. There was however, significance when asked about the skin color most people want and the skin color most people don't want. The white man was most often chosen for the skin color most people want (51%), and the black man was most often chosen for the skin color most people don't want (63%).</p> <p><b>Conclusions/Discussion</b> The results of the study demonstrate that lighter skin is more valued in our culture. However, students in this study did not assign the other positive or negative attributes to any particular skin color. This may be due to a number of reasons including the students knowing they were being studied (Hawthorne Effect) or a lack of racial bias. The researcher suggests further studies to be conducted.</p>	
<b>Summary Statement</b> This project is about determining if students have racial biases.	
<b>Help Received</b> Principals and teachers at two local schools helped implement the questionnaire. Mother helped edit report.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrew S. Sundaram</b>	<b>Project Number</b> <b>J0424</b>
<b>Project Title</b> <b>Multitasking: Efficient or Counterproductive?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment was to find out whether or not multitasking is efficient; however, I also wanted to find out the effects of multitasking on the brain.</p> <p><b>Methods/Materials</b> The materials I used were a paragraph to memorize, a set of exercises in a specific order with a specific amount of repetitions, volunteers, a stopwatch, a source of music, and a pencil and a piece of paper. First, I had my volunteers do the exercises individually, I timed them and rated them for accuracy. Accuracy was based on whether or not the exercises were done in the right order and the right amount of repetitions, and accuracy of the exercise itself. Then I had them say a speech, which I rated for accuracy. Then I had them do the activities together while I played music in the background. I timed them, rated them for accuracy of both exercises and the speech, and recorded whether or not they noticed the music. Finally, I recorded my results.</p> <p><b>Results</b> My results were unanimous. While Multitasking the time was slower and both tasks were less accurate as well. None of the volunteers noticed the music. Thus multitasking is inefficient.</p> <p><b>Conclusions/Discussion</b> I discovered that for the exerises the frontal lobe of the brain would send signals to the muscles using motor neurons. While saying the speech, the signal goes from the brain to the larynx using interneurons. While listening to music, the eardrum transmits the signal to the temporal lobe of the brain using sensory neurons. In conclusion, all this happening at once is to much for the brain to handle, thus, multitasking is inefficient.</p>	
<b>Summary Statement</b> This project displays whether or not multitasking is efficient, and its effects on the brain.	
<b>Help Received</b> My science teacher helped me with any questions I had; My parents helped me by being supportive and driving me to the library.	





**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joanna L. Tabacek</b>	<b>Project Number</b> <b>J0425</b>
<b>Project Title</b> <b>Does the Nose Know?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective was to test if the power of suggestion can influence a person's perception of reality. The goal was to see if people's perception of what they smelled could be influenced because it was suggested to them that it was a different spice than it really was. <b>Methods/Materials</b> There were three stages to the experiment; the first was just having each participant smell each scent so they were able to recognize the scent. This was used this as a baseline. Second, the blindfolded participants smelled each scent as it was correctly identified and they were asked if they agreed or disagreed. This was to test if they really were able to recognize the scent. This was used as a control stage in the experiment. Third was the real evaluation. Each participant smelled a scent, it would be incorrectly identified, and the participants were asked if they agreed or not with what the scents were identified as. This was to test if they could be influenced to think they smelled a certain scent because it was suggested to them. The materials used in the experiment were 4 jars to contain the spices; and a teaspoon each of Cinnamon, Cumin, Mace, Ginger, a notebook to record data, a pencil, a flat surface, a blindfold and participants. <b>Results</b> It was found that in this test most people were not influenced by the suggestion and could correctly identify almost every scent. More people correctly identified the scents during the evaluation stage than during the control stage. <b>Conclusions/Discussion</b> The results showed that people trust their noses more than they trust what they are being told by other people. This means that even though the placebo effect that doctors use with their patients works, it doesn't mean that the power of suggestion can influence peoples' perception of reality in every test. In the end, the hypothesis was proved wrong.	
<b>Summary Statement</b> Testing to see if participant's perception of smell can be influenced by suggestion.	
<b>Help Received</b> Mother and father helped with experimental design, buying materials, and editing project display. School district mentoring program providing general guidance for project.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kirk Patrick H. Testa</b>	<b>Project Number</b> <b>J0426</b>
<b>Project Title</b> <b>Lights On! Lights Off! Testing the Amount of Light vs. the Feeling of Sleepiness</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To determine certain amount of lights' role in melatonin production and a person's feeling of sleepiness and ability to focus in a classroom environment. If the amount of light in a classroom affects the feeling of sleepiness in middle school students, then the reduction of light will increase melatonin production, therefore increasing the feeling of sleepiness by 10%, because melatonin, a hormone produced in the pineal gland and retinas induce sleepiness; studies have shown that adolescents lack the required amount of sleep, making them prone to sleeping in class; and the season in which the experiment is conducted (winter) has proven to be a time in which melatonin is secreted in higher doses than regular.</p> <p><b>Methods/Materials</b> 200 middle school test subjects were to watch a "Bill-Nye" movie (sound output-63.4 dB) in a classroom environment (fluorescent lighting, desks, blacked out windows and room temp. 20-21°C) with a certain amount of light per day (3 days during winter). Day 1-no light, 5 lux (independent variable 1/control); Day 2-1 series of light/half amount, 38 lux (independent variable 2); Day 3-2 series of lights/full amount, 72 lux (independent variable 3). Test subjects were to fill out a survey questionnaire sheet before and after watching the movie.</p> <p><b>Results</b> Day 1 (5 lux) caused the greatest average percentage increase of the feeling sleepiness (41.30%). Day 2 (38 lux) caused an average 35% increase of feeling of sleepiness. Day 3 (72 lux) caused an average 30.57% increase of feeling of sleepiness. This determined the light measurements 5, 38, and 72 luxs' role and effect on the feeling of sleepiness.</p> <p><b>Conclusions/Discussion</b> The hypothesis was valid because the results were much higher than the predicted 10% average increase of the feeling of sleepiness between before viewing the movie from after viewing the movie. Other factors that may have played a role in proving the hypothesis correct may have been the weather, caffeine and breakfast intake, and gender. This experiment is scientifically important because it may help teachers and educators determine and create learning environments that best suits their students to not arouse sleep. Also, the results of this experiment may be useful information for workplace knowledge, because many jobs involve working at night and knowledge of how light effects performance can be a factor in the safety of workers.</p>	
<b>Summary Statement</b> The project focuses on the the effects of melatonin on the feeling of sleepiness of middle school students in certain amounts of light.	
<b>Help Received</b> 7th & 8th grade teachers Mr. Ballard and Ms. de Wood mentored and assisted me with the project; Dr. Hurst provided personal input and knowledge as research.	



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

<b>Name(s)</b> Alexandra N. Vredenburgh	<b>Project Number</b> <b>J0427</b>
<b>Project Title</b> <b>Adolescent Coping: What Factors Contribute to Teenage Eating Disorders?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Last year my friend developed a severe eating disorder and was sent away for three months to a hospital. As a result, I became interested in how adolescents cope with stress and started developing questions such as, why are some kids happier? Why do some teens cope better? How do they cope? How much stress can someone take without developing problems? Why do some kids develop maladaptive disorders such as eating disorders? Anorexia is the 3rd most chronic condition among adolescent girls after obesity and asthma and has the highest mortality rate of all psychiatric diagnoses, as high as 20% in long-term studies.</p> <p><b>Methods/Materials</b> 260 people participated in my study; 48.2% males, and 51.8% females. They ranged in age from 13 to 18. Three teachers had their students participate during class time and gave extra credit. Participants completed a 3-part questionnaire, including a resilience and coping evaluation developed for this study, an eating disorder test, and a stress test.</p> <p><b>Results</b> People with eating disorders had significantly more stress than people without eating disorders (<math>F(1,226)=21.25, p &lt; .01</math>). Weight was not a significant predictor of whether someone had an eating disorder; satisfaction with appearance was the only significant predictor <math>B(1)=-.596, p&lt;.05</math>. People with eating disorders listed more negative things about their life (<math>t(115)= -3.474, p&lt;.01</math>) and appearance (<math>t(114)= -3.487, p&lt;.01</math>). Adolescents that were satisfied with their friendships had lower stress (<math>t(241)=2.499, p&lt;.05</math>). Adolescents that were satisfied with their family had lower stress (<math>t(241)=2.629, p&lt;.05</math>).</p> <p><b>Conclusions/Discussion</b> Adolescents are experiencing more stress than ever. The struggle to fit in, make new friends, and be successful have driven students to face the reality and complications of growing up. This problem has increased over the past decade and will continue unless something is done. There are approximately 42 million adolescents in America. 24% of my participants had some form of eating disorder (anorexia, bulimia, diet pills, laxative use). If my sample is representative, there would be approximately 10.08 million American adolescents with this disorder. If only one percent of teens are helped by a school-based intervention, about 100,800 teens' lives could be dramatically improved. To date, there is no cure for eating disorders. I am hoping that through my research I am able to eventually help develop a cure.</p>	
<b>Summary Statement</b> This study evaluates the relationship between stress and eating disorders and the factors that predict eating disorders.	
<b>Help Received</b> UCSD doctoral student Laura Case met with me and helped me get started with my research. Professor Michael Kalsher, Rensselaer Polytechnic Institute, taught me statistics. My brother, Michael helped with my poster. My father let me collect data at the school where he teaches. My mom edited my report.	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> Caitlin J. Wheelan	<b>Project Number</b> <b>J0428</b>
<b>Project Title</b> More than Meets the Eye	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project is to evaluate which gender is more easily swayed by suggestion.</p> <p><b>Methods/Materials</b> Male and female subjects were independently shown a video clip of an actual burglary. The participants then received a 12 item questionnaire to complete. The experimenter looked over the answers and verbally indicated there were some wrong answers and asked the participant if they would like to go back and change any. Subjects were then scored depending on how they responded to the leading questions receiving one point for agreeing (Yield). Points were also awarded for answers that were changed (Shift). Points for Yield and Shift were averaged among both male and female respondents and added together to determine an overall eyewitness suggestibility rating.</p> <p><b>Results</b> There were a total of 68 yields from 33 male subjects for an average score of 2.06. Among 35 subjects there were a total of 59 yields for an average score of 1.69. Results show that males were more susceptible to leading questions or Yield. There were a total of 26 shifts from the 33 male subjects for an average shift rate of 0.79. Among the 35 female subjects, there were 28 shifts for an average shift rate of 0.80. The results show females were about 2 times more likely to shift as compared to males.</p> <p><b>Conclusions/Discussion</b> The results did not fully support the hypothesis. Men were actually more susceptible to eyewitness suggestibility; however, a notable difference is that men are more likely to make mistakes due to leading questions. Both males and females tend to lose confidence in answers when questioned.</p>	
<b>Summary Statement</b> The purpose of this project was to determine which gender was more susceptible to suggestibility.	
<b>Help Received</b> none	



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> Alyssa L. Yoshitake	<b>Project Number</b> <b>J0429</b>
<b>Project Title</b> <b>Does Mindset Affect Success in Board Breaking?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to find out if and how a person's mindset affected his/her ability to break boards in tae-kwon-do.</p> <p><b>Methods/Materials</b> In the experiment, I had participants break three #2 pine boards. They were told that they were breaking a dry/chemically weakened pine (easier) board, a normal pine board, and an oak/chemically hardened pine (more difficult) board in order to induce a positive or negative mindset. After the participants broke/attempted to break all three boards, they filled out a brief survey regarding board breaking. The materials used were 70 #2 pine boards, 70 permission slips and post-break surveys, a video camera, a digital camera, and experienced board holders.</p> <p><b>Results</b> When the data was sorted by gender, the differences in the importance.affects of mindset were easy to see. About 46% of women and 41% of men broke the "dry pine" board, 46% of women and 39% of men broke the regular pine board, and 21% of women and 52% of men broke the "oak" board. When the data was sorted by age or rank, the differences in the importance of mindset was little, if any.</p> <p><b>Conclusions/Discussion</b> Mindset is important regardless of age, gender, or rank, but the way a successful mindset is achieved is different for both genders. The best type of encouragement for women is typical positive encouragement ("you can do it/this should be easy for you" comments). For men, the best type of encouragement is a challenge ("you can#t break that board/very few people can do this" type of comments). These results can be explained by the fact that body mass has a large impact of the difficulty of board breaking. In general, women have less body mass than men, which makes it more difficult when they are first learning to break boards, which gives them more experience with failure, in general, than men. This makes it easier to cause a negative/unsuccessful mindset based on fear of pain or failure on women, whereas many men think that if they use a little more power and speed, they can break a board that is more difficult.</p>	
<b>Summary Statement</b> Through this experiment, I hoped to show whether or not mindset affected a person#s success in tae-kwon-do board breaking and in what ways different mindsets affected different genders, ages, and ranks.	
<b>Help Received</b> My tae-kwon-do instructor helped organize the break-a-thons where I collected the data and answered my questions. My mom helped film several board breaks (with informed consent of the board breaker) and helped organize the break-a-thons. Home Depot donated the #2 pine for people to break.	