CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Sarah R. Aiello

Project Number
J0601

Project Title
Subliminal Messaging: Did You See That?

Abstract

Objectives/Goals
In my experiment, I tested my hypothesis that a subliminal message would not be successfully entered into the conscious mind of a viewer unless the viewer had access to the image from past experiences. A subliminal message is any message that is delivered below the "threshold of perception". The threshold of perception or awareness is interpreted as consciousness. I believe that if a person does not have conscious access to a subliminal image or word, then they will access the closest image within their consciousness. Even if the participant believes that they are consciously aware of a subliminal image, this may not be the case.

Methods/Materials
I produced a five minute film. Within the film, there were 10 reference points (the numbers 1 through 10) and a subliminal message was placed into the film at 4 locations. The subliminal message appeared for a longer time each time it was shown. The subliminal message was a picture of a street with the word 'SOTP' written on it. The word was intentionally misspelled. Participants viewed the film and were asked to record each time they noticed the "subliminal" message (they identified this by writing the number that followed the message frame). The participants were also asked to record when they could first clearly identify the message (and again they documented the time by writing the number that followed the frame).

Results
There were 76 participants that viewed the film. Most of the participants stated they saw the "hidden message" each time it was displayed, but out of 76 test subjects, 54 of them (71%) identified the word as "STOP", which was incorrect. Only 22.4% of the subjects were actually able to correctly identify the true image, "SOTP".

Conclusions/Discussion
According to my results, if a person does not have previous access to an image, a "subliminal" message may not be correctly interpreted by the person#s conscious mind, even if the test subject believes he or she is consciously aware of the image.

Summary Statement
I created a self-produced film in an attempt to demonstrate that an image hidden within the production might not be accurately identified, if its message was not familiar to the viewer.

Help Received
I wrote the script and filmed the message and number frame sequences, but I must thank my father for filming the parts of my film in which I starred.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Page B. Benoit

Project Number
J0602

Project Title
Some Like It Hot: The Effect of Temperature on Taste Perception

Abstract

Objectives/Goals
My objective was to determine if temperature affects the perception of sweetness. My hypothesis was that, when given two solutions of varying sweetness, a taster would be able to identify the sweeter solution with greater accuracy as the temperature of the solution increased.

Methods/Materials
I prepared six solutions of varying sugar-water ratios: 12%, 13%, 14%, 15%, 16% and 17%. The solutions were given to tasters at four different temperatures: 10 degrees Fahrenheit (Freezer), 40 degrees F (Refrigerator), 66 degrees F (Room Temperature), and 110 degrees F (Hot Bath). I used a sip and spit method in which tasters were given two cups at a time and asked to identify which solution was sweeter. The solutions were given in the following pairs: 13%-14%, 15%-17%, and 12%-16%. In the end, each taster had three opportunities to make judgments about sweetness at each temperature. I tested 18 healthy males and females, all under the age of 16.

Results
The test results showed that as temperature increased, the taste tester's ability to perceive sweetness increased as well. At 10 degrees F, tasters identified the sweetest solution with 49% accuracy, at 40 degrees F with 77% accuracy, at 66 degrees F with 79% accuracy and at 110 degrees F with 82% accuracy.

Conclusions/Discussion
The test results supported my hypothesis. As the temperature increased, the taster's ability to perceive sweetness increased as well. This is important information for the food industry to take into consideration when developing food that will be pleasing to consumers. Arlene Higgins from Humboldt Creamery confirmed that they do consider temperature when making ice cream. When the product is cold, the general rule is that it takes more flavor, and generally more sweetness, for optimal perception

Summary Statement
My objextive was to determine if temperature affects the perception of sweetness.

Help Received
My mother typed my project.. I consulted Dr O'Gara at Humboldt State University regarding my test design

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Amy Bosworth; Rory Hagelstein

Project Number
J0603

Project Title
Does Gender Affect Color Preference? Do Females Really Prefer Pink? Do Males Really Prefer Blue?

Abstract

Objectives/Goals
The objective was to determine if males and females had a distinct color preference and whether males would predominately prefer blue and females pink. We hypothesize females will prefer pink and males blue in both age categories.

Methods/Materials
Phase I: 50 males and 50 females (ages 10-15) were shown 39 color sample pairs, ranging from yellow/green to red/blue and asked to choose their preference. Phase II: 25 males and 25 females (10 -15) were shown 29 red/blue color samples and asked to choose their preference. Phase III: 50 males and 50 females (ages 21 -60) we shown same 29 red/blue color samples and asked to choose preference.

Results
Phase I: 50 males and 50 females were tested (broad color) and 64% of the males preferred the blue/red tones, 36% preferred yellow/green tones; 70% of the broad test subjects preferred red/blue tones and 30% preferred yellow/green. Phase II: of the 25 males and 25 females (age 10-15) tested, 56% f the females preferred pink and 44 % blue; 58% of the males preferred pink and 42 % blue. Phase III: 25 males and 25 females (age 21-60), 68% of the females preferred pink and 32% blue; 52% of males preferred blue and 48% preferred pink.

Conclusions/Discussion
Overall it was shown that both genders, preferred red/blue tones over yellow/green tones. The majority of juveniles preferred pink. In the adult group women overwhelmingly preferred pink and men were roughly split by half between blue and pink.

Summary Statement
Color preferences of males and females.

Help Received
Our teacher helped get color samples to use in the survey.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Taylor Q. Carol

Project Number
J0604

Project Title
Put Away the Pills and Hand Me the Controller

Abstract

Objectives/Goals
Can Re-Mission the video game I played while receiving cancer treatment cause, a change in cognitive perceptions leading to improved health related outcomes such as self efficacy, cancer knowledge, treatment adherence, and quality of life.

Methods/Materials
Video game # Re-Mission
Lap top
Data charts
Research data supplied by Hopelabs

Results
The data showed the Re-Mission group benefited in cancer knowledge, self efficacy, treatment adherence, and quality of life as compared to the control group. Specifically the Re-Mission participants rose 8% in the post cancer knowledge test compared with the control group. The Re-Mission group also showed improved adherence to medical regimen. Out of 40 doses given of antibiotic therapy the Re-Mission group showed 4 less failures regarding patients not taking their antibiotic therapy. In the quality of life questionnaire the Re-Mission group rose fro 76 to 78 on a scale of 100. Comparatively the control group fell from 77 to 75 using the same scale.

Conclusions/Discussion
In each or the four categories new cognitive perceptions led to improved results for the Re-Mission group. However I benefited to such a great extent I thought the overall results would have been higher. My hypothesis was supported by my analysis of results just not to the degree I thought. My increased cancer knowledge, quality of life, and self efficacy were much higher than the presented results. The game re-Mission gave me tremendous knowledge about my cancer and how to fight it. Playing Re-Mission gave me confidence to fight cancer and simulated control over my disease and outcome. I feel my hours of play that was at 25 hours and well above the norm might account for the difference. Reviewing the time of play graph it is evident that I played Re-Mission substantially more than the other participants. This could be an explanation of why I benefited more. To conclude my analysis of results certainly shows the need for more studies in this area. This study using video games for adolescent cancer patients is a first of its kind. My analysis shows this study warrants more research using more time on task to prove the validity of my hypothesis. Further video game use as therapy in adolescent cancer patients seems very promising for the future.

Summary Statement
Re-Mission the video game that I played while receiving cancer treatment changes cognitive perceptions leading to improved health related outcomes such as self efficacy, cancer knowledge, treatment adherence, and quality of life.

Help Received
Ms. Wentz my science teacher gave me guidance on this project

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Tanner Clark

Project Number
J0605

Project Title
Build Your Legos, Build Your Brain!

Abstract

Objectives/Goals
This project asks the question #Does playing with Legos every day improve boys# math scores?#

Methods/Materials
Ten fifth grade boys were selected from two different classes. One class was an advanced/proficient class; one class was a basic class. Of the ten boys chosen from each class, five became the test group and five became the control group. Ten original Lego sets were designed using Lego Digital Designer. Both classes were given a pretest. Each day for ten days, boys from the experimental group from each class were given a different Lego set to build at home each night. At the end of the ten day building period a post test was given.

Results
Boys in the control group from the basic class outperformed the experimental group from the same class. Boys in the experimental group from the proficient/advanced class outperformed the control group from the same class.

Conclusions/Discussion
Though the results of the initial experiment were inconclusive, enough information was gathered from the process to provide guidelines for establishing further controls for the experiment when it was repeated. The experiment was repeated using boys from two sixth grade honors math classes. Post test scores were much lower than pretest scores for both the experimental and the control group. However, post test scores for the experimental group did not decrease as much as post test scores for the control group. Even though all scores went down between the pretest and the post test, boys who played with Legos had less of a drop in their post tests scores, indicating that playing with Legos had a positive effect on their learning.

Summary Statement
My project is about establishing a connection between building with Legos and improving math scores.

Help Received
My mom helped me type the report. Mrs. Denbaugh and Mr. Baggett, two teachers, provided the Saxon Math test generators for me to use, Mrs. Denbaugh, Mrs. Sachs, and Mrs. Reisland provided time and/or students for the experiment.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Madison E. Dunn

Project Number
J0606

Project Title
Memory: Does Gender Make a Difference?

Abstract

Objectives/Goals
My objective was to determine who had better short and long term memory, boys or girls. I predicted that girls would have better memory due to personal observation and experience.

Methods/Materials
My materials were 31 subjects (students in my class-VARIABLES), 31 long term memory tests (penny test-CONTROL), 31 short term memory tests and answer sheet (20 item test-CONTROL), a timer, and 31 candy bars(reward for subjects). I gave the subjects a folder containing the 2 memory tests. They were given 30 seconds to look at the items on the short term test and then 50 seconds to write down as many items as they could remember. They were then asked to look at the long term memory test and pick the answer they thought was correct. I collected the answer sheets, scored them, and then reported my results.

Results
The girls recalled an average of 8.55 items whereas the boys recalled and average of 8.05. There really was no difference between the 2 scores because the girls barely beat them by a fraction. The mode for the boys was 8 and for the girls it was 9. The highest number of items recalled for both girls and boys was 10 and the lowest number of items recalled was 5 items for the boys and 7 items for the girls. On the long term memory, 45% of boys picked the correct penny in contrast to less than 1% of girls.

Conclusions/Discussion
My hypothesis was not supported by my testing. I did not find a statistical difference between boys and girls in the short term memory category. However, I did fing a significant difference in the long term category. The boys scored much higher on the long term than the girls. I do believe that boys and girls remember different things better according to their different interests. So, although the boys did score higher, more tests are needed with several different areas of interests to determine if indeed boys have better long term memory.

Summary Statement
My project's focus was to determine whether a certain gender had better short term and long term memory.

Help Received
My mom helped me put my board together and with the hard information during research.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Lena K. Egbert

Project Number
J0607

Project Title
Cranial Confusion: How the Brain Adapts to Left-Right Inversion

Abstract

Objectives/Goals
I wanted to find out if age was a factor in how people adapted. Specifically, I wanted to find out if age affected a person's ability to adapt to a computer mouse that inverted the direction of motion of the cursor on the computer screen.

Methods/Materials
I used two computer games to measure a person's adaptability. In both games, a target circle is presented at a random location on the computer screen. The goal is to move the cursor over the target and click the mouse. When the target is clicked on, a new target appears at another random location on the screen. The game lasts 1 minute and the total number of targets clicked on is the score. The first game has a mouse cursor that moves normally. The subject plays this game 3 times and I consider the average score as the subject's "normal" score. The second game has a mouse cursor that is "inverted". This means if the mouse is moved left, the cursor moves right and vice versa. Up and down are also reversed. The subject plays this game 3 times. I compared the score of the last "inverted" game with the "normal" score. I did this by expressing the last inverted score as a percentage of the normal score.

Results
I studied the scores from 100 people of different ages. I categorized my subjects by age group as kid, teenager, young adult, adult and senior. The average of each category is shown below:

Kid = 28
Teenager = 53
Young Adult = 42
Adult = 39
Senior = 47

Conclusions/Discussion
My results show me that age does not affect how well a person adapts to an inverted computer mouse. However, people who use the computer more were able to adapt much better. I also found that people who use the computer very little or never had similar scores for both games.

Summary Statement
Does age affect how well the brain adapts to inversion of directions?

Help Received
Brother helped make computer game; Mother drove me to subjects' houses.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Jonathan P. Fidler

Project Number
J0608

Project Title
Metal vs. Classical

Abstract

Objectives/Goals
My project was a test to see if heavy metal has negative effects, both physical and mental, on people.

Methods/Materials
I had people listen to heavy metal and classical music and recorded their blood pressure, heart rate, then had them complete a math test and do an inkblot test and repeated the procedure with classical music. In my tests i used a cd player with the selcted music and a blood pressure monitor.

Results
Through my tests I have discovered that in most cases heavy metal music has negative effects on the listener. Overall performance on the math test dropped and heart rate and blood pressure rose. Also most interesting was the results of the inkblot tests. Immediately after listening to the music, subjects were shown inkblots and asked to answer several questions. The inkblots shown directly after listening to heavy metal music, usually inkblots 1 to around 6, tended to appear more frightening or violent and became more benign as more time passed while not listening to the music.

Conclusions/Discussion
I can conclude that the effect of heavy metal music depends somewhat on the listener, but in all cases the test subjects exhibited some negative effects. In comparison, when the subjects listened to classical music, all the effects of heavy metal were reversed. Test scores went up, and blood pressure dropped and the responses to the inkblots became more positive.

Summary Statement
A test to see the contrast of the effects of classical and heavy metal music on humans.

Help Received
Mother helped to design the poster board.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Hannah Goldan

Project Number
J0609

Project Title
Are There Generational Differences in Taste Preferences?

Abstract

Objectives/Goals
I wanted to know if taste preferences of children change when they become adults. My next question was if children of parents who ate, and now serve certain foods to their children would like them better than those who do not.

Methods/Materials
I randomly selected 14 parents and 1 child of each parent, ages of 5 to 10, all from my school. Granny Smith Apples and Brussels sprouts were juiced into drink form and given to the parent, while the child was not in the room. Subjects were blindfolded with their nose plugged. I recorded their description of the taste (sweet, sour, bitter, or salty), and their ranking from Terrible to Very Good (scale of 1-5). I also asked all of the testers if they eat the foods regularly.

Results
For the Granny Smith Apples, all of the subjects told me that they tasted either sweet or sour and the average rating was 3.61 which was scored Good. The majority all subjects ranked the food Sour which is what I expected. The Good rating for the adults was slightly higher than the children except in the group that did not serve the food regularly.

For the Brussels sprouts, 86% of all subjects thought they were Bitter. The average rating for all subjects was a 2.02 or O.K. but very close to Not Good. The children testers liked the food slightly better than the adults whether they eat them regularly or not.

Conclusions/Discussion
My hypothesis was that food preferences change as we become adults and that people regularly eat certain foods would like them more than those who do not. However I realized that all of the testers ranked these two foods almost the same whether the parents regularly served them to their families or not. I cannot conclude that the different age groups responded differently in ranking taste preferences for these foods. Maybe it is because that people#s taste preferences do not change for these two foods. Possibly my results would be different if I tested more subjects or had more culture differences in the people I tested. All tested live in Humboldt County with families who attend my school.

Summary Statement
I tested taste preferences in children and adults of the same family to see if preferences change as we age and if children of parents who ate, and now serve certain foods to their children like them better than those who do not.

Help Received
My Dad helped with a spreadsheet summarizing my results. He also helped me format text for my display.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Sara C. Halvorson

Project Number
J0610

Project Title
The Effects of Gender on Short-Term Memory

Abstract

Objectives/Goals
The objective of my science project is to determine if boys or girls have better short-term memory.

Methods/Materials
1. Make Observations: I observed through my classes that girls tend to do better at memorizing words and boys are better at memorizing pictures. I went to several libraries to get books, magazines and articles that I could understand. I also used the libraries online documents to help me with my research.
2. Form a hypothesis: I used my research and observations to form my hypothesis. My hypothesis is that gender does not affect short-term memory.
3. Make a prediction: I predicted that girls would do better at memorizing words and boys would do better at memorizing pictures.
4. Perform the experiment: Make a poster of 15 pictures and another with 15 words. Get 10 boys and 10 girls around the same age. Hold up one poster at time for 15 seconds and give them one minute to write answers.
5. Analyze the results: Enter all the answers into a spreadsheet and compare
6. Draw a conclusion: See if my results match my hypothesis and prediction.

Results
The boys got 59 pictures right out of 140 (42%), while the girls got 56 pictures right out of 140 (40%). The boys identified 48 words out of 150 (32%). The girls identified 55 words out of 150 (37%). Looking at the boys results for both pictures and words shows they got 107 total right out of 290 (36.8%). The girls on the other hand got 111 total right out of 290 (38.2%).

Conclusions/Discussion
My experiment proved my hypothesis right, that gender does not affect short-term memory. My prediction that girls remembered more words also proved to be true, but the results were closer than I expected for the pictures.

Summary Statement
My science project trys to determine if boys or girls have better short-term memory by measuring thier recall of pictures and words.

Help Received
My science teacher helped with the overall direction of my project. My Dad showed me how to use tables and graphs in microsoft excel.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Mei Lan Hughes; Dustin Jackson

Project Number
J0611

Project Title
Math Divided by Rock Music = ?

Abstract

Objectives/Goals
We were curious whether our parents were right when they told us not to listen to music while we did our homework. Our science fair project focused on multitasking with auditory stimulation while performing mathematics. Our hypothesis is the auditory stimulation (music) will negatively effect our participants results while they calculate math problems.

Methods/Materials
Two tests were created via the internet. Each test included 33 multiplication and division problems for an average seventh grade level. Test 1 was given to 15-7th grade boys and 15-7th grade girls for 9 minutes and 21 seconds in a quiet classroom. After a 2-3 minute pause, Test 2 was given to the same girls and boys for 9 minutes and 21 seconds with auditory stimuli: Hip-Hop/Rock Music at a loud volume using an iPod Speaker. Our materials were an iPod, Computer and Internet, pencils, a timer, quiet classroom, three songs ("Walkie Talkie Man" by Steriogram, "Crank That" by Soulja Boy, and "Wake Up Call" by Maroon 5), and scratch paper.

Results
Although 7th grade girls did significantly better than the boys with and without auditory stimuli, our results showed the presence of loud music negatively effected the performance outcome accuracy.

Conclusions/Discussion
Our conclusion is that the average 7th grader performs better without auditory stimulation. One of the many explanations for the outcome of the project is that the girls from this particular class have a better math ability, causing them to score better than the boys whether music was present or not. However, boys definately scored more accurately and completed more problems with no auditory stimuli.

Summary Statement
Presence of auditory stimuli negatively effects 7th grade students math performance.

Help Received
Mei Lan's mom helped create and look up information on the computer, and took pictures; Dustin's mom provided materials, assisted with accessing County regulations, and took pictures; Mrs. Hubbard assisted in providing classroom and students.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kara S. Jonsson

Project Number
J0612

Project Title
Valencia Elementary My Dear Watson: Criminal Identification: Which Is More Accurate, Simultaneous or Sequential Lineup?

Abstract

Objectives/Goals
The objective of this science project was to determine the most accurate kind of criminal identification lineup, simultaneous or sequential lineup.

Methods/Materials
A crime scene video was shot in a third grade classroom at a different elementary school so that the suspects would be people that the students at my school would not recognize easily. After the completion of the video it was then shown to four different classrooms at my elementary school. Two fourth grade and two sixth grade classes participated. Each class watched the two minute video and were informed that they were now eyewitnesses to a crime. Three days later each class was shown a photo lineup. Two classes looked at a sequential lineup and two classes looked at a simultaneous lineup. Each student was called out individually and looked at photos. The simultaneous photos were taken with a Kodak camera and placed on construction paper, 5 photos to a page. Each page was then given to the test subject to examine, three sets of photos in all. The sequential photos were presented in a small 5 by 7 binder and each photo was individually placed in a sleeve. All answers were recordedin a notebook.

Results
After the data was analyzed the results indicated that simultaneous lineup was more accurate than the sequential lineup. 8 out of 49 test subjects identified the correct suspect when presented with the picture in the sequential lineup. 10 out of 49 test subjects identified the correct suspect when presented with the pictures in the simultaneous lineup. This experiment demonstrated that simultaneous lineup was more accurate in this case.

Conclusions/Discussion
The data collected does not support my original hypothesis that a sequential lineup would be the most accurate way to identify a crime suspect. 10 out of 49 test subjects correctly identified the criminal in the simultaneous lineup compared to 8 out of 49 test subjects identifying the suspect during the sequential lineup. Something I would do differently if I were to repeat this project would be to shorten the number of days between when I show the video and when the test subjects are presented the photos because maybe it isn't the way you present the photos to an eyewitness but how much time passes between the crime and the identification.

Summary Statement
This project compares the accuracy of identifying a suspect when using two different kinds of lineups: simultaneous and sequential.

Help Received
Ms. Johnson's third grade class at Vine Hill as my actors, Ms.Christie, Mr. Miller, Mr J. and Mr. Peters for agreeing to be my test subjects.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Alexandra N. Kirk

Project Number
J0613

Project Title
It's All in the Eye

Abstract

Objectives/Goals
The purpose of my project was to see if kindergarteners recognize photographs or drawings better.

Methods/Materials
The materials needed for this project are 40 kindergarteners, 20 photographs of different animals, and 20 drawings of those same animals. To do the project I first placed four sheets of paper on the table, face down. Next, I showed the child the practice sheet and asked them to point out the lizard. Then, I flipped the four pieces of paper over and asked the child to point out the cat. I recorded which one they chose, the photograph or the drawing, and repeated the last two steps again for the goat, snake, horse, pig, monkey, penguin, giraffe, owl, and frog. Finally, I repeated the above procedures for all 40 students.

Results
The children picked the photographs an average of 44.25%. When the children picked the photographs it took them a lot longer to find the photographs than the drawings. The average drawings picked were 55.75%, which is slightly more than the photographs, but the children enjoyed the drawings and wanted to talk about them. They asked questions, described them, and said how cute or awesome they thought they were. These results show that the drawings are recognized by the kindergarteners more often than photographs and that the drawings are better teaching tools than photographs.

Conclusions/Discussion
The results that I obtained supported my hypothesis and enabled me to obtain my purpose in doing this project. My project lets kindergarten teachers know which is better to use in teaching their classes, photographs or drawings. It also explains why kindergarteners like cartoons, and drawings in books because they are brighter and more animated in appearance. After doing my research, I also found more support for my conclusion; the human eye recongizes brighter colors during daylight which also explains why kindergartners may have picked the drawings over the photographs.

Summary Statement
The purpose of my poject was to find out if kindergarteners recognize photographs or drawings better to help them in their daily learning.

Help Received
Mother helped by listening to my many ideas and proofreading my board and report; Mr. Barbary helped in overseeing the progression of my project.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
David K. Knittel

Project Number
J0614

Project Title
Memory: The Effects of Various Types of Sensory Perceptions on Short-term and Long-term Memory

Abstract

Objectives/Goals
This project was performed to determine which types of sensory perception (visual, aural, or tactile) resulted in stronger short-term and long-term memory for humans.

Methods/Materials
Subjects of varying ages and genders were selected to view three groups of flash cards with objects and/or words for 60 seconds, then they were asked to recall as many objects as possible. 20 words were read aloud and the process was repeated. Lastly a box of objects was presented that the participant could touch, then they were asked to recall as many objects as possible. Test subjects were called the next day to test their long-term memory.

Results
The data was studied with bar graphs and revealed that seeing and touching items resulted in the strongest short-term and long-term memories (63% and 31%, respectively). Sight alone resulted in the second strongest memories, with little difference between color or black and white images or words. The least effective method was to hear the object name. Middle-aged people had better short and long-term memories. Gender-based results were inconclusive.

Conclusions/Discussion
Humans remember simple objects differently depending on how many and which senses are stimulated. Human beings remember more objects when they can touch and feel them rather than only seeing or hearing them. Changing the order of the tests for future subjects would help to determine if the subjects were losing attention, thus skewing the data.
There is a Chinese proverb that says: 'I hear, and I forget. I see, and I remember. I do, and I understand.' The data in this experiment supports the Chinese proverb. Hearing was the worst category. Sight was the second best. Finally, touching and seeing were the strongest.

Summary Statement
Humans remember simple objects differently depending on how many and which senses are stimulated.

Help Received
Mother helped type; Father helped with graphs and analysis.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Zachary M. Kysar

Project Number
J0615

Project Title
Are You Smarter Than a Kindergartner? The Stroop Effect Revisited

Abstract

Objectives/Goals
The objective of this project was to test if one's ability to read would interfere with their capability to differentiate between the written word and the color of that word. The experiment tested the Stroop effect on readers and non-readers and hypothesized that non-readers would show limited interference from the written word.

Methods/Materials
Subjects were 8th graders, 7th graders, 1st graders, and kindergarteners. All the subjects were shown two different posters: one with color names written in the same color ink as the name of the written color, and the other written in different color ink from the written color names. Subjects were asked to say the color ink that the color names were written in and not to read the written word. Each subject was timed at the completion of each poster.

Results
The data from the 8th graders and the 7th graders supported the Stroop effect. There was interference in processing demonstrated between posters. The results also supported the hypothesis that non-readers would show little interference between the processing of the color ink and the written color word.

Conclusions/Discussion
Even the slightest reading capabilities caused interference from the written words. Some of the 1st graders showed an ability to read some of the color words. This caused an interference effect similar to the 7th and 8th graders. When the 1st graders were removed from the non-reader group, the difference in response times between the kindergarteners and the 7th and 8th graders greatly increased, which further supported the experiment's hypothesis.

Summary Statement
This project examined whether the ability to read would interfere with the processing of colors.

Help Received
Mother helped edit my paper.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Donald H. Livingston

Project Number
J0616

Project Title
Visual Memory and Your Life: The Relation of Visual Memory to Drawing, Facial Recognition and Navigation Abilities

Abstract

Objectives/Goals
I have poor visual memory and wanted to understand the impact of this on my life. However, when I reviewed the existing research I learned that there is disagreement and lack of knowledge about how visual memory impacts life skills. The purpose of this project is to determine how visual memory is related to drawing, facial recognition and navigation abilities.

Methods/Materials
After researching the topic, three hypotheses were developed: 1. Three types of visual memory (spatial, long term and design copying) are highly related to drawing ability. 2. Three types of visual memory are moderately related to facial recognition ability. 3. Spatial Memory is highly related to navigation ability. Tests were created to measure the three identified types of visual memory as well as subjects# drawing ability and facial recognition skills. A survey was developed to measure navigation ability. 24 subjects aged 11 to 82 signed consent forms and were tested. There were 12 males and 12 females. Analysis was done to see how subjects# memory test results related to the skills test results and survey. Correlation coefficients were calculated to see where the connections were greatest.

Results
The analysis shows that: 1.Drawing ability is highly related to all three types of visual memory. 2. Facial recognition skills are highly related to design copying skills (short term memory), and moderately related to long term visual memory and spatial memory. 3. Navigation ability is highly related to spatial memory. The degree of relatedness was determined by comparing correlation coefficients to guidelines used for interpreting correlations in psychological research.

Conclusions/Discussion
People with visual memory deficits of any type will likely also have a hard time drawing realistically. People with poor spatial memory will likely also get lost easily, and people with poor short term visual memory will likely also have trouble recognizing faces. These findings should be confirmed by testing more subjects. Also, a test for navigation ability should be developed so that navigation skill measurement does not have to be done by a self-survey.

Summary Statement
This project investigates how visual memory is related to the skills of facial recognition, navigation ability and drawing ability.

Help Received
Dr.Steve Newton taught me about visual memory; My father showed me how to make the scatter graphs; My brother explained about correlation coefficients; My mother helped me keep test papers organized.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Matthew Malone; Matthew Reathaford

Project Number
J0617

Project Title
Use It or Lose It

Abstract

Objectives/Goals
We want to know if highlighted words will be easier to remember then black and white or underlined. We are doing this project to help kids remember what they study and do better on tests.

Methods/Materials
Methods: create or obtain materials, give students study sheet for two minutes, collect study sheet, give students test for seven minutes, collect tests, correct tests. Materials: tests, study sheets, students between grades 5 and 8.

Results
Highlighted did the best with 27% correct, underlined also did good with 25% correct, and black and white got 20% correct.

Conclusions/Discussion
We accept our hypothesis because we thought that highlighted would do best and underlined would do second best and we were right. Highlighting will help you remember things better but underlining also helps.

Summary Statement
We want to know if highlighting or underlining words will help you remember them.

Help Received
Mother and Father helped with grammer and board; sisters helped with grammer.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Megan R. McAtee

Project Number
J0618

Project Title
Tasty Confusion: The Effect of Color on Taste

Abstract

Objectives/Goals
If 4th and 7th grade students eat vanilla yogurt dyed pink, blue,and yellow, then they will guess the flavor that goes with thte color rather than the actual flavor.

Methods/Materials
vanilla yogurt, food dye: yellow, blue, and red, about 30 subjects that don't know about your experiment, dixie cups, water, clipboard, pencil, data sheet, mixing bowls, spoons

Results
The experiment shows that color can affect taste. Out of 105 samples, 90 flavors were guessed incorrectly. Only two seventh graders guesssed all three yogurt flavors correctly.

Conclusions/Discussion
The experiment was performed to see if color could affect taste. It was predicted that color would affect taste. The data shows that the hypothesis was correct and color can affect taste.

Summary Statement
Forth and seventh grade students are more likely to judge food taste by color than actual taste.

Help Received
Mother helped get student to experiment site and collect materials.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Chris Mendes

Project Number
J0619

Project Title
Placebo Effect on Food Labeling

Abstract

Objectives/Goals
The purpose of my project was to determine if changing the food labeling on a food product would change how people perceived the food.

Methods/Materials
The materials I used for my project were people, paper plates, paper cups, pencils, pack of different types of regular fat foods, pack of different types of reduced fat foods, tally sheets for my first and second experiment.
The way I did my project was like this:
First, buy the products at a store all together. Secondly, clear an area in the experimental area. Next, set up the cups with water. After that, switch at least half of the regular fat foods, and put it in the low fat boxes, and then do the same with the low fat and the regular fats. Then you must get different people to test the products. After that, take out the different foods from the packages in front of the people being tested. Next, set one type of food of regular fat on plate A. Also set one type of food of reduced fat on plate B. Then have the person taste the food on plate A. Next, have the person taste the food on plate B. After that, have them take a sip of water from the paper cup to cleanse the palates. Then, have the person circle on the tally sheet what they thought #Regular Fat# was, A or B. Also repeat the steps above with the 14 products that you still have left. Finally, count up the tally sheets, and then find the percentage of the incorrect answers, and the correct answers on the foods you did not change around, and then do the same with the foods you changed around.
I also did a second experiment to get a more clear determination as to what degree of influence labeling had on people.

Results
The results of my experiment showed that people could tell the difference between a Regular Fat food item and a Low Fat food item even if the items were rearranged. When in doubt, however, they would rely on the packaging label.

Conclusions/Discussion
The experimental data did support my hypothesis to some degree, indicating that changing the food labeling on a food product could influence how people perceived a food. The results showed that labeling influenced about 30% of the people tested.

Summary Statement
To see if changing the food labeling on a food product would change how people perceived the food.

Help Received
Parents for buying products for my experiment; And my teacher Mr. Scott for helping me with my book.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kayla M. Moe

Project Number
J0620

Project Title
Doodles

Abstract

Objectives/Goals
To determine if doodling could help a person improve their attention level while listening to a classroom lesson.

Methods/Materials
For this study, the materials that were used was a documentary movie,an audio book, comprehension tests, and a rating scale to measure the levels of attention of the students.
Students from two different classes were asked to watch 20 minutes of a documentary. The first class was asked to doodled while watching the movie but the second class was not allowed to doodle. A comprehension test was given at the conclusion of the movie and the students were asked to rate their levels of attention on a scale of 0-10, 10 being the highest level of attention. The next day, the same two classes watched the next 20 minutes of the movie, but this time the second class was asked to doodle but not the first. Another comprehension test was given and the students were again asked to rate their levels of attention. The study was then futhered by having the experiment repeated using an audio book.

Results
The data determined that 50% students who doodled while watching the documentary increased their attention levels as well as scored 63% better on the test. The data using the audio book were simular. 58% of the students had increased attention levels and 42% had better test scores. When averaging the two studies, 54% of the students demonstrated improved attention levels and 52.4% demonstrated improved test scores.

Conclusions/Discussion
Based on the results, the hypothesis was proven correct. Doodling does help improve a person's level of attention while listening to a classroom lesson. The data also suggested that doodling improved comprehension, not only in the students who experienced increases in their levels of attention, but also in students who reported a decrease in their attention. For those students, they had an 50% increase in their test scores. Further experiments considerations in this subject area would be to: extend the time the movie/audio book was watched or listen to; have student doodle during an actual lesson given by a teacher; extend the study to several weeks; or, explore other methods or strategies to improve levels of alertness.

Summary Statement
To determine if doodling while listening to a classroom lesson improves a student's level of attention.

Help Received
Mother helped with making the graphs and selecting the documentary and audio book.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Cassidy M. Plunkett

Project Number
J0621

Project Title
The Effect of Olfactory Stimulation on Short-Term Memory

Abstract

Objectives/Goals
The goal of this project is to make study time more efficient by introducing another stimulus, such as scent, during the process of memorization. The original hypothesis states that if individuals study while inhaling a certain scent, then the scent will trigger more memory recall because they are using more than one of their senses.

Methods/Materials
Test subjects were asked to memorize as many words as they could out of ten in one minute. Then, they wrote down all of the words they could remember. They repeated doing this for a second time, except they studied while inhaling a citrus essence consisting of a make-up sponge saturated in Aromatherapy Orange Nectarine Oil.

Results
The results of this experiment conclude that the average number of words correct while inhaling a certain scent is 6.6 and the average number of words correct without inhaling a scent is 7.28. The results do not support the original hypothesis.

Conclusions/Discussion
One reason that this may have occurred is because although scents trigger memories, a certain memory may already be tied to that scent. Also, the scent may trigger thoughts or emotions that are not connected to the situation at present. Therefore, the scent would serve as a distraction

Summary Statement
The Effect of Olfactory Stimulation on Short-Term Memory

Help Received
My teacher proof-read my report and helped me correct mistakes.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Julia A. Pokorny

Project Number
J0622

Project Title
ESP Testing: Believe It or Not

Abstract

Objectives/Goals
The purpose of my project was to see whether certain people have ESP and if the results are positively affected by their belief in ESP. ESP is short for Extra-Sensory Perception, which means understanding the world around you without using your usual five senses. The type of ESP I tested for was clairvoyance.

Methods/Materials
Before testing each person I asked whether they believed in ESP. For each trial, I placed 12 cards from a standard 52 playing card deck face down in front of the subject, making sure they had no knowledge of the cards. The subject then predicted the suits of the cards by circling the corresponding suit on the prediction sheet. I flipped over the cards and recorded the number of correct predictions. I repeated this process until all of my subjects had completed 30 trials.

Results
The highest average of correct predictions per trial for any subject was 3.43. Four subjects were non-believers and had an average of 3.1. Three subjects were believers and had an average of 2.7.

Conclusions/Discussion
My results indicated that none of the subjects had ESP. Three subjects had better than average number of correct predictions but there is not enough evidence to conclude that they have ESP. There is no indication that the belief in ESP had any positive effect in the results. In fact, the subjects who didn't believe in ESP had a better average than those who did.

Summary Statement
My project is about testing for ESP and whether belief in ESP positively affects how subjects perform when tested.

Help Received
My dad helped me with the experimental design, like the number of cards per trial and the number of trials. He also helped me to understand the probability and statistics used in the data analysis.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Shubha S. Raghvendra

Project Number
J0623

Project Title
Do You Remember? A Phoneme-Based Structural Analysis of Word Recall

Abstract

Objectives/Goals
The purpose of my project was to analyze factors involved in the short-term memorization and recall of words. Specifically, I focused on proving a model for word recall I synthesized based on research and a study I conducted last year (Studying the Effects of Contextual Information on the Analysis of Words). This model describes the short-term memorization of words as follows: (1) The word is broken down into individual phonemes (sounds). (2) Factual and (3) emotional associations are made to the word. Though steps (2) and (3) have been proven through scientific research, the step (1) is a hypothesis I developed from observations of my pattern-recognition study of the reading process from last year; therefore, a second purpose of my project was proving this model for short-term word recall. Based on results from last year which indicated that phonemes (as opposed to just letters) were crucial in the reading process I hypothesized that phonemes would again be important in the short-term memorization process.

Methods/Materials
To evaluate my hypothesis, I created a series of 8 tests which I administered to 26 subjects. These tested a variety of variables, focusing on establishing a basis for word recall (phonemes or letters?) & pinpointing the location of the clue (beginning, middle, end) that would be most effective in increasing frequency of recall (FoR). The setup of these tests was to present a subject a list of 10 words for a minute and then have him or her recall the words with the help of certain clues (depending on the variable) or no clues at all (in the control).

Results
My data established phonemes as the basis of word recall because trials where phonemes were kept intact outperformed all others in terms of subjects# FoR (a 70% average increase from the control). I noticed that #beginning clues# (phonemes or letters) were most effective in increasing FoR. Lastly, in all non-phoneme trials (i.e. trials evaluating the effects of letter clues on the reading process), I noticed a strong link between the #novelty# of words (calculated by averaging the percentage chance of any letter being a given letter for all the letters of a word) and FoR.

Conclusions/Discussion
From my results, I concluded that my hypothesis was correct and my model of short-term word memorization and recall was valid. Most importantly, through my project, phonemes were established as a basis for the short-term memorization of words.

Summary Statement
The purpose of my project was to analyze factors involved in the short-term memorization and recall of words.

Help Received
My mother help me coordinate testing subjects; my father helped my out with data analysis and critiqued my presentation.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Alexandra Reale

Project Number
J0624

Project Title
Under the Surface: Priming the Subconscious Brain

Abstract

Objectives/Goals
My objective is to determine if a person's behavior will change after reading hidden keywords in a scrambled-sentence test.

Methods/Materials
Using a stopwatch, I secretly timed people's walking speed before and after they took one of two scrambled-sentence tests that I created. My purpose in doing this was to see if the hidden keywords within the test would cause an alteration of the person's behavior, specifically the person's walking speed.

Results
I found that the subjects' walking speed was affected by the hidden keywords in the text sixty-two percent of the time.

Conclusions/Discussion
My hypothesis was supported by the results of the test. I think the reason the individuals' behavior changed after reading the hidden words is because of a subconscious desire to fit in with the situation at hand. The subconscious brain of the person reading the text causes him to change his behavior, specifically his walking speed, without his awareness. This is a pyschological technique called priming--a person's behavior and mood can be altered by simply reading or hearing something pertaining to a particular state of mind.

Summary Statement
My project is about the effect of subconscious priming on people's behavior.

Help Received
My parents helped find subjects and sent them in to participate when I requested. I used my dad's computer and software to generate charts and graphs.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kelsey D. Reimer

Project Number
J0625

Project Title
Mind Freak

Abstract

Objectives/Goals
During my experiment, I wanted to see if the human brain took into consideration age and gender when observing optical illusions, the Stroop Effect, and warped words. My objective was to prove that the thirteen to nineteen age group and the male group would be most effecient in these tests that I preformed. The teenagers are more alert than most other age groups. I also believed that men would be better in these tests because I think women concentrate too hard on getting a good time when men don't think, they just do.

Methods/Materials
During this experiment, I used a computer to print out optical illusions, warped words and the Stroop Effect. Then I used a stopwatch to test 24 people (twelve men and twelve women, using equal men and women in each age group) and recorded the results in my science journal. Then, I took the logged times and the number of people who got the correct answer on the optical illusions and input them into a graph. I communicated my results to my science class, teacher and the RIMS Science Fair judges.

Results
After observing the graphs and the number of people who veiwed the old woman and the straight lines, my hypothesis proved inconclusive. teenagers did the best out of any age group on all the tests. Males however, were efficient on only two out of the three tests. Men were having a little trouble observing warped words.

Conclusions/Discussion
In conclusion, my hypothesis proved to be inconclusive. The males were only efficient in two out of the three tests. The teenagers were great on all three tests. My hypothesis proved correct there. This project was a challenge but was extremely fun and exciting. Working with the community and the people you are around almost everday was a really good learning expirence for me. I would recommend this project to anyone .

Summary Statement
Determining if the human mind takes into consideration age and gender when viewing the Stroop Effect, Warped Words, and Optical Illusions.

Help Received
Mother assisted with glueing

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Grace Roderick; Gretchen Roderick

Project Number
J0626

Project Title
Mozart Effect

Abstract

Objectives/Goals
To see if listening to Mozart while taking a test helped the kids do better on the test.

Methods/Materials
Test materials were compiled with the assistance of the third grade teacher's current curriculm and included math, science, social studies and grammer. 2 different tests were created. One to be taken while listening to Mozart and the other to be taken in silence. We also tested two different classes. The first one was the third grade class at St. Mary of the Angels, in Ukiah and the second was the fourth grade at Grace Hudson Elementary School, in Ukiah.
We chose soothing Mozart songs: The Rondo-Allegro, from Eine Kleine Nachtmusic, Andante from Piano Concerto No 21 in C and Quartet for Piano, Violin and Cello. There was approximately 18 minutes of music for the test.

Results
While the kids were taking the test without music my sister and I found that the kids took longer and figited more than they did with music, and after they were all done with their test we asked the kids if they like taking the test with or without music and alomost every student said that they liked taking the test with music rather than without. When my sister and I were correcting the tests we found that the kids actually did better on the test WITHOUT music even though they like the test WITH music better. so we were wrong music didnt help.

Conclusions/Discussion
So in the end we proved our hypothesis wrong because kids actually did better without music than with it. Now we are thinking what would happen with different: genres? age groups? if you liked the music or not? what would happen?

Summary Statement
Does listening to classical music help or hinder concentration and performance on cognitive tasks?

Help Received
Mrs. Coursey, 3rd grade teacher helped with what to put in the test, Our mom helped with typing.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kirk T. Silva

Project Number
J0627

Project Title
Are ADHD Students Really That Different?

Abstract

Objectives/Goals
The objective is to test the hypothesis that children with ADHD have a better memory when the period of memorization is short.

Methods/Materials
Gather and assemble six large boards with ten pictures on each board. Design test with those pictures and ten more pictures to make a total of thirty pictures. Show the first two boards for two minutes, then take down the boards and pass out test one. Collect test papers. Show the next two boards for five minutes, take the boards down, pass out the corresponding test. Collect tests. Show the next two boards for seven minutes. Next, take down the boards and then pass out the corresponding test. Collect tests. Repeat with all other classes.

Results
During the five minute memorization time, ADHD children did the same as the non-ADHD children. For example, in the first test (two minutes) the average ADHD test score was 28.8 out of 30. Non-ADHD students had an average score of 28.7 on the same test. On test 2 (five minutes) both ADHD and non-ADHD test scores were an average of 28.5 out of thirty. On test three (seven minutes) ADHD students scored an average of 26.5 out of thirty while non-ADHD students scored three points lower: 23.4 out of thirty.

Conclusions/Discussion
My conclusion is that children with ADHD had higher average scores during the period of shorter memorization and during the period of longer memorization, although not by much.

Summary Statement
Does ADHD affect memory?

Help Received

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Christian T. Tanaka

Project Number
J0628

Project Title
Who's a Better Learner, Children or Adults?

Abstract

Objectives/Goals
The objective is to find out who is a better learner, children or adults through three phases of chess.

Methods/Materials
Methods: I created a lesson plan specifically targeting the key ideas of chess principals: Opening (to test memory); Middlegame (to test problem solving skills); and Endgame (to test conceptual ideas). Following the lesson plan, an exam was administered covering the three main phases of chess. These exams were targeted to children and adults with little chess experience, at beginner's level.

Materials: Chess board, chess pieces, demo board, demo board stand, lesson plan, and test/exam

Results
Children: Opening - % correct: 60%, Middlegame - 48%, Endgame - 62% Total average % of all categories - 56.67%

Adults: Opening - % correct: 42%, Middlegame - 50%, Endgame - 50%, Total average - 47.33%

Conclusions/Discussion
The children proved to be the better learners, scoring higher in memory and conceptual thinking, yet the adults scored higher in problem solving.

Opening: Part of the brain that controls memory is in the temporal lobe/hippocampus. As you grow older, the hippocampus is altered through structural and biochemical changes, causing memory loss. Maybe this is why the children dominated the adults in this area.
Middlegame: Part of the brain that controls problem solving skills is in the frontal lobe, where calculation and specific details are processed. This is one of the last areas of your brain to develop, and proven true, with the adults scoring higher than the children in this phase.
Endgame: Several parts of the brain control concepts, the frontal lobe (sequential execution of the endgame) and the temporal lobe. It appears that the adults used mainly problem solving skills, trying to solve the puzzles through calculation. They did not see/consider the #whole picture#.
Attitude/Nature: Both groups were equal, in terms of strength, but the children had a greater motivation to do well on the exam. Some adults didn#t put as much importance into the test, and some too embarrassed to take the test for fear of humiliation.

Summary Statement
My project compares children vs. adult learning capacity through chess

Help Received
Chess Palace and Laguna Woods Chess Club - attracted participants through e-mail flyers; Art House, science advisor - organizational improvements; John Schulte, friend - helped transfer my youtube visuals onto CD; mother - photographer at my lessons

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kendra L. Vine

Project Number
J0629

Project Title
Do Left Brained People Perceive Optical Illusions Differently from Right Brained People?

Abstract

Objectives/Goals
My goal was to understand if left brained people perceive optical illusions differently than right brained people.

Methods/Materials
30 subjects of different ages and gender participated in my research. I determined whether the subjects were right brained or left brained by a test I found on the internet. Then I e-mailed five selected illusions to my subjects and charted their first views. I chose only illusions that had two ways of looking at it.

Results
In my charts I found one pattern and that was that both left brained and right brained subjects chose the same dominant way of seeing the illusions. Out of my 30 subjects, 12 were left brained and 18 were right brained. The dominant perceptions for each optical illusion were as follows: Clockwise for the Spinning Lady Illusion (75% for left brained group/56% for right brained group); Indian for the Indian vs. Eskimo Illusion (92% for left brained group/89% for right brained group); One Face for the One Face vs. Two Faces Illusion (92% for left brained group/56% for right brained group); Saxophone Player for the Saxophone Player vs. Woman Illusion (58% for left brained group/56% for right brained group); Young Lady for the Young Lady vs. Old Lady Illusion (58% for left brained group/61% for right brained group).

Conclusions/Discussion
I originally thought that left handed people were right brained thinkers and the other way around. But after testing several of my subjects, I learned that this is not true. Most people use both sides of their brain, and think very alike. Based on the results, there are no noticeable differences in how left brained people and right brained people observe optical illusions. I found this to be the case with left handed people vs. right handed people, and male vs. female too. All in all, I learned something new and hopefully will be accepted to participate in the State Science Fair.

Summary Statement
My project is about how left brained people and right brained people perceive optical illusions, whether the same or differently.

Help Received
My mom showed me how to make the charts and spreadsheets using Excel.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Katherine A. Whorley

Project Number
J0630

Project Title
Do Re Mi, Who's Off Key? The Effects of Age, Gender, and Musical Training on Relative Pitch

Abstract

Objectives/Goals
My project originally tested the effects of age on relative pitch. I believed that the youngest age group, ages 5-20, would be the most on pitch. However, my project escalated into a test on the effects of gender and musical training on relative pitch.

Methods/Materials
50 volunteers were given a reference note using a keyboard. With a chromatic tuner, I measured their score, or relative pitch. There were 10 volunteers in each of the 5 age groups, 5 males and 5 females. Each volunteer filled out a questionnaire detailing their age and any musical training.

Results
My original results were inconclusive. The age data had no clear pattern. I next tested gender, but those results had no pattern either. Finally, I tested musical training, and those with training had much better relative pitch.

Conclusions/Discussion
My conclusion is that while music training improves relative pitch, age and gender have no effect. This lets me know that a singer should train and practice to improve their relative pitch.

Summary Statement
My project#s goal was to see if age, gender, or musical training would affect relative pitch.

Help Received
My dad took pictures for me while I did the testing. My mom helped me with Excel. My family and I had a discussion on mathematical procedures after the completion of my project.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Kelcie E. Williams

Project Number
J0631

Project Title
Inside Cognition and Spatial Ability

Abstract

Objectives/Goals
Does sexual differentiation in people lead to differences in their Cognitive or Spatial Abilities?

Methods/Materials
40 Plus male & female subjects were tested in: Mathematics, Object Identification/Location, & Ship Model Construction, using Legos as a substrate. Materials included, math work sheets & books, "Where's Waldo" graphics and Lego Ship Building Kits.

Results
Each participate had their identity blocked and were assigned an identification number in all tests. Results were treated as a population of data for Boys and Girls, respectively. Boys on average took a shorter period of time to complete their tests (73%) as compared to Girls (94%) in any given time period. The differences were statistically significant.

Conclusions/Discussion
The hypothesis suggested all boys and girls would show differences in their Spatial and Cognitive abilities. However, my data clearly shows sexual maturation plays a vital role in the laying down of new neural pathways for structural modifications in their distinctive abilities to locate visually a figure, "Waldo" in a complex graphical background and remembering the layout of a ship, completing its construction, under a time constraint. Both populations of the sexes showed similar aptitude in mathematical abilities, contradicting the "general belief boys are better at math than girls". Furthermore, sexual differences were blurred in the pre-developed populations of boys and girls, in the elementary school test group.

Summary Statement
Do males and females develop different pathways to Cognition and Spatial Processing as they age.

Help Received

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Cheryl E. Wilson

Project Number
J0632

Project Title
What Affects an Illusion?

Abstract

Objectives/Goals
The objective of my project was to determine whether varying the size and color of the inducing circles will affect the perception of the relation in size between the standard and comparison(variable) circles.

Methods/Materials
I tested 40 people, both girls and boys, ages 12-14. I tested each subject with four tests administered in all. The first test, following my hypothesis, with large and white inducing circles, the next with small and white inducing circles, the third with large gray inducing circles, and the fourth with small and gray inducing circles.

Results
I found there was a direct correlation between the size of the inducing circles and the perceived size of the standard circle compared to the comparison circle. 68% of the subjects who took the tests got test one wrong, 20% of subjects got test two wrong, 37% of subjects got test three wrong, and 25% of subjects got test four wrong.

Conclusions/Discussion
I concluded that the large inducing circles produced the largest illusion, especially when white, but still produced a partial illusion when colored gray. In this experiment I tried to control all factors that i was able to, however some uncontrollable factors would be the subjects vision, the subjects cultural background and any previous exposure or understanding of the illusion.

Summary Statement
Changing variables in the Ebbinghaus Illusion to find their affect on the perceived relation in size between the standard and comparison circles.

Help Received
Dr. Loomis helped find a focus for my project.

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Katherine Wu

Project Number
J0633

Project Title
America's Next Top Learner: Visual vs. Kinesthetic vs. Auditory

Abstract

Objectives/Goals
The first objective of my science fair project was to see whether visual learners, kinesthetic learners, or auditory leaners could remember details better. The second objective was to determine which type of learning style was most commonly preferred to complete a task efficiently.

Methods/Materials
Before all testing began, I had all 30 of my test subjects take a survey. First I conducted a test to see whether visual, kinesthetic, or auditory learners could remember details the best. I had the test subject look at a picture for 30 sec. and then answer 5 questions about the picture. I blindfoled the test subject, had him/her feel a statue for 30 secs, and then answer 5 questions about the statue. I had the test subject listen to an audio tape for thirty seconds, and then he/she would answer five questions about the tape. My second test was to see whether a person could perform a task better through seeing, hearing, or just doing the task itself.

Results
Visual test: boys received an average of 72%, girls recieved an average of 73%. Kinesthetic test: boys received an average of 57%, girls received an average of 53%. Auditory test: boys received an average of 64%, girls received an average of 70%.

Conclusions/Discussion
My hypothesis that visual leaners could remember detials the best was correct. The first portion of my test showed that people scored higher on the visual test rather than on the other two tests. Visual learning is also more productive, and most people are visual leraners. Visual learning is better for academic subjects, where a lot of memorization is needed.

Summary Statement
My project deteremined which type of learning style was more efficient in remembering details and which type of learning style was more helpful/ efficient in completing tasks.

Help Received
Father helped me print surveys; Friend helped me do some research

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
J. Alex Yeoman, III

Project Number
J0634

Project Title
Colored Memory

Abstract

Objectives/Goals
The objective of my project was to determine if the color of the printed word has any affect on a person's ability to remember it. I believe that it will.

Methods/Materials
I developed two lists of words. List #1 had 40 words. I selected the words from a standard list of 4th grade reading words. 20 words were printed in red; 20 in black. I created a second list (list #2) by choosing 10 of the red words and 10 of the black words from list #1 and adding 20 new words. All the words on list #2 were typed in black. I gave list #1 to 40 sixth grade students to read for 1 minute. After a 5 minute break, I gave the same students list #2 and asked them to circle all of the words they remembered from list #1. I then analyzed my data by creating a graph and doing a simple "t" test.

Results
Based on the information I gathered, it didn't show that there was a significant difference in a person's memory based on the color the word was printed in. I analyzed my data even further by performing the necessary steps to perform a simple "t" test. After completing this, I concluded that my experiment did not hold any statistical significance. My testing population was too small.

Conclusions/Discussion
My initial hypothesis was incorrect - at least based on this one experiment. The conclusion might have been different had I tested more subjects. I still believe that colored words and/or passages will affect a person's ability to recall the information. I want to continue this experiment, building a larger testing pool, testing different colors, and using colored words within a passage that has context to see if any of these things might make a difference. If highlighting certain words and/or ideas in color really can improve a person's ability to remember the information, it could make a significant impact on the way we learn.

Summary Statement
This project attempts to determine if the color of a printed word affects a person's ability to remember it.

Help Received
Mother helped by consulting; school psychologist taught me how do do the "t" test

CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Stephanie Zgouridi

Project Number
J0635

Project Title
Colorful Confusion: Human Reactions

Abstract

Objectives/Goals
To discover how age affects the way or amount a person is affected by stroop effect, and if people are physically or verbally faster.

Methods/Materials
Problem Statement: How much does the level of affection by Stroop Effect differ between age groups, and are people less quick when performing verbal tests than when physically performing it?
Hypothesis: My hypothesis was that children will be least affected by Stroop Effect. Since they have less reading skills, they would be more focused on the color. For other part, it#s thought that of the two actions, moving is more automatic. The is because even if we can move and speak on impulse, we tend to move even when we#re not aware of it. Even if we sometimes speak in our sleep, it more common to move around.
Materials: A laptop with internet connection for websites www.davd.tam.name.html and www.dcity.org was used, and standard office supplies. A camera was also needed.
Procedure: Some major steps I took included testing with both physical and verbal tests, as well as simply testing to see how quick a person could react to a stimulus.
The fact that I altered was the age of the subject (i.e. children, teens, and adults).
My sample size was about 50 people, and each person took one physical and one verbal test.
I took the average congruent time and average incongruent time for both the physical test, or test #1, and the verbal test, or test #2.

Results
Results: The average congruent and incongruent time for test #1 in the beginner group was 1.9289 seconds and 2.247 seconds. For intermediate, their congruent and incongruent time was 1.236 and 1.5113 seconds. The adult group had a congruent time and and incongruent time of 1.777 seconds and 2.157 seconds. For test #2, the beginners got a congruent and incongruent time of 8.584 and 35.257 seconds. For intermediate, the average for congruent and incongruent words was 7.411 and 21.595 seconds. Lastly, the adults received a congruent and incongruent time of 14.311 and 23.072 seconds.

Conclusions/Discussion
Conclusion: For the first part, the group least affected by Stroop Effect were the intermediates, those averagely affected were the adults, and the most affected were the beginners. The first part of the hypothesis was incorrect. Still, it appears that people were quicker physically than verbally. The average times physically only went up to about 3 seconds, but the verbal tests had times like 20 or 30 seconds.

Summary Statement
This project was about discovering more about human reactions, so that this knowledge may be applied to things in life more important than simply Stroop Effect.

Help Received
Mother drove to all testing locations.