CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Cameron J. Adams

Project Number

J0601

Project Title

Sights Unseen: The Surprising Effects of Inattentional Blindness

Abstract

Objectives/Goals

I heard about a phenomenon known as "inattentional blindness." The article I read said lifeguards sometimes do not notice swimmers drowning at the bottom of a pool because they constantly focus on activity at the top of the pool. According to research, inattentional blindness affects the ability to notice something, even if it is in the field of vision. Research showed nearly half of adults tested demonstrated inattentional blindness in experiments. I wondered if inattentional blindness would as strongly affect people my age. I decided to make a video and try to find an answer.

Methods/Materials

I made a video in which two teams passed a ball. Three players wore white shirts, and three wore black shirts. The test subjects were instructed to count the number of passes made by white team members to other players in white. Halfway through the video, a man in a hooded, black Halloween costume walked through the middle of the game area. He looked directly at the camera and remained on the screen for eight seconds. Three grade levels of participants in three different classes viewed the video: sixth, seventh and eighth graders. The participants were instructed they were being tested for their ability to accurately follow a fast-paced game. They were told to keep count of passes made by the team in white shirts. The class sizes were kept small so all participants could easily view the screen (a SmartBoard). After the participants viewed the video, they were each asked to complete a questionnaire. They recorded the number of passes they counted and also wrote down anything unusual they might have noticed during the video.

Results

Some participants wrote comments about the "pattern" of passes or height of a player or a "hand-off" that occurred during the game. Only two subjects, 3% of the total, one male and one female, mentioned seeing the strange intruder in a Halloween costume that strolled through the game area. Later, when the participants discovered the true aim of the video, test subjects still could not recall having seen the intruder at all!

Conclusions/Discussion

Unlike the adults tested by research scientists, instead of half of the test group experiencing inattentional blindness, 97% of the middle school students were affected by this phenomenon. To my surprise, the middle school students seemed even more likely than adults to overlook something unexpected in the field of vision.

Summary Statement

This project tested the effects of "inattentional blindness", the inability to perceive something unexpected in the field of vision, on middle school students and found 97% of them experienced inattentional blindness.

Help Received

My parents helped with transferring the video to a CD; the actors that were in the video; my science teacher who helped me in many ways; and the students that watched the video and answered my test questions.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Charlotte Anderson; Sarah Miller

Project Number
J0602

Project Title
Do You See What I See?

Abstract

Objectives/Goals
The objective/goal of our project was to find out if, when looking at 11 optical illusions, boys saw different images than girls. We predicted that there would be 5 differences in the answers of boys and girls.

Methods/Materials
1. Eleven optical illusions of 2 types. The two different types of illusions are shape/image contrast illusions and double image illusions.
2. About 80 people (roughy 40 boys and 40 girls); about 1/4 of the people selected randomly, and the rest selected conveniently. No specific age group of people.
3. Paper to record observations on. We made a special observation sheet that is included in report.
4. Pencil/pen to record.
5. A computer to research 11 optical illusions and finalize project.

Results
The results from our project were that, out of eleven optical illusions, there were three differences in answers of boys and girls (instead of the five differences that we predicted). Two of the three differences in answers were in double image illusions . The other difference in answer was in a shape/image contrast illusion. The first image that caused a difference in answer between boys and girls was a vase or two faces. The majority of boys saw two faces, while the majority of girls saw a vase. The second image that caused a difference in answer between boys and girls was a porch looking upwards or a porch looking downwards. On average, the majority of boys said the porch was looking down. The majority of girls said that the porch was looking up. The third image that caused a difference in answer between boys and girls was the word "lift" or jumbled black shapes. On average, the majority of boys saw the word "lift", and the majority of girls saw jumbled black shapes.

Conclusions/Discussion
Our hypothesis was that there would be at least 5 differences in answers between boys and girls because boys and girls sometimes see things differently. Our hypothesis was incorrect because the results show that there were only 3 differences in answers between boys and girls. But, we were partially right; we just did not predict the correct number of differences.
Some sources of error were: not all of our subjects were selected randomly, subjects' answers might have been influenced by other subjects' answers, the order of the images might have had an effect on subjects' answers, and there was an uneven number in genders.

Summary Statement
Our project tests whether boys see a different image than girls when looking at optical illusions.

Help Received
Mrs. Anderson drove us to test random people in Pasadena; Mrs. Miller helped us choose the color and outline for our poster; Brianna Miller took pictures of us while working.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Aram Z. Angelo

Project Number

J0603

Project Title

Males vs. Females: Interpreting Facial Expressions

Abstract

Objectives/Goals

The purpose of my project was to find out whether males or females have a better ability to interpret facial expressions so I can prove my hypothesis that females do interpret facial expressions better than males.

Methods/Materials

To conduct my research, I studied books on facial expressions and accessed internet sites. I chose twenty different facial expressions(emotions)and created a test packet with five multiple choice answers listed below each picture. The test started with a #happy face# for comfort. Pictures were black & white to increase imagination. I created an answer sheet(each expression has a correct answer.)My experiments involved testing five different age groups (8-12, 13-19, 20-40, 41-64 & 65yrs) of both males and females. All test groups were divisible by three for three separate trials; each group had an equal amount of males & females. (600 TOTAL TEST PARTICIPANTS.) To be fair and consistent, everyone had twenty minutes to finish their packets. Indication of gender & age group was required but identity was optional. I also conducted personal interviews with a psychologist, Ron Holman, PhD, The Holman Group, Managed Behavioral Health Care Services; Counselor, Raffi Kahwajian, AGBU; phone interview-Counselor, Jordan Kramer, Insight Behavioral Health Inc.

Results

The accuracy of the males was only an overall 2.5% higher who won in trial 1 & 2 (age 20-40), trial 1 (age 41-64), trial 2 (age 65+). The females scored an overall 4.9% higher than the males in all the remaining trials. This clearly supports my hypothesis.

Conclusions/Discussion

The females did better than the males in interpreting facial expressions. Females were more willing to take the test and wanted to talk about the project. Females tend to focus at faces more than males do. Males and females have #equal# facial expressions on their face when speaking to others; however, the males expression is done in a #smaller# way than the females. Females express and have more facial expressions. Different cultures and environments could be studied. I also learned that when a person (male or female) is asked a question, if they look to their left (looking for visual memory), they are telling the truth, if they are looking towards their right, they are not being very honest. After studying my three test results, I have been able to conclude that females have a better ability (4.9% higher) to interpret facial expressions than males.

Summary Statement

I believe females have a better ability to interpret facial expressions than males.

Help Received

My mom checked grammer and board. She drove me to the psychologist & counselor offices so I could interview them. She also drove me to the Ararat Home to pass out test packets. My dad supervised me passing out test packets to our neighbors. A couple teachers at my school helped pass out test packets to

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Kavi S. Arora

Project Number

J0604

Project Title

The Stroop Effect: Validity and Gender Differences

Abstract

Objectives/Goals

Does the process of reading the word affect the task of naming the color of the ink the font was written in and is there a gender difference?

Methods/Materials

o Stop watch with minutes, seconds, and milliseconds
o Pen or pencil
o Computer generated words for testing, in color
o a computer generated chart to record my results
o 82 subjects: 41 males & 41 females with minimum reading skills of Grade 3

1.First I decided that I want to test a total of 82 people with equal number of males and females.
2.I made 2 test charts and I tested and timed everyone with them using a stopwatch. For Test 1 the subjects read the words as written. For Test 2 they were asked to name the ink color of the fonts and not read the words.
3.I made sure that the subjects understood the task to be done. All questions were answered before the test was started. The subjects were tested in a comfortable environment.
4.Data recorded included the age and gender of the subjects and the time it took to read each chart.
5.Average time was calculated for both tests and rounded off to the second decimal place.
6.I made a graph to show the results.

Results

Test 1 was just reading the words. Test 2 was reading the color ink instead of the word.
In Test 1 males averaged 7.99 seconds and performed better than females by 0.41 seconds.
In Test 2 males averaged 20.59 seconds and performed better than females by 0.84 seconds.
The average score for all subjects combined for Test 1 was 8.2 seconds and 21.01 seconds for Test 2.

Conclusions/Discussion

It was easier for people to read the word than just read the color. When you look at one of the words, you see both its color and its meaning. If those two pieces of evidence are in conflict, you have to make a choice. Because experience has taught that word meaning is more important than ink color, interference occurs while paying attention only to the ink color. The interference effect suggests you're not always in complete control of what you pay attention to.

Contrary to my hypothesis males scored better for both tests but the difference was minimal and I do not think that it was a significant gender difference. A larger sample size may help in my future project.

Summary Statement

The human brain works more efficiently for automatic processes than for controlled ones.

Help Received

Father audited my calculations and graphs. Sister drove me to test subject's homes.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Sven F. Bomer

Project Number

J0605

Project Title

Juggling: Which Learn Faster, Left-handers, or Right-handers?

Abstract

Objectives/Goals

The objective of this project was to learn about the art of juggling. Especially in comparison to other sports, juggling is relatively unexplored, and this project was designed to help jugglers learn more about this pastime. In addition, it may also help obtain more information about the functions of the brain, and about juggling in relation to handedness.

Methods/Materials

During the experimentation phase of this project, 15 left-handers and 15 right-handers (based on the hand used for writing) were tested. They received the same instructions and introductions to juggling, and time to practice. Each person received three homemade juggling balls, each consisting of ½ a cup of rice in a plastic bag with two balloons wrapped around. After practicing, the participants recorded the data on the forms handed out.

Results

Once the data was recorded and organized, it was clear that there was virtually no difference in the juggling abilities of the left and right-handed subjects. The subjects had varied data, but most of them, both left and right-handed, had results of a 0-2 catch improvement. The results showed that the average for left-handers was 5.33 catches and 5.625 for right-handers, a difference of less than 0.3 catches.

Conclusions/Discussion

The results clearly matched the hypothesis from the beginning of the experiment. There was only a miniscule difference in the averages, almost certainly caused by the small test size, showing that left and right-handers have equal juggling abilities. This suggests that juggling requires both hemishperes of the brain, making it a dual-brain activity.

Summary Statement

In my project, I investigated the learning abilities of left and right-handed subjects while juggling.

Help Received

My mom drove me around numerous times for all of the supplies, and my dad helped me figure out how to use Microsoft Excel to graph all of the data. Mr. Morrow, my PE teacher, helped by taking time out of two of his classes, and most importantly, Mrs. Gillum helped by guiding me through the project.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Mackenzie L. Carter

Project Number

J0606

Project Title

Cell Phones and Driving Reaction Time

Abstract

Objectives/Goals

The objective of this project is to determine if a cell-phone conversation while driving will affect reaction time. I believe that talking on a cell-phone while driving will affect reaction time because of a lowered concentration rate and diminished mental awareness of the situation.

Methods/Materials

One 'Stationary Reaction Timer Driving Simulator' was assembled and used to test three groups of subjects. The subject groups were divided into three categories: Youth; ages 16-20, Adult; ages 25-45, and Senior; ages 65 and older. Each test subject was first allowed two test-drives on the simulator to become familiar with how the device worked. I then performed a primary test of the subject on the simulator five times without the distraction of a cell-phone conversation, and a secondary test five times while engaged in a detailed standard cell-phone conversation. The results of each group where recorded and averaged.

Results

Engaging in a cell-phone conversation showed a primary to secondary difference in reaction time by an overall average of +.03 seconds. Each age group though, had distinctively different results. The Youth group had quicker overall reactions in both tests, and a difference of only +.01 seconds. The Adult group had similar primary reaction times as the Youth, but a much greater difference in the secondary test, +.13 seconds. The Senior group exhibited much slower overall reaction times, but the difference, +.06 weconds, was not as notable as the Adult group.

Conclusions/Discussion

I came to the conclusion, through my experiment of 620 simulated driving tests, that talking on a cell-phone while driving does affect reaction times, proving that my hypothesis is correct. It was interesting to observe the differences in each age group, proving that age affects reaction times also. Through my research I learned that a cell-phone conversation lowers your concentration rate on the road as well as your mental awareness and perception time of drving situations. While driving at 60 miles per hour, a .45 second delayed reaction would cause you to travel an extra 39.6 feet. My hope is that people will be made aware of this and will consider not using their cell-phones while driving. Further research could be done to determine why certain indviduals and/or age groups have better reaction times as shown in my experiment test data.

Summary Statement

Through my project I determined that cell-phones are a significant distraction while driving, which cause delayed reaction times.

Help Received

My father helped with set-up of the 'Stationary Reaction Timer Driving Simulator'; Mother helped with display.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Jeff S. Compton

Project Number

J0607

Project Title

Understanding Estimation

Abstract

Objectives/Goals

Estimation skills are important in everyday life, such as when predicting how many bags of groceries will fit in the truck of a car, or detecting computational errors. However, little is known about estimation, such as whether people can improve with practice. The goal of this project is to learn more about estimation skills.

Methods/Materials

A total of 60 participants had 24 trials each in which they were shown cards and asked to estimate how many measuring units would fit along a line. The trials differed in the shapes of the units and the sizes of lines. Half of the participants were randomly assigned to a condition in which they received feedback following the first half of the trails. After making the estimates, participants were asked several questions, such as whether had attended any college math classes.

Results

Results showed that participants were much more likely to underestimate than to overestimate, that they improved with feedback, and that participants with college math were more successful. The appearance of the units affected estimation: participants did better when the units were larger, and when they were circles. Finally, participants were not good at predicting the accuracy of their estimates.

Conclusions/Discussion

This research suggests that people tend to underestimate size, and that feedback can help improve performance. This research also suggests that what an estimation task looks like can affect the results, and that how confident people are might not be a good guide to how well they perform in a task.

Summary Statement

I investigated estimation skills by asking people how many measuring units would fit along lines of different sizes, to examine biases in estimation, the effects of performance feedback, and the relation between accuracy and confidence.

Help Received

My parents helped find articles about estimation and helped with data analysis and proofreading. My friend Jennie Jones and my sister Alison helped me collect the data. Mary Sue Compton, my grandmother, helped me assemble the poster.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Ashlee L. Dubach

Project Number

J0608

Project Title

Teaching Techniques

Abstract

Objectives/Goals

My goal in doing this project was first to understand what role the teachers really played. I wanted to prove that it's not just what we are being taught but it's how we learn it that really effects how well we(students) remember the material. Then I wanted to find out which techniques that teachers use that are the most effective on students. If I could narrow it down then maybe my results could help beginning teachers with their class or help the less effective teachers become better creating a new generation of enjoyable teachers in our society.

Methods/Materials

1. e-mail address; 2. Binder notebook; 3. Techniques chart with the top techniques of teachers; 4. Student chart with student reactions listed; 5. A mechanical pencil; 6. A package of lined paper; 7. Digital camera; 8. A computer; 9. A flashdrive; 10.Microsoft Word program; 11.Internet access.

Results

In the data from the three middle schools, Heritage, Quail Valley, and Pinion Mesa, I have found some interesting things regarding the teaching techniques of a middle school science teacher. I have found that eye contact with the students is one of the best ways to keep their attention, and the students react well to the technique. One thing the students really don't react at all to are the teachers facial expressions. The students seem to "zone out" when the teacher has a new expression on their face. Posture of a teacher does effect how the students react. A teacher that stands straight or carries themselves with more poise gets a better reaction than a slouchy teacher, suprisingly. Voice pitch in the classrooms is one of the best ways to get the students attention according to my data. Humor is a good way to get students to pay attention to the teacher because of the more open situation; the students don't "zone out" as easily.

Conclusions/Discussion

I proved my hypothesis is right by recording the teacher's techniques and the responses the students have. Every time the teacher would raise or lower their voice pitch the student's attention would turn to the teacher. When a humorous remark would be made the students would loosen up and concentrate more. I learned that each teacher has one specific technique that they use effectively more. I enjoyed watching how each teachers own strategies effect the students in different ways. I would change the amount of times I got to go to each classroom.

Summary Statement

I studied teaching techniques to better understand the main and most effective techniques that teachers use to teach students.

Help Received

My mom helped type some things, and she drove me to the schools where I got my information.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Chloe J. Feller

Project Number

J0609

Project Title

Does Age Affect Short-Term Memory?

Abstract

Objectives/Goals

I wanted to investigate the question if short-term memory was affected by one's age.

Methods/Materials

1. An I Spy picture book; 2. A timer; 3. Test subjects (40 people divided equally into four different age groups); 4. Forty questionnaires; 5. A folding table and two chairs; 6. Several pens; 7. Digital camera to photograph and document the study.

Major steps: 1. First set up and lay out all materials; 2. Randomly select a person who fits within the age groups; 3. Explain the procedure; 4. Set timer for one minute; 5. Have them study a picture for one minute and answer a questionnaire. No time limit. 6. Write down all observations about the subject's testing and affects on the test results. 10. Repeat this procedure 40 times.

My independent variables were the ten people in age groups 4-12, 13-19, 20-35, 36-53. My dependent variable was the measurement of all the age group results. My constant variables were the picture I used to test all age groups, the amount of time to study the picture, the questionnaire I used, and the environment under which each person was tested.

Results

1. All groups could accurately and correctly recall items from the picture, so it appears that there was no guessing in the unaided recall segment.
2. A surprise result was that females in all age groups had better short-term memory recall than the males.
3. The youngest group 4-12 performed the poorest remembering an average of 52% of the aided questions and could remember unaided 3.4 items on average.
4. The 13-19 year old age group placed third out of the four age groups. They could only remember an average of 58% of the aided questions and could recall unaided an averaging 5.7 items for the group.
5. The eldest group (ages 36-53) came in second. They could remember 68% of the aided questions and an average of 6.3 items on their own. Health conditions affected this group's results.
6. The 20-35 age group performed the best. They could remember an average of 76% of the aided items and an average of 7.9 items unaided.

Conclusions/Discussion

Was My Hypothesis Correct? No. I predicted that participants in the 13-19 year old age group would perform better because I thought their minds were still growing.

Summary Statement

I investigated how age affected short-term memory in forty people divided into four age groups.

Help Received

My teachers provided guidance in scientific method. My mother helped edit the writing and design of my project.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Alexander T. Fields

Project Number

J0610

Project Title

Do You See What "Eye" See?

Abstract

Objectives/Goals

The purpose of my project is to determine the reliability of eyewitness testimony . In a trial, the jury needs irrefutable evidence to send someone to jail. Niether the jury nor the eye witnesses can afford to make mistakes. That's where my project comes in. Take a robbery, for example. The people who just got robbed will go down to headquarters to testify as to what they saw. The whole point of my project is to determine the reliability of eyewitness testimony. I wanted three questions answered: 1) The basic question which is how reliable is eyewitness testimony; 2)I also wanted to find out if boys or girls are better at eyewitness testimony; and 3) I wanted to find out which was more reliable, testifying immediately after the robbery or waiting a few days when the witnesses may have a chance to calm down and think about what they saw.

Methods/Materials

Methods: I wrote a script to set the scene for a robbery; Then my friends formed the cast for my video; Next we filmed the robbery; Then I wrote out a crime scene questionnaire; At school I showed the class the movie;I gave them the questionare; They answered the questions; I sorted the answer sheets by boys and girls and added up how many right and wrong answers each had; Two days later I handed out the questionnaire again to the same group and went through the same process; I summarized the results and made the graphs; and I put my poster together.

Materials:Digital video camera; Actors; Costumes; "Nerph" guns; Sunglasses; Phone; Computer; CD; Questionnaire sheet; Microsoft excel software

Results

I discovered that eyewitness testimony wasn't that reliable,and that people remembered more details immediatly after the event happened. Also I found out that boys were better at accurately remembering the event immediately after the event and after a few days as well.

Conclusions/Discussion

The results of my hypothesis was two-thirds correct. I was correct about eyewitness testimony not being very reliable. I also was correct in my hypothesis that eyewitness testimony was more reliable immediately after the event than waiting for a few days. But I was incorrect thinking that girls would be better recalling details of an event than boys. The boys did a lot better job remembering than the girls. (However, throughout watching the video the girls were giggling.) I learned a lot about eyewitness testimony and now know it isn't very reliable.

Summary Statement

My project sought to discover scientifically the accuracy of eyewitness testimony; who is more accurate-boys or girls, and is immediate recall more accurate than delayed recall.

Help Received

Three of my friends acted in the fictional robbery that I scripted, directed and video taped. Other than the acting, I wanted to do, and did, the entire project myself.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Colleen N. Flynn

Project Number

J0611

Project Title

The Nose Knows (Or Does It?)

Abstract

Objectives/Goals

The objective of my experiment is to determine who your smell interacts with your taste.

Methods/Materials

Subjects were asked to taste and smell two different flavors at the same time. Each subject was blindfolded, given a scent to hold under their nose while sucking on a cherry sucker. Subjects were then asked what flavor they tasted and it was recorded. Subjects then rinsed their mouths and repeated the procedure two times more with the same cherry sucker but two different scents. The three scents used were vanilla, cinnamon and pepperment. 100 subjects were used.

Results

When my subjects smelled peppermint while tasting cherry, 85% of the subjects did not taste cherry, while 15% did. When my subjects smelled cinnamon while tasting cherry, 77% of the subjects did not taste cherry while 23% did. When my subjects smelled vanilla while tasting cherry, 62% did not taste cherry while 38% did.

Conclusions/Discussion

I predicted in my hypothesis that the two flavors would combine. For example: peppermint-cherry. However, my results show that if the scent is strong, it will most likely overpower what you taste. My data supported this because most of my subjects did not taste the cherry sucker when they smelled pepperment and cinnamon. However, less of my subjects did not taste the cherry sucker when they smelled the vanilla which was a weaker scent. I also found that if a subject had allergies or a cold that interrupted their ability to smell, they most likely didn't taste anything at all.

Summary Statement

How does smell interact with your taste.

Help Received

My mother suggested I use more than one scent.

Name(s)
Alexandria G. Fuertes

Project Number
J0612

Project Title
How Does Music Affect Us Psychologically?

Abstract

Objectives/Goals
The objective of my project is to determine whether or not music affects us psychologically. I believe music will either increase or decrease memory retention as well as alter mood and creativity.

Methods/Materials
Informed consent was received from 22 subjects, 7 male and 15 femailes, ranging in age from 12 to 72. Memory retention and creativity were tested using no-music as a baseline - then again tested while playing 3 different genres of music in the background. A series of tests using word flash cards were performed to help measure memory retension. Subjects were also asked to draw a pictures; these pictures were then analyzed for creativity. Subjects were asked to write down their emotions and seperately, asked to write down how the music made them feel. Blood pressure readings were also taken.

Results
Classical music played in the background boosted memory retention scores 32.5%, a lot higher than any other music genre. Playing no music closely followed classical music at 23.3%.

Conclusions/Discussion
My conclusion is that music definitely has an affect on us psychologically; surprisingly, not in all the ways I had originally hypothosized.

Summary Statement
The purpose of my project is to scientifically determine whether or not music increases or decreased memory retention, as well as alter mood or creativity.

Help Received
My step-father helped me set up templates and charts in Excel. My mom helped me glue items onto my poster board.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Miriam Gaistman

Project Number
J0613

Project Title
Aloud or Silently? That Is the...

Abstract

Objectives/Goals
The objective of this project was to see if students would comprehend things better by reading aloud or by reading silently.

Methods/Materials
Fifty- six students were tested in seventh grade. The students were given two reading articles and eight true or false questions according to each of the articles. The students were asked to read both articles either silently or aloud. They were then given a test based on the reading. Room conditions were kept constant.

Results
Of the fifty- six students, twenty- nine were male, and twenty- seven were female. In general both males and females got better reading scores when reading aloud than reading silently. Males had a 1.7% better score, females had an 8% better score, and the average improvement for all students was 4.9% when reading aloud.

Conclusions/Discussion
In conclusion if students in the seventh grade read aloud they have better comprehension than if they read silently. It is a proven fact that using two senses is much more efficient in the learning process than only one sense. When students study out loud they retain more information. There could be a certain time of day when the class is told to read aloud (obviously one person at a time) and others silently, listen and then discuss the topic as a group. In preparation for an exam it is recommended that the student be in a quiet surrounding, with nothing to interrupt or interfere with their studies. They should read the information out loud, understand the information making it easier to retain.

Summary Statement
The main focus of my project was to see if students would comprehend reading material more easily, whether by reading aloud or by reading silently; students have different ways of comprehending material and processing it into their brain.

Help Received
Mrs. Armour (teacher) guided me throughout my project; Mr. Wood proof read my review of literature; Dr. Arturo Chayet for his medical output and his help on optometry for my interview and in my review of literature; Mom and Dad helped in coming up with an idea and put display board together

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Ryan B. Gerard

Project Number

J0614

Project Title

Backing Up Blind

Abstract

Objectives/Goals

I heard about a case in which a pedestrian, in a crosswalk was injured by a school bus. The bus driver said that she did not see the woman in the crosswalk. The woman was in a blind spot. This made me wonder about the potential dangers of blind spots that surround ordinary cars and whether drivers are aware of the size and location of these blind spots. The goal of this project was to identify the locations of blind spots for various types of automobiles and to test the driver's knowledge of these danger zones.

Methods/Materials

I conducted a total of 90 tests, 12 tests on each of seven different types of cars: three sedans, a minivan, a sport utility truck, a sports car, and a suburban. I also constructed six extra tests on a vehicle equipped with a rear view camera and sensors and more than 30 baseline tests to establish my methods. I constructed a dummy whose height could be manipulated. I tested to find front blind spots, back blind spots, and side blind spots; I also surveyed driver awareness by having the driver fill out a questionnaire. When they were done, I asked them to "back up," this was to see if the driver takes enough precautions before backing up to prevent a back-over accident.

Results

To my surprise, the sports car had the largest rear blind spot and the sedans had the smallest! As for the front blind spots, the suburban had the largest front blind spot. The sports car had the smallest front blind spot. The cars with the largest side blind spots were the sedans.

Conclusions/Discussion

From the questionnaire results, I found that most drivers weren't aware of how very large the rear blind spots and side blind spots were, and the drivers were more cautious about their front blind spots which are actually much smaller in size.

Summary Statement

My project surveyed driver perception of blind spots and investigated actual size of rear, side and front blind spots at different heights for various makes and models of automobiles.

Help Received

Father helped me to test the cars; neighbors let me test them and their cars; teachers let me test them and their cars; mother let me test her and her car.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Adam W. Goldman

Project Number

J0615

Project Title

The Effect of Materials on the Amplitude and Experience of Sound

Abstract

Objectives/Goals

Experiments were conducted to determine the differences between the sounds made by instruments constructed from different materials. Attempts were made to discover what effect changing the soundboard of an instrument has on its sound by graphing the amplitude on a computer software program and by how those differences are perceived by the human mind.

Methods/Materials

Experiments were conducted by recording one instrument with interchangeable tops, referred to as soundboards, on a high fidelity recording with Pro Tools software program. This included a visual frequency graph enabling comparison of graphed characteristics to acoustic attributes determined by a questionnaire. Applicant made experimental string instrument resembling a Banjo (zinc washbucket, axe handle, tamborine, shelf bracket, common and musical hardware) with interchangable soundboards. Materials List: (Experiment) Shure KSM44 microphone, microphone cable, microphone stand, Shure M367 Six Input Portable Mixing audio processor, Macintosh computer with ProTools and iPhoto software, Bose Triport OE headphones, instrument with interchangeable tops (wooden top, metal top, acrylic top, Remo top, skin top,) tape, digital camera, tripod, paper, printer, socket wrench. (Questionnaire) Pen, Paper, computer with Microsoft Word, CD recordings of same music played on the instrument with each different soundboard, head phones and portable CD player.

Results

Amplitude Peak Statistics were recorded, graphed and analyzed. The acrylic top had the fastest attack and was the loudest of all the different soundboards. The acrylic top stayed mainly in the high/mid range and had the highest amplitude.The metal soundboard had a quiet and slow attack that was the quietest of all of the tops. The metal stayed in the high range and low amplitude. Questionaire responses were recorded and graphed. Wood was voted most appealing because it had the strongest midrange tones and amplitude.

Conclusions/Discussion

The wood soundboard#s amplitude was in the midrange and had the most #appealing# sound of the five. The results suggested that the middle range of tone and sound are what people think of as musical. The material of the top, or soundboard, of the instrument had a major effect on its sound. The effect of materials on sound, and what the human ear identifies as these differences are discussed.

Summary Statement

This project compares the objective and subjective qualities of sound.

Help Received

Mother helped shop for materials, assist with power tools . Professional music editor recorded instrument at home recording studio.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Summer S. Hammeras

Project Number

J0616

Project Title

Gorillas in Our Midst

Abstract

Objectives/Goals

My objective was to determine if a person performing an attentionally demanding task (counting basketball bounces)would notice an obvious detail(gorilla) if it were presented in different ways.

Methods/Materials

1. Create three different videos with two teams in black or white t-shirts bouncing basketballs.
2. Have a gorilla enter the video by either walking, running or walking through in a red jacket.
3. Show one of the three videos to different individuals and ask them to count the number of bounces by the team in white.
4. Record the results.
5. If the gorilla is not noticed, show the same video again with instructions not to count the bounces.
6. Record the results.
7. Compare the results from all three videos and decide which video did the best at capturing attention.

Results

As it turned out nobody saw the obvious detail (gorilla) when it ran through the scene (0/60). Some people saw the obvious detail in the video when the gorilla walked through(4/60), and when it had a red jacket on(5/60). I let all of the participants who missed the gorilla watch the video for a second time without counting. In the change of speed video, six people still did not see it.

I think nobody saw the gorilla the first time in Video 2 because it happened too fast. The reason why people saw the gorilla in Video 3 is because everything else was black and white but the bright red jacket caught their eye. Most people noticed color rather than speed according to my data.

Conclusions/Discussion

My experiment proves that it is challenging to focus on a task and try to see details at the same time. I think the age of the participants could have affected my results because much younger or older people had more difficulties concentrating on the task. In the future I would like to test my project on people of the same age because their abilities would be on the same level. Video like this could be a good training process for people who might be interested in police work or any job that is involved with a lot of action. These jobs need to be able to see obvious details around them even if they are performing another part of their job.

Summary Statement

A person's ability to notice an obvious change in a scene is usually much less than they believe.

Help Received

My mother filmed my three videos while my six friends played basketball; sixty people watched the videos; Dr. Daniel Simons helped to give me the idea for my project when my parents took me to a museum in San Diego.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Shelby A. Holloway

Project Number

J0617

Project Title

Gender and Eyewitness Identification

Abstract

Objectives/Goals

Problem Statement: The question is, are girls better eyewitnesses than boys?
Hypothesis: If girls see a crime, then they're better eyewitnesses than boys.

Methods/Materials

Materials: Video camera, questionnaires, digital camera, photo lineups, volunteers
Procedure: I created a crime scene video, and showed it to a couple of the science classes, then I handed out a questionnaire. After that, I figured out the percentage of which gender remembered the most characteristics of the two criminals. Next, I started creating a photo lineup. The students had to choose one boy and one girl who they thought were the ones in the video. I then totaled up the percentages of which gender correctly identified the suspects.

Results

In the descriptions, the girls remembered the boy's short brown hair better than the boys did, and the boys were better at remembering the girl's long blond hair than the girls were. The girls were twice as accurate in remembering the clothing than the boys. Percentage-wise, more girls chose the right boy suspect from the lineup and more boys chose the correct girl from the lineup.

Conclusions/Discussion

My hypothesis was that girls would be better eyewitnesses than boys. That was proved true in the case of the descriptions right after showing the video. But, in the case of the lineups, the boys were slightly better at identifying the suspects.

Summary Statement

My science experiment tests whether girls or boys are better eyewitnesses to a crime.

Help Received

Mother helped organizing report, getting lineup photos from internet. Friends acted as criminals in video.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Sara N. Hubl

Project Number

J0618

Project Title

Do You See What I See?

Abstract

Objectives/Goals

The purpose of this project was to determine if the presentation of color words will have an affect on the subjects ability to respond correctly when asked to specify word or font color. I hypothesized that when presented with color words congruent and incongruent to their semantic meaning, the group Female Adults (ages 19-39) would have the highest percentage of correct answers.

Methods/Materials

In my study, I tested a total of fifty subjects consisting of 25 male and 25 female. These subjects were equally broken into the following age groups: Children, ages 5-11, Adolescent, ages 12-18, Adult, ages 19-39, Middle Age Adult, ages 40-59, and Seniors, ages 60+. Prior to testing, I explained to the subjects that they will be viewing a series of four tests formatted into a PowerPoint presentation, and each containing ten slides. The slides will consist of color words printed in congruent and incongruent font colors, but this will not be revealed to the subject. As the subject went through the testing process, I recorded their exact responses. Following the tests, I analyzed the data collected.

Results

After reviewing the data I collected, this is a basic overview.

1. Female Adults, ages 19-39, performed the best out of all age groups with 99.5% of their answers being correct.
2. My research indicated that female brains pay more attention to detail and color, and as a result should likely score higher on the tests. On the contrary, however, my male subjects, scored higher than females in three out of the five age groups.
3. Male and female Children, female Middle Age Adults, and female Seniors performed the poorest.

Conclusions/Discussion

I concluded that my testing did support my hypothesis. The group Female Adults (ages 19-39) had the best outcome with respect to correct answers.

Summary Statement

This project determined the ability of male and female subjects, in several age ranges, to respond correctly when asked to specify word or font color.

Help Received

My father advised the project.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Tanner J. Kelly

Project Number

J0619

Project Title

Through the Eye of a Witness: Eyewitness Accuracy in Children

Abstract

Objectives/Goals

My experiments have determined the effect of witness confidence and clarity on accuracy. I also concluded the level of eyewitness accuracy when questioned using a questionnaire requiring only general descriptions versus a direct line of questioning asking specific questions. My study also determined how exposure time affects eyewitness accuracy. My study may alter the reliability of child eyewitnesses in the justice system, and may change the manner of questioning of child eyewitnesses by law enforcement.

Methods/Materials

In the control test, over 100 test subjects, ranging in age from 12-14 were placed in a classroom test environment in sets of approximately 30, unaware that their accuracy as an eyewitness would be challenged. 1 of 3 uniquely clothed 12-year-old females would enter the test environment, with new test groups each time, in random order (to prevent descriptions of the suspect being communicated between subjects and polluting the test population). The suspect would enter the test environment and engage in mock argument with a teacher and exit after 15 seconds in the control and 30 seconds in the variable. Once the #suspect# had exited the test environment, subjects were informed of the nature of the study and after consenting, the subjects completed a general information questionnaire, requiring only volunteered answers to unspecific questions.

Results

The results determined that teenage eyewitnesses are generally inaccurate. Exposure time had no effect upon the accuracy of the subject testimony in the interview. However, the questionnaires did show that the variable subjects were far more accurate than the control subjects. There was also no noticeable effect of clarity or confidence on accuracy.

Conclusions/Discussion

Child eyewitnesses were proven to be largely inaccurate, proving part of my hypothesis correct. My belief that the variable test subjects would reach a greater level of accuracy over the control subjects was correct. However, there was no apparent difference in accuracy in the interviews, only in the questionnaires.

Summary Statement

My study designed to understand the effect of witness confidence and clarity on accuracy in child eye witness accounts.

Help Received

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Ashly C. Kloiber

Project Number
J0620

Project Title
The Effect Age Has on Short Term Memory

Abstract

Objectives/Goals
My objective was to determine the effects that age has on a person's short-term memory.

Methods/Materials
Six pre-selected age groups were chosen to include people from ages 4 and up. Sixty people, ten from each pre-selected age group were tested for their ability to recall items from their short-term memory. Fifteen household items were randomly selected and placed on a table in a certain configuration. Test subjects were allowed thirty seconds to examine the fifteen items. The items were covered up and the test subjects were given two minutes to recall which of the fifteen items they could remember. The average number of items recalled from the short-term memory testing was determined per age group. The percent of items recalled per age group was graphed and compared.

Results
The age group 22 to 40 years old had the most items recalled. The average number of items recalled was 11.7 out of the 15, which is 78%. The age group 4 to 6 years old had the least amount of items recalled. They recalled an average of 5.8 out of the 15 items, which is 39%. The 7 to 10 year old age group had an average of 9.0 out of 15 items recalled with 60%. The 11 to 21 year old age group had an average of 11.5 out of 15 items recalled with 77 %. The 41 to 60 year old age group had an average of 10.5 items recalled with 70%. The 61 and up age group had an average of 8.1 items recalled with 54%.

Conclusions/Discussion
My conclusion is that age does have an effect on memory. I believe the fact that the 4 to 6 year old age group having the lowest average amount of items recalled is insufficient to my results due to them having a very low attention span. Short-term memory peaks at ages 22 to 40 years old and then declines after the age of forty. The results from the age group 11 to 21 years old are fairly close to the 22 to 40 year old age group results. It could most defiantly be true when my grandmother uses the famous excuse, #I can't remember because I am too old.#

Summary Statement
My project tests if a person's short-term memory is affected by the aging process.

Help Received
Test subjects were obtained through these various resources: Healy Senior Center, The Sing Trees Recovery Center, classes at Redway Elementary, and many friends of our family. My mom also helped me make the data charts.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Shalini Kolluru

Project Number

J0621

Project Title

The Impact of Deep Breathing on Memory

Abstract

Objectives/Goals

My objective was to learn about how deep breathing affects students' memory.

Methods/Materials

1. My experimental sample consisted of 78 students from grades 5 and 6.
2. As part of pre-test, students were given a list of non-sense syllables to memorize for ten minutes. Then the students were asked to recall as many of the non-sense syllables as they could and write them on a piece of paper.
3. After a break, I trained 78 students in the process of deep breathing. After they were well versed with the process of deep breathing (using the correct posture), the experiment was implemented.
4. The same set of students were asked to engage in deep breathing for 10 minutes.
5. After the deep breathing, they were given a different list of non-sense syllables to memorize.
6. Next, as part of the post-test, the students were asked to recall as many non-sense syllables as they could and write them on a piece of paper.
7. The pre and the post-test responses were tabulated and analyzed to assess the impact of deep breathing on memory.
8. Finally, the students were surveyed about how they felt after the breathing exercises.

Results

1. The mean correct response in the memory test before deep breathing consisted 3.9
2. The mean correct response in the memory test after deep breathing consisted 6.3
3. The mean correct response for female students consisted of 3.8 in the pre-test and 7.4 in the post-test.
4. The male students on the other hand had a mean of 2.6 in the pre-test and consisted 5.1 in the post-test.

Conclusions/Discussion

1. I found that deep breathing has a positive impact on memory.
2. Students stated that they felt more relaxed and could concentrate better which helped them remember the syllables better.

Summary Statement

My project is about how deep breathing impacts memory.

Help Received

Mother guided me through whole project ; Coach helped with paper work ; School teachers prvided class time and students for the experiment

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Michelle Kwon

Project Number

J0622

Project Title

The Match Begins: Written vs. Verbal

Abstract

Objectives/Goals

Do you do better at a task if you see the instructions or if you listen to the instructions? I am trying to figure out whether written instructions are better or whether verbal instructions are better.

Methods/Materials

Materials: 1. Written Instruction Paper 2. Verbal Instruction Paper 3. Legos 4. Tape recorder 5. Camera 6. People 7. Blocks

Method: First, I gathered eight different colored blocks and legos. Then, I created the verbal instructions and written instructions. I found a suitable place to hold the testing. For the investigation, I got people to try to stack the blocks and legos based on the two different instructions that were given. First, I gave them written instructions to read for a minute. After, they had to stack the blocks and legos. Then, I gave them a tape recorder to listen to. Then, they would stack the blocks and legos based on those directions.

Results

I found out that overall written instructions were much better. Females scored better than males but for both genders, the written instruction scores were greater than the verbal instruction scores. Then, for all age groups, written did better than verbal. Out of the thirty-two people who were tested, nineteen people did better at written, six people did better at verbal, and seven received the same score for both written and verbal. I did a retest for all my subjects, and the scores went up. The written scores were still higher than the verbal scores.

Conclusions/Discussion

Since the testing shows that the written instruction scores overthrew the verbal instruction scores, I can conclude that my hypothesis was correct, that written instructions scores are better than verbal instruction scores

Summary Statement

I am trying to figure out whether which instructions, written or verbal, is better for a task.

Help Received

My teacher provided the blue manuel (the steps for the Science Fair Project). Also, he gave me the idea for my science fair topic. My mom provided some of the materials used in my procedure.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Seungjoon Lee

Project Number

J0623

Project Title

The Distinguishable Tone "A"

Abstract

Objectives/Goals

To determine whether the 3rd octave of tone 'A' (3.52kHz) is the most distinguishable sound to humans.

Methods/Materials

1. Downloaded for selected 4 sounds to an MP3 player.
2. Produced the 7 tones using the "Note Worthy Composer" computer program on a laptop.
3. Recruited 53 volunteer students without bias.
4. Divided the 53 volunteers into 2 groups of 31 students and 22 students.
5. Instructed the students to raise their hands if they heard the tone within the sound.
6. Presented each of the individual 7 tones, simultaneously with each of the 4 sounds.
7. Played the instrumental classical music recorded with each of the 7 different tones for the subjects for a specified amount of time.
8. Gathered data based on individual responses.
9. Repeated steps 7 and 8 for each of the other 3 sounds.
10. Tallied the results.
11. Used the data to determine which tone is most distinguishable to the human ear.

Results

Presented with "Classical music," the 3rd octave of tone 'A' (3.52 kHz) was the most detected. (43 students out of 53)
Presented with "Sound of falling rain," the 3rd octave of tone 'A' (3.52 kHz) was the most detected. (38 students out of 53)
Presented with "Speech," the 3rd octave of tone 'A' (3.52 kHz) was the most detected. (45 students out of 53)
Presented with "Christian rock," the 3rd octave of tone 'A' (3.52 kHz) was the most detected. (22 students out of 31)

Conclusions/Discussion

Humans can hear the 3rd octave of tone 'A' over almost any other sound. As my research indicated the frequency of tone 'A' is nearly the same as the natural frequency of the human ear. The 3rd octave of tone 'A' and the natural frequency of the human ear combine to make resonance thus emphasizing the 3rd octave of tone 'A' for the human ear.

Summary Statement

Through the experiments, I evaluated that the 3rd octave of tone 'A' (3.52 kHz) is the most distinguishable sound to humans.

Help Received

53 students have helped me with my experiments and Mr. Akin provided the classroom to accomplish the experiments successfully.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Laura S. Levy

Project Number

J0624

Project Title

The Reading Mind: Word Recognition in Short-Term Memory

Abstract

Objectives/Goals

I looked for a correlation between the ability to read a paragraph composed of anagrammed words easily (first and last letters are in the correct positions, middle letters are mixed up) and the ability to spell well. Hypothesis: if reading and spelling ability are connected through working visual and phonological memory, then people who can read anagrammed words in a paragraph easily are more likely to be better spellers than people who cannot read the same paragraph easily.

Methods/Materials

I tested 81 adults: To prevent bias I designed and created all testing materials myself and always tested using a particular order. 1) Subjects were given a spelling test made up of common and uncommon words from the paragraphs to be read in steps 2 and 3. 2) I timed each person while they read the anagrammed passage aloud and marked how many errors/long pauses they made. 3) They read the normal passage aloud and I recorded as in 2. 4) Subjects filled out a questionnaire that I used later to break the population into smaller cohorts so I could isolate other variables that might affect results. Results were plotted using Excel. Regression lines and r values were determined using the Excel statistical tools.

Results

I found no correlation between reading ability (anagrammed reading speed/normal reading speed) and the number of spelling errors made or for most of the relationships compared in the total population. There was no correlation between variables in the cohorts, although those who learned to read phonetically vs. sight recognition were better spellers. I constructed 2 x 2 tables to find the p values using the statistical calculator at http://statpages.org/ctab2x2.html: most results could have occurred by chance.

Conclusions/Discussion

My hypothesis cannot be supported by my data. I did not find a correlation between reading anagrammed words and spelling ability so these tasks may not use the same neurological pathway. The phonics vs. whole word data suggests that learning how to spell may involve several pathways, such as hearing or speaking. Because reading ability did not predict spelling ability and vice-versa, this suggests that some people cannot learn to spell by just reading words. I am next going to try to test for other connections to see if there is a better way to help people learn how to spell.

Summary Statement

Do reading and spelling use the same neurological pathways through working memory?

Help Received

Drs. H. Stark and M. Czech reviewed my project for design and ethics. My mother helped me learn the statistics I needed, showed me where to find the statistical calculator and how to use Excel.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Megha Manjunath

Project Number

J0625

Project Title

Stereo Vision: Do We Really Need to Recognize Images to Perceive Depth?

Abstract

Objectives/Goals

Stereo Vision refers to the ability of animals and humans to fuse the left and right eye images to perceive the 3D world around us. This depth perception requires matching visual features from the left and right eye images. In this study I explore how the presence of these recognizable visual features affect the time it takes to perceive the depth. In particular, do we need to recognize the image content individually to perceive depth?

Methods/Materials

Students in the age group 10-14 were selected to view 15 stereo image pairs, and three random dot stereograms. Stereo images were taken from a standard digital camera by displacing the camera by 6 centimeters from left to right. The stereo images were combined together on the computer using Photoshop software. Each pair was altered in 3 different color variations; orignial color, black & white, and inverted color. The random dot stereograms were taken from the Magic Eye II book. Random dot stereograms do not have a distinguishable pattern when viewed one at a time. Stereoscopes were used to view all 18 images. The times the viewers took to perceive the 3-D images were recorded into a log book.

Results

The normal stereo image pairs took about 1-10 seconds for the viewers to see, while they took 30-90 seconds to see the random dot stereograms. The data was graphed onto four different graphs. Each graph represents the average time to perceive depth and its standard deviation. The first graph compares the stereo images amongst themselves. The second graph compares the orignial color stereo images to the black & white images and the inverted color images. The third graph compares the random dot stereograms amongst themselves. The fourth graph compares both the stereo images to the random dot stereogram.

Conclusions/Discussion

The time to perceive depth increases as the complexity of the image features increases. There wasn't any significant difference between the color and black & white version images, but the inverted color images were much more difficult to see. Surprisingly, experiments with the random dot stereograms showed that we can still perceive depth with absolutely no recognizable image information at all!

Summary Statement

This project is about how the presence of recognizable features in image pairs affect the length of time to perceive depth.

Help Received

Dad helped in graphing results. Got help from UCSB graduate students, Dmitry Federov, Michael Quinn, and Thomas Kuo to take stereo pictures.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Kristy R. Melton

Project Number

J0626

Project Title

Stroop Effect

Abstract

Objectives/Goals

i wanted to find out how fast Males and Females could say the ink color and the actuall word on the index cards.

Methods/Materials

Males and Females in 6th 7th and 8th grade
17 index cards
felt tip pens- red yellow blue green orange
white poster board

Results

I found that Females in 6th grade were faster in reading the word and the ink color but in 7th grade Males and Females had the same time in reading the ink color and males were fasterb in reading the word and for the 8th grade i found that males were faster in reading the word and the color.

Conclusions/Discussion

i found that my hypothesis was wrong because not in all grades were faster in reading the color and Males weren't faster in reading the word in all grades.

Summary Statement

testing Males and Females on how fast they con read the ink color and word

Help Received

teacher helped write, dad got me a new board, mom helped put together

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Megan R. Montgomery

Project Number

J0627

Project Title

Driving while Talking: A Dangerous Diversion?

Abstract

Objectives/Goals

The purpose of my experimentis to see if talking on a cell phone while driving impairs the ability of that driver. My hypothesis is that talking on a cell phone while driving a car will increase one's risk of being involved in an accident because it will cause a person to divert his or her attention from the road in order to carry on a phone conversation.

Methods/Materials

I tested thirty people by having them operate a driving simulator game at an arcade. Each participant drove the game one time without using a cell phone. The results of each participant in the first test was then recorded. Each participant then drove the same course a second time and during the course answered a cell phone call and then carried on a conversation by answering a series of questions designed to make them think. The results of the second test was then recorded and compared to the results of the first test. The materials needed were a driving simulator game at an arcade, a cell phone, a pre-determined set of questions, quarters for the game, and thirty participants.

Results

The results of my experiment determined that drivers using a cell phone tend to drive faster. The majority of participants in my experiment reported that it was more difficult to safely steer the car while talking on the cell phone. All of the participants in my tests said that they had a hard time concentrating on their driving while talking on the cell phone. The participants that talked on the cell phone while driving also caused more damage to their cars and the cars around them as measured by the simulator.

Conclusions/Discussion

The affect of a cell phone on a driver's ability to safely operate a motor vehicle is that a cell phone basically forces a person to divert their attention away from the road, their speed, and the cars surrounding them in order to carry on a conversation. Each person I tested on the machine went faster while using the cell phone and also caused more damage to their car and the other cars around them. They also reported feeling distracted and they found it harder to steer the game. This helps prove my hypothesis that using a cell phone while driving increases the risk of being involved in an accident is true because one would be more distracted from the road, their speed and the other cars around them. In conclusion a cell phone is a very dangerous diversion to a driver.

Summary Statement

Talking on a cell phone while driving increases one's risk of being involved in an accident.

Help Received

My mother an father assisted by driving me to the arcade and they helped me recruit participants for my experiment. My father also took pictures of me testing my participants in my study.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Branden P. Mooney

Project Number

J0628

Project Title

Fear Factor II: The Effect of Visual Stimuli on Cognitive Ability

Abstract

Objectives/Goals

This second-year study was designed to test whether fear-inducing two-dimensional visual images would result in an increase in cognitive ability. My hypothesis was that fear-inducing images would heighten cognitive ability, as measured by performance on word recall tests.

Methods/Materials

Using a laptop computer and a self-designed, interactive Powerpoint presentation, thirteen male and thirteen female participants ages 13 to 18 were shown a series of safe images (small, cute animals). They were then given a short word recall test (Test 1). Participants were then shown a series of images designed to be fear-inducing (spiders, snakes, insects, hypodermic needle injections) and given a second word recall test (Test 2).

Results

Overall, cognitive performance increased 10 percent for all teens after viewing the fear-inducing images. Results were more pronounced among male teens, with a 20 percent increase on Test 2 after viewing the fear-inducing images. Twenty out of the twenty-six test subjects either increased in cognitive performance in Test 2 or else exhibited no decline. Only six test subjects exhibited decreased cognitive ability on Test 2.

Conclusions/Discussion

In a previous study (Fear Factor I), I examined the effect of three-dimensional visual stimuli on heart rate using tarantula exoskeletons. In Fear Factor I, increases in heart rate were higher among females. In Fear Factor II, results were more pronounced among male teens, who demonstrated a 20 percent increase on Test 2. A 20 percent increase would mean the difference between a 1700 score and a 2040 score on the SAT. If fear-inducing visual stimuli can raise cognitive performance as my experiment seems to indicate, then watching a very scary movie or looking at fear-inducing images just before taking the SAT might be a good strategy, especially for teen males.

Summary Statement

Fear Factor II is a study of how fear effects cognitive ability in teens.

Help Received

My father showed me the basics of how to use Microsoft Powerpoint and Excel software programs.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Jodie C. Nakajima

Project Number

J0629

Project Title

Shh... I'm Driving!: What Is the Effect of External Stimulus on Driver Reaction Time?

Abstract

Objectives/Goals

For my project, I was trying to see which activity would slow down a driver#s reaction time the most; listening to music, talking on a handheld cell phone, or talking on a hands-free cell phone, compared to no distractions (the control group).

Methods/Materials

First, I had two cars parked forty-five feet away from each other, one in front of the other, using two measuring tapes lined up on the ground. Then I set up a video camcorder on a tripod so both cars# taillights were visible through the lens. I had a helper go into Car #1 (the front car) and press down on their brakes at random times. I had nine test subjects go into Car #2 (the back car) one at a time. They were told to press down on their brakes (causing the taillights to go on) every time they saw the taillights of Car #1 turn on. Each test subject did ten trials for each test condition. For the trials that used the cell phone, I asked them different questions (from a list that I made) from another cell phone. After all of the test subjects finished, I plugged the camcorder into a television and reviewed the tapes. I wrote down the exact time that Car #1 and 2#s taillights went on in my notebook and subtracted the times to find the reaction time. The times were very accurate because the camcorder has a digital timer inside the machine that can record down to a thirtieth of a second.

Results

I found that the trials with music playing had the fastest reaction times, second fastest was with no distractions, third fastest was with the handheld cell phones, and the slowest reaction time with the hands-free cell phones.

Conclusions/Discussion

I think that the trials with music had the fastest reaction times because they were immediately after the trials with no distractions and the test subjects may have gotten more used to the task and improved over the period of time. I think the trials talking on a handheld cell phone had faster reaction times than the ones talking on the hands-free cell phone because the volume of the speaker on the hands-free phone wouldn#t go loud enough for all of the test subjects to hear, making them concentrate more on what they were being asked. Some other things that may have affected the results were the changing sunlight and that some of the test subjects didn#t perform all ten trials.

Summary Statement

The purpose of this experiment was to see which activity would slow down a driver's reaction time the most; listening to music, talking on a handheld cell phone, or talking on a hands-free cell phone, compared to no distractions.

Help Received

I would like to thank my grandparents for letting me use their driveway, my mom for being my helper, and my parents for letting me to use their cars and cell phones.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Katherine M. Nigro

Project Number

J0630

Project Title

CSI: The Brain: Cranium Spatial Intelligence

Abstract

Objectives/Goals

The objective of this project was to find out what age group of people can recognize shapes the fastest. It would help companies, who are targeting a certain age group, know how long to show their logo on a television commercial so that viewers would be able to recognize the logo.

Methods/Materials

Test people with a sheet of paper in front of them with 15 different shapes on it. Hold up a card with one of the shapes on the piece of paper on it. Time how long it takes, with a stopwatch, for the test subject to point at the shape on the sheet of paper that matches the shape on the card. Record data. Needed materials: shape sheet, shape cards, stopwatch, data table

Results

Females 20-29 years old were the overall fastest at recognizing shapes and the females 70 and older were the slowest.

Conclusions/Discussion

The results showed that 20-29 year olds are the fastest at recognizing shapes. The hypothesis was right in the fact that the test subjects 20-29 years old were the fastest, yet they were faster than the tenth graders by 1.91 seconds instead of 2 seconds. When advertisers are targeting 20-29 year olds, they will not have to show their logo for as long as they would need to with people over 70 years old.

Summary Statement

This project tests the age group of people that can recognize shapes the fastest.

Help Received

Parents drove the experimenter to different places for experimentation.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Shubha S. Raghvendra

Project Number

J0631

Project Title

Studying the Effects of Contextual Information on the Analysis of Words

Abstract

Objectives/Goals

The objective is to compare the effect of different types of contextual clues on the analysis of words.

Methods/Materials

Thirteen people aged 40-50 were asked to unscramble words in nine different circumstances (different contextual clues). These trials were (1) the words scrambled with the first phoneme (sound) intact, (2) the first and last phonemes intact, (3) the first letter intact, (4) the first and last letters intact, (5) the word scrambled as part of a sentence, (6) a structurally incorrect sentence, (7) a paragraph, (8) a structurally incorrect paragraph, (9) and the control - the word scrambled completely randomly.

Results

Subjects performed fastest and most accurately on the "Phonemes Intact" trials (trials 1 & 2). These trials also had the fastest average time per word. The next fastest trials were the "In Context" trials (trials 5 & 7).The slowest and least accurate responses occurred on the control trial, which had no contextual clues. Also, accuracy increased and the average speed went down by almost 20 seconds on the "Phonemes Intact" trials compared to the "Letters Intact" trials (trials 3 & 4).

Conclusions/Discussion

My results showed that while contextual information does have an effect in the word analysis process, phonemes play an even greater role in it. The poor accuracy and speed my subjects showed in the "Letters Intact" trials as compared to the "Phonemes Intact" trials only reinforced the importance of phonemes, leading me to believe that in learning to read and write, placing emphasis on phonetics is crucial.

Summary Statement

This study is about how different contextual clues affect the brain's analysis of words.

Help Received

My father helped my with my Excel spreadsheet and board; my mother helped me find subjects; my sister let me do a dry run on her.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Kara E. Roberts

Project Number

J0632

Project Title

Read to Remember or Listen to Learn?

Abstract

Objectives/Goals

To find out whether people remember writing better if they read the text, listen to the text, or listen and read the text at the same time.

Methods/Materials

Methods

I tested 30 people on passages they read, listened to, and read and listened to at the same time. My test takers were given a passage in written form. They read the passage. Then I had them listen to a similar passage I had on a compact disc. Then, I gave them a passage to read and listen to at the same time. After these 3 passages, I gave them a three section test about one of the three passages. I repeated this process three times, changing the order each time.They each heard, read, or heard and read 9 passages all together.

Materials

9 Passages from Harry Potter and the Half Blood Prince by J.K. Rowling: 3 passages in written form, 3 passages in Compact Disc form, 3 passages in written and Compact Disc form, 1 CD player, 1 pencil or, pen for each person, 3 tests per person, 1 answer sheet, 30 people to take the tests.

Results

Average # of answers correct for reading: 10.2 out of 15
Average # of answers correct for listening: 8.8 out of 15
Average # of answers correct for reading and listening at the same time: 10.1 out of 14
Average # of answers correct total: 29.1 out of 45
Average Percent of answers correct total: 64.7% out of 100

Conclusions/Discussion

I found out that the people I tested, remembered best when they read the text, remembered second best when they listened and read the text at the same time, and remembered the worst when they just listened to the text.

I think there may be many possible reasons why this might have happened. I think that reading might have come in first instead of reading and listening because the sound might have distracted the visual and kinesthetic learners. This may have occurred because they weren't reading at the pace they usually read. Hearing the words may have been too slow or too fast for their pace of reading. Or, maybe most of the people in my sample were visual learners, rather than auditory or visual and auditory learners.

Summary Statement

My project was about whether people remember informtion given to them better if they read the information, hear the information, or if they read and hear the information.

Help Received

Dad helped me come up with the idea for my project, helped me burn the passages on to CDs, proofread my notebook; Mom took me places to test my subjects, took me to get supplies for my backdrop, proofread my notebook; Nancy Litteken let me test at her New Years party; Everyone who took my tests.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Adam Sefchovich

Project Number
J0633

Project Title
To Remember, or Not To Remember? That Is the Question!

Abstract

Objectives/Goals
To find the most effective learning tool that provides the most efficient and long lasting utilization of time and effort.

Methods/Materials
To give a subject two tests one for short and the other long term memory, the first test will be based on the story the subject read aloud and the other test will be the based on the recording that subject heard for long term memory.

Results
Reading aloud is a much better learning tool for short and long term memory.

Summary Statement
What is a better learning tool reading aloud or listening and what gives better short or long term memory.

Help Received
My science teacher hellped proofreaded my report

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Natasha N. Sosa

Project Number

J0634

Project Title

The Stroop Effect: Does Age Matter?

Abstract

Objectives/Goals

The goal of my project was to investigate whether age had an impact on the Stroop Effect.

Methods/Materials

30 subjects were tested in each of three groups: younger group (2nd and 3rd graders), middle school students (6-8th), and adults. They were asked to read from three different lists of color words for five tests. The three lists were as follows: words in all black ink, words matching the ink color and words and ink mismatched. Subjects were asked to read out loud the printed words (for three tests) or the color the word was printed in (for the other two) as fast and as accurately as possible. I recorded their time and number of mistakes.

Results

While each group clearly demonstrated the Stroop Effect, the youngest group had the largest difference in their times. They took 82.70 seconds longer to say the color when mismatched than to read the word when mismatched. In contrast, the middle school students had a difference of 51.28 seconds and the adults had a difference of 48.26 seconds.

Conclusions/Discussion

There appeared to be an affect of age on the performance of the Stroop Effect. The youngest group clearly had more difficulty naming the color when mismatched, even when taking their overall rate of reading into account. They also made more mistakes and demonstrated more frustration and uneasiness with the task. The middle school students and adults performed similarly. Both groups tended to use strategies (i.e. following with finger) to help them with naming the color of the word. They also tended to be wary of a trick when asked to name the color when it matched the word. The youngest group appeared to notice the matching and then proceed to just read the words quickly.

Summary Statement

My project determined that age had an impact of the Stroop Effect.

Help Received

My mother helped recruit subjects and drove me to their homes for testing. She also held the videocamera during testing.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Amber J. White

Project Number

J0635

Project Title

Can the Brain Translate Misspelled Words?

Abstract

Objectives/Goals

The purpose of my project is to determine if the brain can see a misspelled word and translate it to what it was intended to say.

Methods/Materials

Over a period of several weeks, I tested 80 human test subjects. I chose to test 20 elementary school students, 20 middle school students, 20 high school students and 20 adults. By doing this, I was sure to get a large range of reading experience among the test subjects. I supplied each test subject with typed paragraphs that I made up. Most of the words were spelled incorrectly. The first and last letter of each word stayed in the same place but all the letters in the middle where randomly scrambled. I had a copy of the same paragraphs, but all of the words on my paper were spelled correctly. I then asked the subjects to read their paragraphs out loud to me. As they read aloud, I was marking which words they got wrong, which words they struggled with, and which words they read correctly. On their paper, I recorded their age and gender as well as the amount of words they read correctly. Finally, I gathered the results from each of the subjects, and then charted their results according to age group and gender.

Results

Out of all 80 test subjects, high school students and adults had the highest average reading scores. They were able to read an average of 132.9 words correctly out of the 137 words in the paragraphs. Elementary school students were able to read and translate an average of 125 of the 137 words. They did well for being young test subjects.

Conclusions/Discussion

According to the results of my experiment, I believe I have proven my hypothesis correct. The brain can translate the misspelled words it sees and interpret it to say what it was supposed to say. The older test subjects did better than the younger ones because they have seen and stored the correct word in the memory for a longer period of time

Summary Statement

My project shows that the brain can see a misspelled word and translate it to what it was meant to say.

Help Received

My mom helped organize my research, and helped edit the report. She also helped layout the board.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)

Jessica M. Winter

Project Number

J0636

Project Title

The Placebo Effect of Food Labeling

Abstract

Objectives/Goals

My objective was to find out if food packaging affects the way a person perceives how a food will taste. Using sixteen different food items I switched the packaging of seven items to find out if a person's perception of taste of regular and reduced or low fat foods is influenced by the packaging of the products.

Methods/Materials

Sixteen different food items were purchased which offered regular and low fat or reduced fat varieties. These items included liquid and solid refrigerated foods, as well as dry packaged items. The food items were presented to the testing group individually on a paper plate marked A or B. The subjects also saw the food item coming out of the packaging as it was prepared. After tasting item on plate A, they cleansed their palates with water and tested plate B. They then circled the item on their tally sheet which they thought was a "Regular Fat" food. This procedure was completed for all sixteen items. The food items that were tested in both varieties were: milk, oreo cookies, strawberry yogurt, Italian dressing, iceberg lettuce, plain bagels, Wheat Thin Crackers, saltine crackers, pretzels, white bread, Chex Mix, Cheez-It Crackers, popcorn, peanut butter, strawberry jelly, mayonnaise, deli turkey, chocolate pudding, pineapple tidbits, Sprite soda, and Ritz Crackers. The non food items that were used included; paper with clipboard for tally sheet, pencils, napkins, small paper plates, Dixie cups, paper bowls, plastic spoons, forks, knives, toothpicks.

Results

The items that were not switched had twenty seven percent incorrect answers and seventy three percent correct answers. The items that were switched and remained original were forty five percent incorrect and fifty five percent correct. The items that were switched had more incorrect answers as compared to the items that were not switched.

Conclusions/Discussion

This concludes that most consumers can't tell the difference between low fat or reduced fat foods as compared to regular fat items. When the items were switched, nearly half of the testing group had incorrect answers. My experiment proved that not only can you have a perception about how foods can taste, but you also can't tell the difference in taste between low fat and regular food items. From my results I would recommend that consumers should try to eat reduced or low fat food items to promote better health practices and as a way to lose weight.

Summary Statement

The way a person perceives how a food item will taste is affected by the labels on the packaging.

Help Received

Mother and close friend helped me prepare some of the food items.

CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)	Project Number
Rafael Zarate	J0637

Project Title

Optical Illusions

Abstract

Objectives/Goals

The objective was to determine if age and gender would make a difference in decoding hidden images in optical illusions. This is important because if perception is affected by these factors, they probably should be considered in cases such as the admission of eyewitness testimony.

Methods/Materials

Thirty persons of both sexes, in three age ranges (5-15, 16-40, older than 40) were presented with four printed optical illusions and asked to find the hidden image. The time in seconds they took to find it was measured, and means and standard deviations were obtained.

Results

The results showed that people in the range 16-40 decode the images faster, while no significant difference was found between men and women. However, it was found that the subject matter of the image is important: younger kids were better at decoding the image of a dog, and older people the image of a kiss. Women decoded the image of a baby faster than men did.

Conclusions/Discussion

I conclude that the sample was too small to reach adequate conclusions. My hypothesis that persons in the intermediate age range would decode the images faster seems to be supported by the results, but a larger sample would be required, and the subject matter of the images should be taken into account, too.

Summary Statement

Determining if age and gender make a difference in decoding hidden images in optical illusions

Help Received

Father helped in printing images of optical illusions