

The Effects of Anxiety on Short- Term Memory

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8th grade

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About me :)

My name is Meng Fei Shen and I'm currently 13 years old attending Madison Middle School in Tampa, Florida.

I've always been someone full of curiosity when it comes to science, after all, science is such a simple word, but the meaning behind it is to me, infinity. In the broad world of science, there are always questions left unanswered, sitting there to be answered by someone. Everything is science and I hope to become an obstetrician when I grow up, which correlates directly to medical science.

Winning this competition would be nice, but it isn't everything because the experience of conducting this experiment and making this presentation was amazing. Besides, in my heart, I know that I tried my best and already won the most important person that I'm competing with, Meng Fei Shen.

Purpose

This science fair project was performed to test the adverse effects of anxiety on the short-term memory of boys and girls.

Hypothesis

I predict that the students, especially boys, will be anxious about being on in the limelight, which will affect their memory adversely.

Materials

- 5 female 13-year-olds
- 5 male 13-year-olds
- 40 random "things/objects" (toothbrush, cellphone, paper, plate, water bottle, pen, book, etc...)
- Stopwatch
- Paper and Pencil
- Blankets



Procedures

1. Obtain materials needed.
2. Separate the objects into two groups, each group containing 20 objects. Arrange the set neatly in front of the room.
3. Remove the blanket covering the first set of objects. Ensure that each participant is able to see the objects.
4. Allow two minutes for the participants to memorize the names of all the objects and monitor the time using a stopwatch.
5. Give each participant a sheet of paper and pencil. Ask each participant to write down their gender at the top of the paper, followed by a list of the objects that they remember seeing.

Procedures

6. Collect the papers after 5 minutes.
7. Record the number of correct objects recalled by each participant in a table.
8. Allow the participants to relax for two hours.
9. After resting, uncover a new set of items.
10. Give them two minutes to memorize the items.
11. Now, one at a time, put the students in the limelight and have them recite from memory.
12. Record the number of correct objects recalled by each participant and their gender in a table.

Data/Results

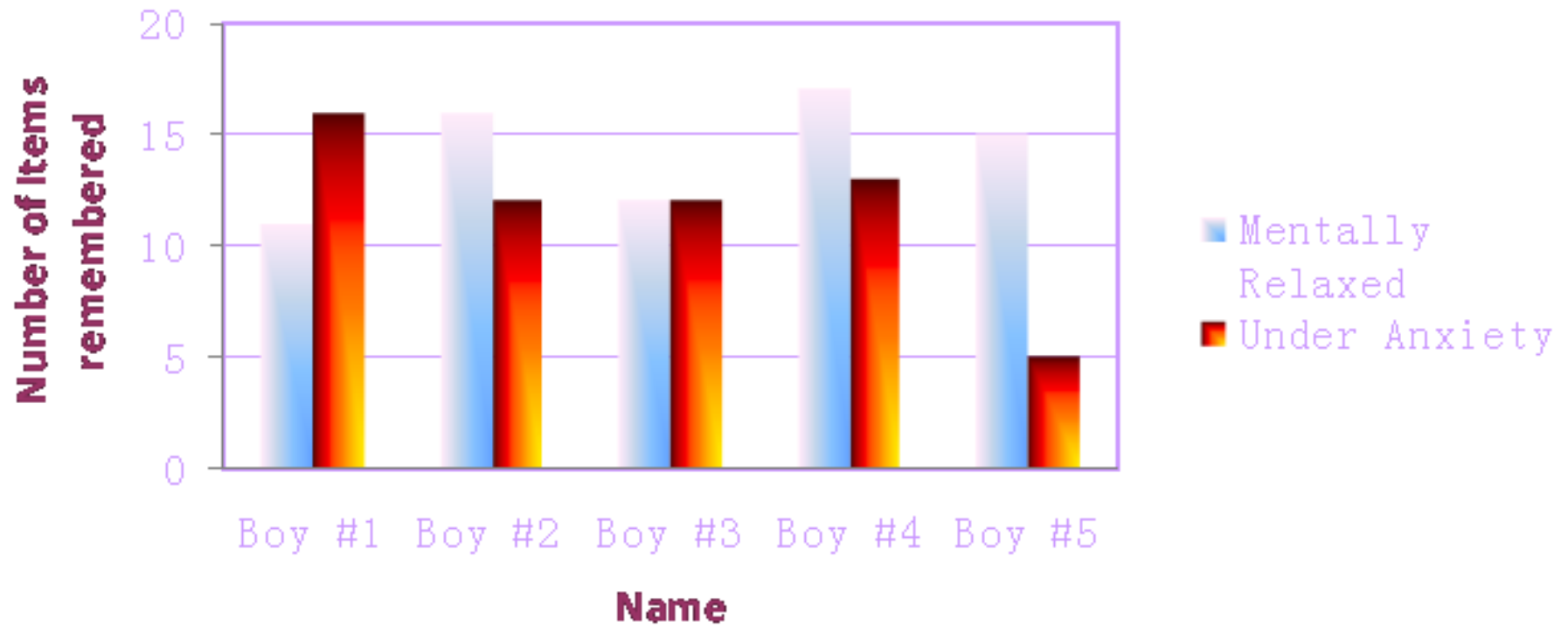
Gender	Number of items remembered when mentally relaxed (out of 20 items)	Number of items remembered when under anxiety (out of 20 items)
Boy	11	16
Boy	16	12
Boy	12	12
Boy	17	13
Boy	15	5
Girl	16	14
Girl	13	10
Girl	10	14
Girl	12	8
Girl	14	13

Data/Results

Gender	Average number of items remembered when mentally relaxed	Average number of items remembered when under anxiety
Boy	14.2	11.6
Girl	11.8	11.6

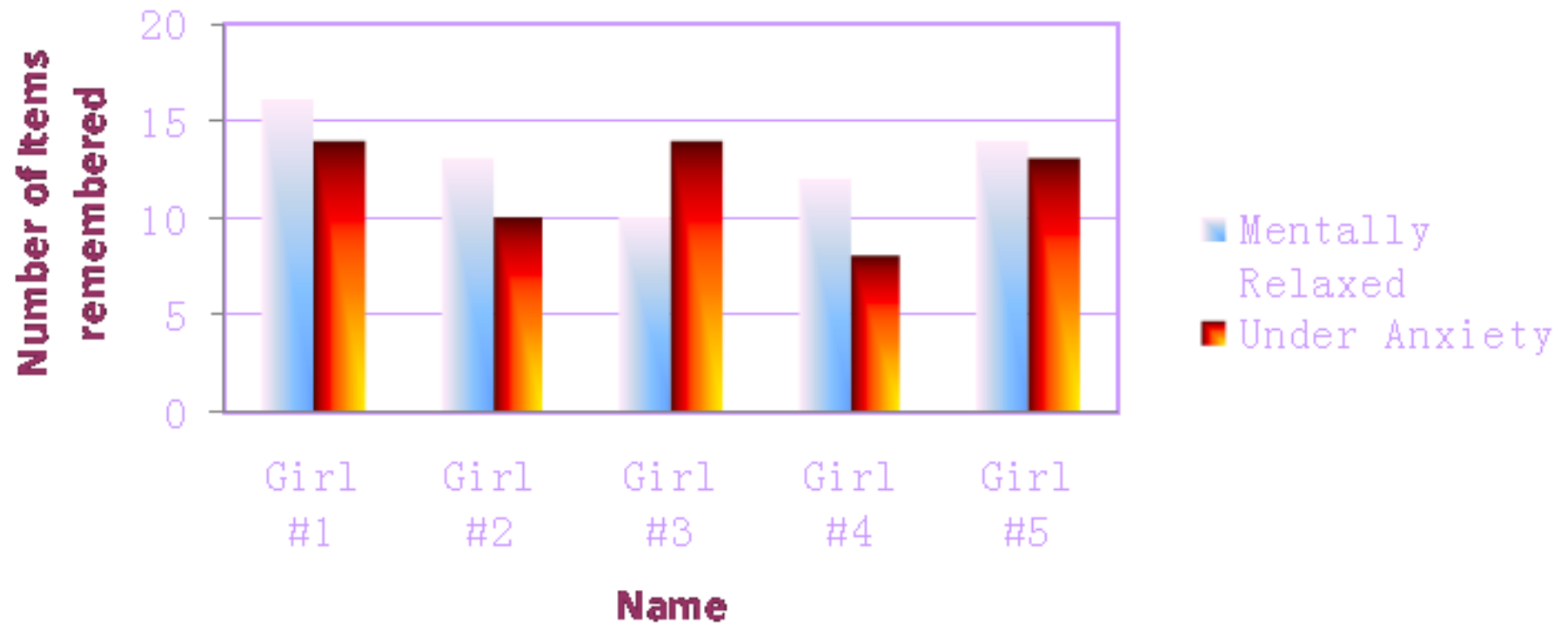
Data/Results

The effects of anxiety on boys



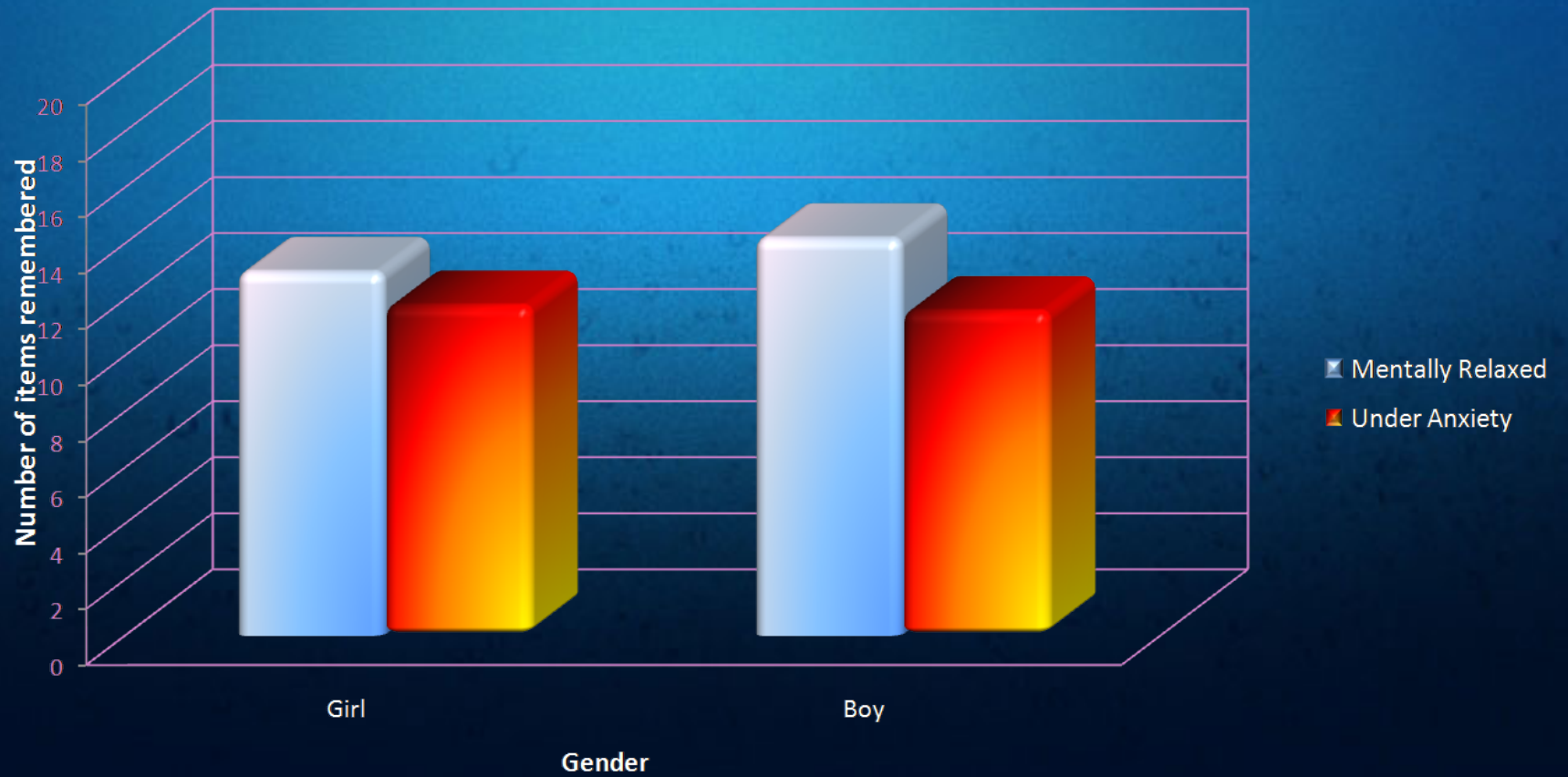
Data/Results

The effects of anxiety on girls



Data/Results

The average of how anxiety affects the short-term memory of girls and boys



Discussion

All things considered, this lab was, in general, what I had expected. But in contrary to my original thoughts, I did not know that boys would have started off better than the girls, which I found very fascinating. According to an essay by Jennn Fusion on eHow, men and women are wired differently, and hence they each are better at remembering certain things. For instance, men are better at memorizing directions while women are better at memorizing emotional events like anniversaries and weddings. I went in to deeper research on this topic and discovered that the human brain is composed of both gray matter and white matter, which represents information processing centers and matter that works to network these systems. In a recent study, UC-Irvine psychology Richard Haier discovered that men had 6.5 times the amount of gray matter than women and women had nearly 10 times the amount of white matter! I find this quite amazing and it definitely explains why the opposite genders are affected differently by the anxiety.

Discussion cont...

In addition, I also made a further research on the effects short-term stress or anxiety to your memory. An essay on the website, Suite101 stated that cortisol is a stress hormone that circulates through your body when feel stressed or apprehensive which may cause minor damage to your memory. However, when you are exposed to long-term stress or anxiety, this may affect your memory critically, which explains why many adults experience long-term stress may have a major decrease in their memories.

Conclusion

In conclusion, my hypothesis was supported. According to my test results, both genders' short-term memory were affected by anxiety, which was when they had to recite it out loud. In addition, as my hypothesis said, boys were affected slightly more than girls. My data supports this assumption and proves my hypothesis.

During my analyzation process in this experiment, I observed that boys started off with a better average than girls in the first test experiment where they were mentally relaxed. However, when boys entered the second round, their memory started to dramatically decrease when they were under anxiety. All in all, anxiety had a stronger effect on boys compromising the fact that the short-term memory of boys were more affected during anxiety.

Abstract

The purpose of this experiment was to find out if anxiety had any effects on short-term memory. My hypothesis stated that I predict anxiety will affect short-term memory, especially boys. This hypothesis was supported by my data collected.

When conducting this experiment, I had two sets of items and they were both covered with a blanket. I revealed one set of item in each round to determine if people are really affected before and after anxiety. I timed each participant in both rounds to ensure accuracy and I kept track of the number of items they remembered.

In general, I found that anxiety did affect both genders, but males were more dramatically affected. When mentally relaxed, boys had a better average in memory than girls. However, unlike boys, girls were only slightly affected by anxiety.

In the final analysis, I was able to assume that anxiety does affect short-term memory according to the data in my experiments. Hence, when most people are put under conditions where they become nervous, their short-term memory will most likely decrease.

Bibliography

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Thank you for reading/listening!