

A study to show the difference in the
Duration of STM between males and females

Summary

The aim of my study was to repeat the work of Peterson and Peterson on the duration of short-term memory between males and females aged 17-18. I took a random sample of 16 pupils from Eggescliffe Sixth Form 8 males and 8 females. They were all asked to complete the Brown-Peterson technique. The statistics used for analyzing the results was Chi-square. The recall sheets showed more females recalled correctly than males, and that the duration of STM is 18 seconds. This accepts my alternative hypothesis and suggests that Peterson and Peterson's findings still hold true today.

Introduction

Peterson and Peterson (1959) demonstrated the duration of STM using a method that became known as the Brown-Peterson technique. Participants were shown a trigram of 3 consonants e.g. DRS, GTH. They were then asked to recall the trigrams either after 3,6,9,12,15 or 18 seconds. Participants were given an interference task before they were asked to recall the trigrams. The interference task was to prevent the participants from rehearsing the trigrams, which might have improved their performance. The interference task was to count backwards from a three-digit number e.g. 354,674.

Peterson and Peterson found that participants recalled 80% of the trigrams correctly after 3 seconds, this however decreased as the time increased. After 18 seconds only 10% of trigrams were recalled correctly. This study showed that STM has duration or 18 seconds. However, if the information is rehearsed then the information is remembered for longer.

I decided to apply the Brown Peterson technique to males and females to see if there is any difference in the duration of STM between the two genders. This would be able to show whether or not a particular sex is able to carry out two tasks at the same time and so them both successfully. I felt it would be interesting to find out if there was a clear difference in duration in SMT between the two genders and if Peterson and Peterson's findings were still relevant to today.

Aim: To investigate whether there is a gender difference in the duration of STM between males and females.

Alternative hypothesis: There is a difference in the duration of STM between males and females.

Null hypothesis: There is no difference in the duration of STM between males and females.

Method

Design: The study was experimental research using an independent groups design. The independent variable was the time delay and the dependent variable was the number of trigrams recalled.

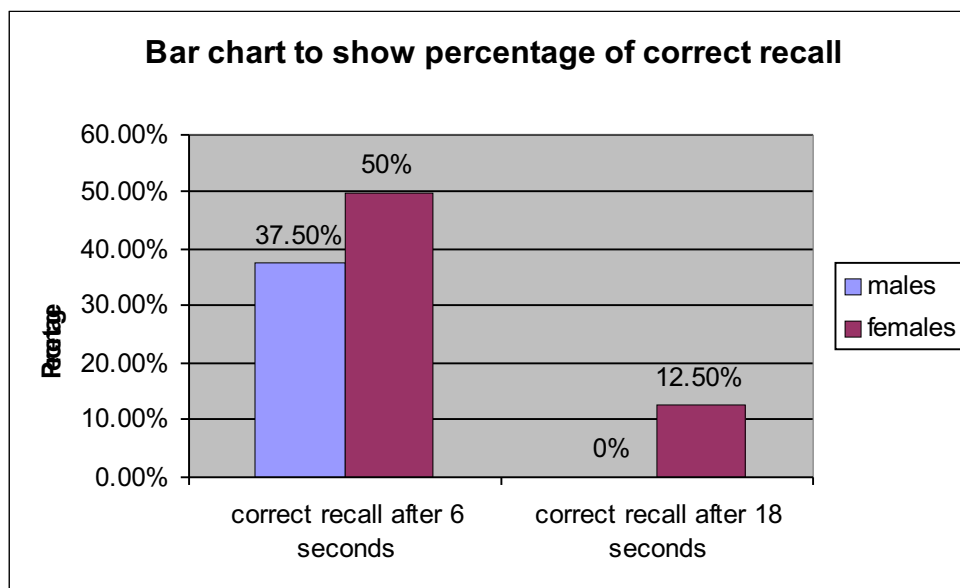
Participants: 8 males and 8 females all aged between 17-18 were used in this experiment. They were a random sample selected so that the results could be more generalized. They were all drawn from Eggescliffe Sixth Form.

Materials: A sheet of instructions and a recall sheet were given to every participant. An OHP was used to project 2 sheets each with 3 trigrams, plus 2 other sheets which both had a 3 digit number on them. A stopwatch was also used to count the time between the interference task and recall.

Procedure: the experiment was held in a classroom, each participant was asked to sit at a desk and read the instruction sheet in front of him and her. They were then asked if they had any questions. The participants were then shown a sheet of three trigrams for 3 seconds. For 6 seconds then had to count backwards from a three digit number shown on the OHP and write this down on the paper provided. They were then asked to recall the trigrams also on the paper provided. This method was then repeated but the participants were asked to count backwards for 18 seconds. After the task was completed the participants were then debriefed.

Results

	All trigrams correct after 6 seconds	All trigrams correct after 18 seconds
Males	37.5%	0%
Females	50%	12.5%



Treatment of Results

In order to analyse whether the results showed any difference between males and female's duration in STM Chi-square was used.

This was an appropriate test because Chi-square can be used to indicate if there is a difference between gender and the duration of STM. The data collected was the amount of correct trigrams recalled by each person. The data was independent as it was impossible for a participant to appear in more than one cell.

$$\text{Formula for Chi-Square} = \sum \frac{[O - E]^2}{E}$$

Calculated value = 6.496428589

Degrees of Freedom = 1

Critical value at $p < 0.05 = 3.84$ (for calculations see appendix)

As the calculated value of 6.496428589 is bigger than the critical value of 3.84 there is a less than 5% possibility that the result is due to chance so the alternative hypothesis can be accepted.

Discussion

The alternative hypothesis, which states that there is a difference in the duration of STM between males and females, is retained. Females in both the 6-second and 18-second task recalled all three trigrams correctly showing 50% correct after 6 seconds and 12.5% correct after 18 seconds. Whereas males only showed 37.5% correct after 6 seconds and 0% correct after 18 seconds on the other hand I did only carry out my experiment on a certain age range so my null hypothesis may be correct. The Chi-Square test indicates that there was less than 5% possibility that the results were due to chance. Whilst there is still a slight chance that my null hypothesis is actually correct it seems safe to conclude that females are more likely to remember and recall information even when they have been given an interference task.

The results confirm that Petersons and Petersons experiment on how long the duration of STM actually is. My results showed a 12.5% correct recall with females after 18 seconds where as Peterson and Peterson's results show 10% recall after 18 seconds. Also Peterson and Peterson's results show a 50% correct recall after 6 seconds, this is exactly the same for my female results, suggesting maybe in Petersons and Peterson's experiment they only used females.

In Peterson and Peterson's experiment it does not distinguish a certain age range. This makes it difficult to show whether my results have reflected Peterson and Peterson's study.

If I were to repeat this experiment I would use more participants of a wider age range to show if the duration of STM increases or decreases with age. I would also have tested the participant's recall after 9, 12 and 15 seconds instead of just using 6 and 18 seconds. I would have also like to try out different stimuli for the interference task such as smells or melodies. A problem that arose during the experiment was that people weren't entirely sure at first what to do even with the clear instruction sheet in front of them. This made it very hard to explain to the participants without giving too much information away. Perhaps if I had done a trial experiment first or written the instruction out more clearly the participants might have understood more. It was clear to see with the use of the recall sheets whether or not the trigrams were correct or not so reliability was not a problem.

The implications of my findings are that Peterson and Peterson's results still hold true today as they did in 1959.

References

Peterson and Peterson (1959) Duration in Short-term Memory: Michael W. Eysenck and Cara Flanagan page 35

Cardwell, M., Clark, L. and Meldrum, C. Psychology for A2 level. Collins Educational.