

**G.C.S.E**

**PSYCHOLOGY - MR HUNT**

**COURSEWORK**

**"HOW GOOD IS THE MEMORY?"**

## HOW GOOD IS THE MEMORY?

### INTRODUCTION

#### AIM:

In this investigation, my aim is to see whether shallow processing or deeper processing lasts long in the human mind. This means that I am checking to see whether people can remember things that can make a story thus meaning more or if they can just remember random things due to physical appearance.

#### RELEVANCE TO SPECIFICATION

In this investigation I am trying to investigate whether people remember more when there is a meaning attached to it or whether they just remember it due to its physical appearance. We are seeing how well the brain remembers things if it finds it harder or easier to remember things that mean little or nothing at all. The area of study I am researching for this investigation is "levels of processing approach". The psychologists that investigated this were Fergus Craik and Robert Lockhart (1972). They were challenging the multistore model saying that there are two ways in which we remember things. Craik and Lockhart believe that people remember things that can be elaborated (linked to other things) on rather than things that are remembered due to visual appearances. These are called shallow processing and deep processing. Shallow is when you remember something because you have not elaborated on it but just remembered it using acoustic processing like remembering a phone number. Deeper processing is when we remember things because we have made links with it and so we associate it with other things so it is easier to remember.

#### HYPOTHESIS

My hypothesis is that people are more likely to remember things where they can make semantic connections, rather than things they encounter on a shallower, seemingly unconnected level? Hopefully by the end of this investigation, I shall have proved my hypothesis correct.

## METHOD

### Design

Every investigation has a design to it. A design in an investigation is the way in which you undertake the experiment. It is the way in which you wish to illustrate your experiment and collate the data. The main designs used by psychologists are, independent measures, repeated measures and matched pairs. Independent measures are when one of the two groups does the experimental task while the other does the controlled task. This means that they get results that are more varied. The downfall of this design is that the two sets of people may vary in their experience, attitudes, intelligence, alertness and moods. Repeated measures are when all the participants go through both of the experiments. This is an advantage as it means that there are no participant variables, which makes it more of a fair test. However, the failure is that they may guess the aim of the study, and know how to react for the next experiment altering the results, making them futile. This is known as 'demand characteristics'. Finally, matched pairs are when the participants have the same characteristics as those in the other groups so that they only need to take part in one experiment. This may be more time consuming and expensive but it means that there is no need to do the test again. The design I am going to pick is going to be repeated measures. The reason is because it allows me to give both experiments to both groups so that there are no participant variables, however I risk the fact that the participants guess the aim of the study, which may cause demand characteristics that will affect the results.

### Experiment

The experiment is the surrounding in which psychologists choose to do their experiments. The six main types of experiments are: laboratory experiment, field experiment, natural (quasi) experiment, survey, questionnaire, and interview. My experiment is taking place as a laboratory experiment. The reason is because laboratory experiments give the psychologists complete control of what is happening. In addition, psychologists get to control all the variables so that they can have the right settings. That is why I have chosen laboratory experiment so that I can make the experiment inch perfect, as I will have total control. Furthermore, it is easier to replicate, an example is Murdock's research on free recall.

### IV and DV

In my investigation, I need to have an IV and a DV. An IV stands for "independent variable". A DV stands for "dependent variable". An IV is the thing that you change in your experiment. It is the thing that you are changing as that is what the investigation relies on. Without the IV, there would be no investigation. The DV is the thing that you measure. This is what you are expecting to happen so that it can be recorded as a result. The DV occurs naturally in the experiment while the IV is altered to differ the results. Without the IV or DV there would be no

experiment and nothing for us to record to see whether our experiment is a success or not.

My IV and DV:

I.V. = The type and range of images shown on the screen

D.V. = The number of images recalled by the participants

### Ethical Considerations

Ethical considerations are a number of things that may affect the participants. It is our duty to make sure that they are comfortable in what they are doing and that they do not feel any negative emotions. Ethics are desirable standards of behaviour we use towards others. It is treating people with respect as they are taking part in our experiment. Furthermore, they are legally entitled to withdraw whenever they feel like it. Ethics are used so that we do not invade personal privacy. Ethics to do with this are confidentiality and withdrawal. Confidentiality means that the participants' data and results are not shown to any one else but kept anonymous, so that they do not get embarrassed if they did poorly. Withdrawal means that the participant has the right to withdraw at any time in the experiment if they are not comfortable. Another ethical consideration is to minimise distress and deception. This is when you make sure that they are not caused physical or mental harm or are not embarrassed, frightened or harmed. Deception means that the psychologists cannot do anything that does not have to do with the experiment so that they don't know what they are doing. However, this may be needed so as not to demand characteristics. Finally, we need to gain consent from the participants and debrief them. Debriefing is when you tell them what they have just done so that they do not feel deceived and know what they had just been doing. In my experiment, I need to consider the following taking into account my participants: confidentiality, withdrawal and distress. The reason this has to be taken into account is because they may feel dumb if they could not remember all the pictures. Furthermore, their results are kept confidential so that they can get the reassurance that no one else shall see their results.

### Control

In order for my experiment to be a success, I need to make sure that there is nothing affecting the participants or I.V. that would affect the D.V. This would mainly affect someone that had independent measures as their design as it would mean that they have two groups, therefore having to make everything identical except for the I.V. In order to control the experiment all the participants have to undergo the same standardised procedures and standardised instructions. Standardised procedures are things that make sure both groups go through the same experience. This means that the place, materials, room lighting and such things should be kept the same so that their results are not affected. Also, the experiment should be at the same type of day so that nothing is affected. In my experiment, I do not have to keep standardised procedures and instructions as I

only have one group of participants but I have to make sure that it is a fair test. This means that everything but the IV has to be the same. This will include the participants getting the same amount of time as each other. In addition, they should all do it the same room, so that nothing different can distract them.

### Sampling

Sampling is one of the most important parts of your experiment. The reason is because it is the way in which you choose your participants. Furthermore, the participants are going to be the ones that determine whether your investigation is a success or not. There are four main ways in which psychologists pick their participants. These are random sampling, opportunity sampling, stratified sampling and systematic sampling. Random sampling is when participants are picked based on the variables that they have that will help with the experiments. These people are known as the target population. It is from here that the participants are picked. Opportunity sampling is when the psychologist picks who they can find and who wants to do it. The downfall of this sampling is that psychologists may pick participants that appeal more to them based on the way they look or the way they comport themselves. Stratified sampling is when participants are looked for based on their features regarding the aim of the experiment. Finally, systematic sampling is when the participants are picked using intervals. This means that the participants are picked at fixed intervals, like a register where every third person may be picked. The sampling that I am picking is "opportunity sampling". The reason is because it allows me to pick anyone. Also, the people are more accessible and whoever wasn't to take part can saving us time.

### Participants

Participants are the people that are going to take part in my experiment. In order to choose my participants, I used opportunity sampling as mentioned in the last paragraph. I used opportunity sampling because it was less time consuming and it mean that I could just take anyone that we thought was available or who wanted to take part. I shall choose 20 participants. The target population are students between the ages of 14-15 who attend Eastbury comprehensive school. The reason I have chosen this number of participants is because it will allow me to have more results, which means that I can make a more accurate conclusion.

### Materials

When doing an investigation it is important that you know what apparatus that you are using. The reason is because some things may affect the participants and alter the results making the useless. The materials that I am using for my experiment are: 10 images that are significant to one another, 10 random images that are insignificant, screen and Elmo, pen and paper and stop watch. The reason I am using the 20 images is because those images are my Independent variables. So, they have to be changes. Also, the average teenager can recall 7 images in their head. However, based on a recent experiment it shows that the average teenager can remember 13 images. That is why I am using 20 images so that it can make my

experiment fairer. I am using a screen as the board of which the pictures are going to be shown and the Elmo is going to capture the images and put it onto the screen. The pen and paper are going to be used by the participants to write down what they can remember. It is going to be used as a way of gathering the data and marking it against each person's name. The pencil and paper are my tools for measuring the dependant variables. Finally, the stopwatch is going to be used so that I can time how long to let them look at the pictures and how long to let them write up what they remember.

### Brief & Debrief

When doing an investigation that is going to contain participants, it is advised that psychologists brief the participants on what they are going to do. The brief can or cannot tell them what they are going to do, but it should let them know that they are not going to be involved in anything that is not to do with the experiment. Furthermore, it is like an introduction into the investigation and you are letting them know that they are taking part.

The final part of an experiment is debriefing the participants. This is needed so that they know what they have played a part in and so that they do not get the feeling of deception. In addition, debriefing is used so that the participants do not feel embarrassed or physically/mentally hurt from the experiment as they would know what they have been doing. Finally they would know what they had just taken part in and why.

### Procedure

A procedure of an experiment is what you are going to be doing. It will be a step-by-step guide to how to perform the experiment. The reason it is going to be like this is so that other researches can look at the experiment in case they too want to do it. The procedure is very important because it shows how psychologists have done their investigations. Without simple procedures, psychologists would have to be working out the same thing, trying it over and over again.

### Here is my procedure:

#### Brief:

Hello ladies and gentlemen. It is our pleasure to announce to you that you are taking part in our memory investigation. We need your help in what we are hope will be a success. You have been chosen to take part in our experiment. We ask of you to behave in a fashionable manner while you participate. You are going to observe a number of images on the screen. You will then be given a certain amount of time to write down as many as you can think of. We will then collect your results and analyse them. Your results are confidential and will not be shown to anyone for any purpose whatsoever. Furthermore, this investigation is not to see how smart or clever you but just for us to gain some results so that we can carry on with our research. Now that you have the concept of our experiment if

you wouldn't like to participate, you may leave now. Thank you. Now the experiment will begin and I would like complete silence.

- I shall put the 20 participants in a room and brief them on what they are just about to see
- I will direct them to look at the screen at which time, 10 images are going to be shown
- I will put in the 10 images that have semantic connections towards one another, and give the participants a minute to look at the screen
- I will then take off the pictures and put on the next 10 images that don't connect in anyway for a minute
- I will hand out the paper and pens while the minute is going on
- I shall then take off the image and the participants will have 1½-minutes to write down as many images that they can remember
- We will then collect their results, debrief them on what they have just been involved in, and answer any questions
- Thank them for taking part in the investigation

Debrief:

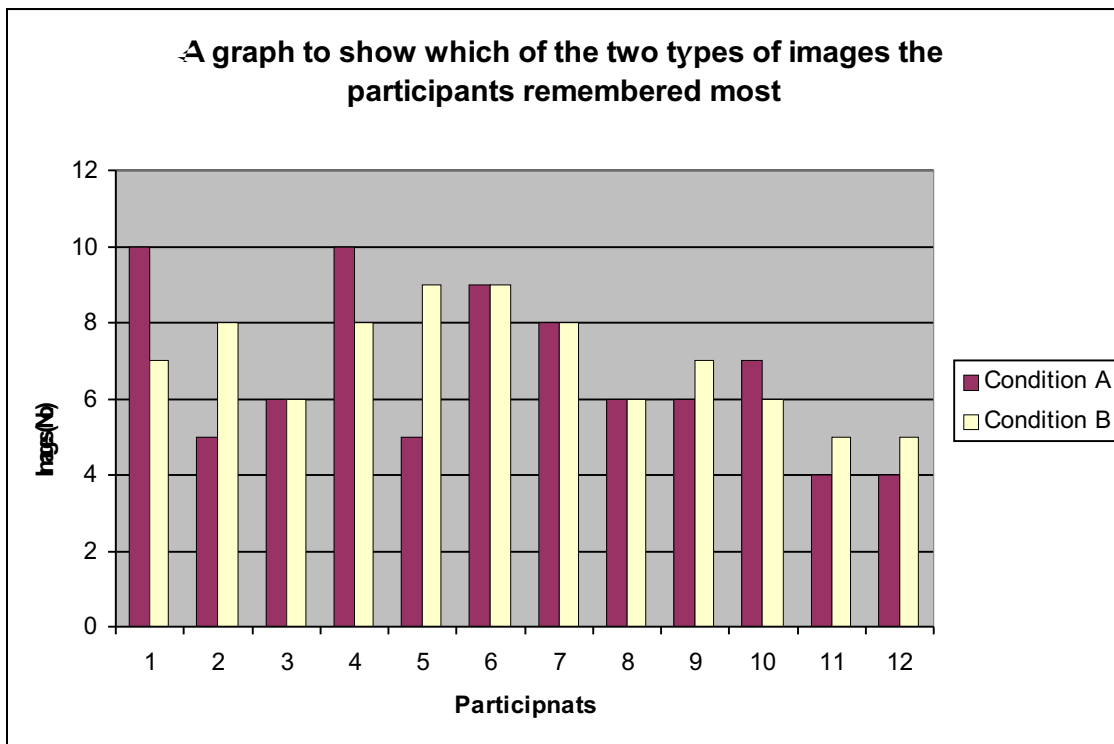
Thank you for participating in our experiment. We hope can now tell you that the reason we called you here was because we were investigating how much more people can remember things based on the connections that they have. We needed you so that we could see how much more you remembered than the other set of pictures and then use it to conclude if our experiment was a success. As we said, in the begging your results are kept confidential and it was not to see how smart you were but how much you could remember. We are more than happy to answer any questions you would like answering to. Thank you once again

# RESULTS

## TEST RESULTS

Number of participants	Condition A		Condition B	
1		√		X
2		X		√
3		-		-
4		√		X
5		X		√
6		-		-
7		-		-
8		-		-
9		X		√
10		√		X
11		X		√
12		X		√
TOTAL	80	3	84	5

My results show that more people remembered the meaning less pictures. This may be because they are more visually appealing which leads to shallow processing.





Data Presentation

Now that I have collated the results I need to put them into a table and graph so that they can be studied easily. The results are first put into a table and then into a graph. The reason the table has been set out in this way is because it shows all of the participants that took part and how many of the pictures they remembered. Furthermore, it tells us which of the two conditions they remembered most and allows room for calculations. Now that a table has been made we need to put it into a graph. There are a number of graphs that can be chosen. These are bar charts, graphs and scatter grams (scatter graphs). The reason I chose a bar chart is because it allows us to see which of the two conditions each participant remembered most. This makes it straightforward to read and easier to work from.

Data Analysis

Data analysing is being able to analysis what the results are trying to show us. It is being able to look at the results and see if a pattern emerges or not. When analysing a graph or chart, there are four methods used. These are mean, median, mode and range. Also known as 'measures of central tendency'. The mean is also known as the average. It is the total of all the scores added together and then divided by the number of scores added together. Median is the middle of the scores when they are put in order of lowest to highest. Mode is how often a score occurs. The range is the lowest score taken away from the highest score to give you a spread of the scores. From looking at the bar chart I will use mean, mode and range.

	Condition A = 4, 4, 5, 5, 6, 6, 6, 7, 8, 9, 10, 10	Condition B = 5, 5, 6, 6, 6, 7, 7, 8, 8, 8, 9, 9
<b>Mean</b>	6.67	7
<b>Mode</b>	6	6 and 8
<b>Range</b>	6	4

After analysing the bar chart we can see that condition B had a better average than condition A, this shows that more people remembered condition B. Also, in condition B the most amounts of pictures remembered was 6 and 8 which shows that the pictures were easier to remember than condition A, where the most images remembered of the 10 was 6. Finally the range shows that condition A, is greater as it has the lowest and highest scores, highlighting the extreme score. In conclusion the results do not go with the hypothesis. However, I believe that there are a number of reasons for this and they shall be discussed in the interpretation and conclusion.

## DISCUSSION

### Interpretation

Interpretation is being able to correctly identify any patterns and relate them to the aim of the study, discussing the implication of the results and discussing the results in relation to previous research.

The results obtained show that most people remembered condition B rather than condition A. The aim is to see which of the two kinds of processing lasts longer in the human mind. Based on the results we can see that shallow processing last longer. The results do not support my hypothesis, which was people are more likely to remember things where they can make semantic connections to, rather than things they encounter on a shallower, seemingly unconnected level. The results have proved this, by more people being able to remember condition B rather than condition A. In relation to Craik and Lockhart's studies, their results challenge my findings. They believe that deeper processing was a easier way of retention as it involves semantically encoding things rather than shallow processing that involves ordinarily encoding things, thus being forgotten quicker. Furthermore they backed up their findings by saying that the reason for this is because deeper processing requires more effort, so it could be the extra effort that increases remembering. In spite of this, my results still did not match their studies. Although, Michael Eysenck considered that their materials used to test shallow processing was not distinctive enough, as a result relating to the lack of remembrance. The fact that condition B was remembered more than condition A, brings me round to thinking that there are a number of reasons for this. As an unexpected finding, I believe that it has something to do with the way the experiment was carried out and the materials used. All of this will be discussed in the evaluation.

### Evaluation

Evaluation is the summing up of the results. It is where you talk about the overall outcome of experiment, also what the weaknesses were and suggest whether there can be any improvements, and offer appropriate suggestions for further research.

As I mentioned in my interpretations, I believe that there are a number of reasons for the inadequacy of my results. These could be because of the way the experiment was set out or maybe the participants showed demanding characteristics. When planning the investigation, I believe that the reason for condition B being retained in the memory longer is because the pictures were more physically appealing which means that they stood out more and were easier to remember. Also, because some of the pictures used related to what was going on at the time. For example, one of the pictures was of Maria Sharapova. This may have been easy to remember because of Wimbledon going on at that time. Another reason for condition A not being remembered so much was because of the amount of pictures shown within the given time limit. Therefore not allowing enough time for the participants to make any semantic connections between them.

Furthermore, I believe that demand characteristics played a part in the results coming out as they were. After condition A was shown, I assume the participants already knew what was coming so they prepared themselves for the next set of images. Hence them remembering condition B easier. When I did the experiment one ethical issue aroused. It was that all of the participants did not want to put their names on their sheet, despite telling them in the brief that the scores were not to measure how dumb or smart they were but just to use for further research. Yet in the pilot study they did not mind. Because we saw the flaws in the experiment, it allowed us to create another experiment more improved. In order to make the experiment a success I think that more time should be given for each of the conditions so that it allows time for the participants to make semantic connections between the images. In addition to this it could be that you keep the same amount of time but reduce the amount of pictures so that they have less to look at. However, based on the pilot study we can say that it would not work if we reduced the amount of pictures. When comparing the results to Craik and Lockhart's results we can see that they differ. Despite that, both results have the same reasons for what has happened. What's more the results obtained oppose my expectations, for this reason there is room for further investigation. In order for the experiment to be clearly decided, I think that it is wise to do the experiment again but with all the improvements mentioned. Also, we should look at the constructive approach by Bartlett to see how people used existing knowledge to remember new things, which means that shallow processing could have more depth to it than we think.

### Conclusion

As the experiment draws to a close, we can say that there are a number of aspects that caused the experiment not to be a success, hence leading to the results. At the beginning of this experiment, my hypothesis was to be able to prove that people are more likely to remember things where they can make semantic connections to, rather than things they encounter on a shallower, seemingly unconnected level. However, the hypothesis has not been supported by the results. Furthermore, these results cannot be used to generalise the hypothesis. The reason I think this, is because a small sample is not enough to represent the target population. The experiment has been a success, not in the region of the results but in being able, to provide evidence that supports the idea that shallow processing requires more thought. In addition, I have learnt that there are a number of reasons why deeper processing tends to have a higher retention rate than shallow processing. Such as, things that require deeper processing require more effort. So that may be the reason they are remembered more. The behaviour of the participants could have caused my results to be unreliable. The reason may be because they did not know what to do next, which means that my debriefing needs to be adjusted so that the participants get the full concept of what the experiment is about. I propose that if the experiment were to be done again that, I would change the procedure and the participants involved. In conclusion, I have been able to answer my aim, and provide evidence that shallow processing lasts longer in the human mind. However, I believe that with further research I can prove that my experiment was not an omission but a triumph.

# APPENDIX A

This is my pilot study. This is to see whether this experiment will be a success and if not then, I can adjust it so that it becomes a success.

*Here is the procedure for the pilot study:*

- I shall put 10 participants in a room and brief them on what they are just about to see
- I will direct them to look at the screen at which time, 5 images are going to be shown
- I will put in the 5 images that have semantic connections towards one another, and give the participants 10 seconds to look at the screen
- I will then take of the pictures and put on the next 5 images that don't connect in anyway for 10 seconds
- I will then take off the images
- I will then entertain them for 10 minutes
- I will hand out the paper and pens in the last minute of the ten
- The participants will have 30 seconds to write down as many images that they can remember
- We will then collect their results, debrief them on what they have just been involved in, and answer any questions
- Thank them for taking part in the investigation

Based on the results of my investigation we can say that it was not a success. One of the reasons my experiment was not a success was because of the lack of images on the screen. Now that I can see that my procedure did not help me get good results I shall design another procedure that should help me in making my experiment more concrete.

PILOT TEST RESULTS

Number of participants	Condition A		Condition B	
1		-		-
2		√		X
3		X		√
4		X		√
5		-		-
6		-		-
7		-		-
8		X		√
9		X		√
10		X		√
TOTAL	34	1	41	5

My pilot study shows that more people remembered the meaning less pictures.  
 This may be because they are more visually appealing which leads to shallow processing.

