

An experiment to investigate the effect of depth of processing on memory

Introduction

Imagine one morning you wake up to find you've completely lost your memory. How do you feel? You would be unable to do many things you take for granted such as remembering your name, age or where you lived nor recognise any familiar faces or voices. You would not recall what you were thinking about few minutes ago or what your plans were for the day, in fact you would be absolutely helpless without your memory.

Memory is the process of retaining information after the original is no longer present. There are many links between learning and memory; certain things that are learned and memory are very similar phrases.

Although specialists who theorize behaviourists would dismiss the idea of memory, because they claim memory is more than just learning, suggesting the involvement of cognitive process. It is important to recognise that a normally functioning memory system must be capable of three stages:

1. **Encoding:** when information is changed into codes so we are able to make sense of it. For example sound waves are changed into words and words are changed into meanings.
2. **Storage:** the information that we encoded then is stored, so it becomes available sometime in the future. Our memory for a word will include memory for how the word sounds like, looks like and what the word means. Different types of information are stored in different ways depending on how we retrieve it.
3. **Retrieval:** retrieval occurs when we try to retrieve information from storage. Sometimes we don't seem to remember something, this maybe because we are unable to retrieve it. For example this can happen when you go to get something from a different room, but as you get to the room you seem to forget what you went in there for. Sometimes returning to the original room often helps us to retrieve the information.

We have looked at some of the research on memory now we will look closely at two models of memory. One of the best-known models of memory is the multistore model.

R. Atkinson and R. Shiffrin (1968) proposed we pay extra attention to information that enters the sensory memory where it can be registered for short periods of time before its lost through decay or passed on to short-term memory. Short-term memory contains a small amount of information, which is active at one time; it can contain seven items so new information displaces information that is already in there. Short-term memory can hold information for up to 30 seconds unless it is rehearsed. When information is rehearsed it is transferred to long-term memory where it will become permanent and can be used in the future although it is possible for loss of information through decay or interference.

Craik and Lockhart (1972) dismissed the idea of the multistore model put forward by Atkinson & Shiffrin and proposed another way of interpreting, they claimed that short-term and long-term stores are not separated, but whether we remember information or not really depends on what we do with it. For example, if your remembering a word by acoustic rehearsal and not thinking about it deeply enough the word is processed at a shallow level and it can be easily forgotten. Whereas if you try remembering the word using different techniques such as rhyming word or using the word to fit a sentence, you are processing this information more deeply and therefore you are likely to recall it.

Aim

My aim for this experiment is to assess the levels of processing and investigating the effect of mental imagery on memory.

Hypothesis

There will be a significant difference between the numbers of words recalled by processing the word to a deeper level.

Null hypothesis:

There will not be a significant difference between the numbers of words recalled by processing the word to a deeper level any difference is due to chance.

Method

Design

The study I am doing is an experimental study, it gives clue about cause and effect and it is very similar to what Craik and Lockhart did. To test my theory I asked two volunteers to look at a piece of paper and answer yes/no questions containing words (please see appendix) in the piece of paper there was two different sections known as the shallow and deep end. This theory was used to test how many words the participant would remember.

The independent variable in this experiment was the participant's depth of processing in the deep or shallow end. The dependent variable was the number of words recalled from the memory test. Extraneous variable can affect the experiment and the results. To control my variable all participants will follow the same method. Standardised instructions (please see appendix) and a standardised material that concluded a blue or black pen. The experiment was beneficial because the same material could be used for experimental and controlled conditions.

Participants

The participant I chose were aged 16 and over. I did not choose children because they need to have parental consent for ethical reasons. The two participant involved in the experiment was a male and a female; I chose them by means of an opportunity sample. For instance males may react differently to females.

Due to ethical right I informed the participants that they had a right to leave during the experiment or withdraw their results at anytime if they wish to.

Materials

- 2 resource sheets include both sections, for the shallow section it required the participants to process information structurally and phonetically, but for the deep section it required the participant to process information semantically (please see appendix 3&4)
- Pen (black or blue)

Procedure

My data consisted of approaching participants and asking them for their permission "im a GCSE student taking psychology, will you please take part in my experiment established my data? It will involve completing a questionnaire and then you will be required to write down a list of words." I informed my participants that their name would remain confidential and that the experiment would take about 15 minutes, also they had as long as they like to answer questions and recall words. The participants were given the resource sheet alone with a pen and were told to write down their age and gender and to answer the questions given with a yes/no answer, and then each participant was tested to see how many words they would recall on each section.

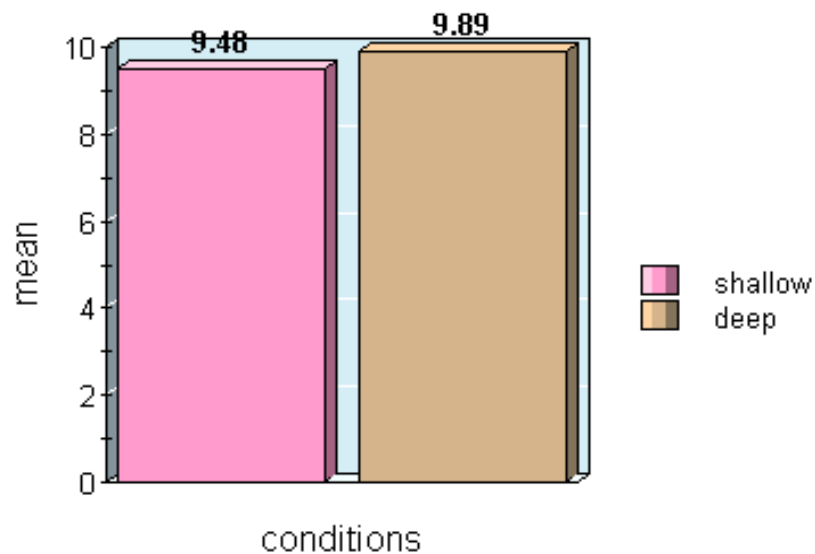
Afterwards I debriefed all participants involved and told them that the experiment was to discover whether people recall words when processed to a shallow or deeper condition.

Results

This is a summary table to show my results

	Shallow	Deep
Total	275	287
Mean		
Median	9	9
Mode	6,7,9,13	5,7,8,10,13,17
Range	18	18

This is a bar graph to show the mean for the shallow and deep condition.



The bars are not touching because these are two different results.

Discussion

It seems that those participants who processed the words to a deeper condition than a shallow condition were able to recall more words. Therefore there was a significant difference and my hypothesis can be accepted, nevertheless my results show many similarities, the median for both shallow condition and deep condition was a 9, the range for both condition was 18. This shows although there was a significant difference it was not a big difference also 7 and 13 was a common number for the mode.

However my experiment still backs up Craik and Lockhart's experiment because most participants found that processing words to a deeper condition, helped recall those words. But my results show that there wasn't a big difference to words being processed to a deeper condition than a shallow condition.

Looking back at this experiment and in my introduction we can say that there appears to be many different factors to memory, so therefore we cannot say memory is based on one factor.

The experiment was biased towards people age of 16 + and a representative sample of the population was not gained, also the participants were volunteers and therefore it is biased towards "volunteering" type of person.

If I could do the experiment again I would ask more people and get more results, I would also explain the experiment in more detail so that it is more ethically right. I would also make the words more bold and clearer on the resource sheets as this could help participants.

References

<i>Author</i>	<i>Title</i>	<i>Publisher</i>
Mike Cardwell Liz Clark Claire Meldrum	Psychology for A Level	Published by HarperCollins
Barbara Woods	Psychology First	