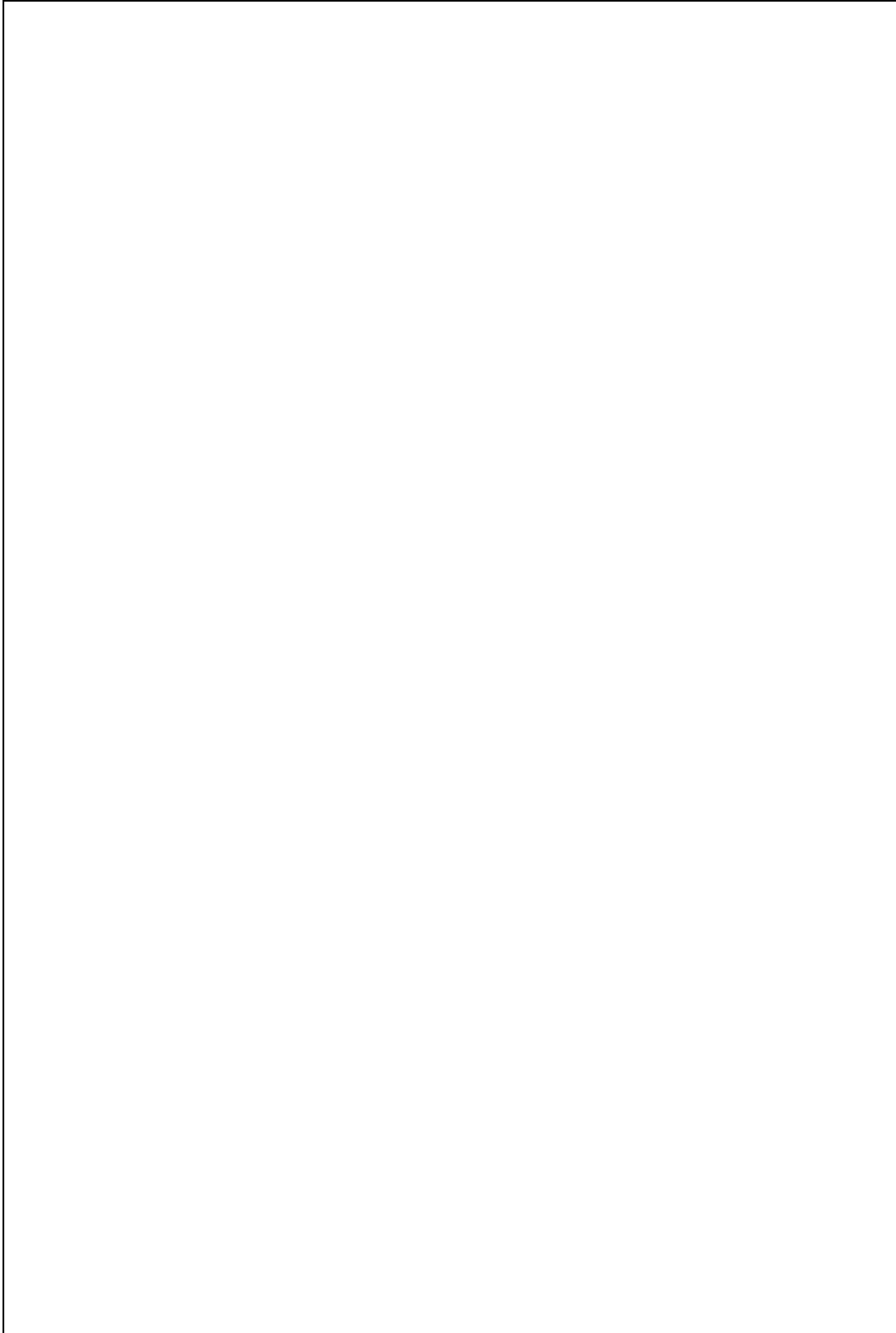


# MEMORY



**Abstract**

1. This experiment studies the effects that organised and unorganised lists have on the performance of memory recall. Participants were randomly assigned to conduct an experiment using two different methods; words in a random format and in an organised format.
2. There were twenty subjects, split into two groups (10 participants in each). They viewed word lists that were the same, using countries only, but they were structurally different (one organised and one unorganised). The participants were then asked to recall the words from the lists.
3. The participants using the organised list did not do as well as expected and the participants that used the unorganised list did better than expected. Surprisingly, the results of the research showed that there was little difference between the two groups, regardless of the organisation.
4. The research did not support the research previously conducted by Bowers et al (1969)
5. The research showed that a larger participant sample, chosen more randomly over a longer period could give better results.

## **Introduction**

Human memory is similar to computer memory, enabling us to store information for later use. There are two main types of storage for our memory - short-term (STM) and long-term memory (LTM). This course work will only be covering STM, as this is what we will be investigating in this experiment.

In STM there are three main theories as to why we forget things.

- \*Displacement: Existing information is replaced by newly received information when the storage capacity is full, Waugh and Norman (1965).
- \*Decay: Information decays over time.
- \*Interference: Other information in storage at the same time, distorts the original information, Keppel and Underwood (1968).

Short-term memory is often called active memory or working memory. What ever you are actively thinking about or working on at a given moment is held in this memory system. Information taken into the STM must be limited; otherwise we would be overwhelmed by sensory stimuli. One process that is crucial to preventing STM overload is selection attention, whereby some information is screened out when entering a given sensory channel, whilst attention is directed to other information entering that channel. Encoding occurs when you use deliberate encoding strategies (verbal labelling, mental pictures etc) to put something into STM. Once information is placed in STM, it will fade in less than half a minute if it is not renewed by rehearsal (repeating it mentally). Retrieval of information from STM is direct and immediate because the information has never left the conscious mind. Information can be maintained in STM indefinitely by rehearsal (repeating it over and over again).

When recalling information, it has been proven that we are more likely to remember the first few and last few items, this is called the primacy and recent effect. Research carried out by E J Thomas (1972) cited by Hayes (1984) states that the memory for the beginning and end of a lecture is almost perfect but reduces dramatically from the middle toward the last ten minutes, it is also stated that if the lecture was broken up into smaller blocks of learning with short breaks, there are more times at which the primacy and recent effects can occur.

This experiment was to test two separate groups that were chosen at random, showing their level of recall of words given to them. An organised list was given to one group, whilst an unorganised list was given to the other group. The experimenters chose the words, of countries that they had travelled to. The purpose of this experiment was to test Bower's findings on his own experiment; the group that produced the best results on recall were the organised word list group.

The opportunist sampling of participants were used to test memory. The two groups were tested on their level of recall. By testing exactly, both Independent and Dependant Variables, which needed to be under, exact conditions in a quiet room with no distractions.

The experiment conducted in this research study is similar to that of Bower et al (1969), but with the exception of the distraction task. This is to see if organization of words will or will not affect recall of information. Bower et al (1969) conducted an experiment to see whether organisation would affect recall in the short-term memory (STM). He gave his subjects either an organised list of words or a randomised list of words. A distraction task was also given, to ensure that his subjects were using their short-term memory. His test of free recall provided results, showing that the subjects recall from the organised list was greater than that of the randomised list.

The aim of this experiment is to prove whether information is easier to remember if in an organised or randomised format.

### **Hypothesis (Null)**

Differences (if any) in the participants remembering more words from the organised list than the participants remembering words from the unorganised list will be due to chance.

### **Design**

Participants were chosen through opportunity sampling, with an equal number of males to females, aged between 15 and 65. The lists were constructed by choosing 12 different countries that the experimenters had visited, and twelve countries that they would like to visit in the future. The organised list was arranged into four different continents of the world, with six countries being allocated to each continent. The second list was arranged into one long list of countries, randomly and with no pattern. A list of instructions was written out to give to the participants, in order that no bias could be shown when instructing them what to do.

The independent variable (IV) is shown in the experiment as providing organised information, were as the dependant variable (DV) provides free recall. A pilot test was carried out, as initially, the time limit for the experiment was four minutes to study the lists of words and three minutes for the recall. The time was changed to three minutes to study the lists and two minutes to recall; this was due to the pilot test finding, showing the timings to be too long.

### **Materials**

The stimulus materials consisted of word lists, in this case, countries. Appendix 1 shows the list that was randomly organised and Appendix 2 shows the other list that was organised into countries within continents (four mini lists with headings). Pen, paper and a stopwatch were used in this experiment.

### **Participants**

Ten males and ten females were chosen in total. Ten of these overall participants were from Totton College and the other ten were from the home environment. To give an accurate representation of a wide generation, the participants were aged between 15 and 65. The sample was opportunistic, meaning that the first people seen over a period of time were sampled (as opposed to pure random sampling).

### **Procedure**

The participants were given a standard set of instructions, stating that they follow and read instructions carefully (Appendix 3). Once participants had completed reading instructions the test of free recall was given. Following this a verbal debriefing was given (Appendix 4). Only one person withdrew from the experiment after reading the instructions; claiming to having a bad memory.

## **Results**

The results from the experiment supported the null hypothesis, as the results were unfounded by the experiment researched by Bowers et al (1969). The findings were that both methods used for the two groups proved that there was little difference – as both sets of results proved to be similar. Appendix 6 shows a frequency polygon graph (showing two sets of data); indicating that overall participants with the randomly selected list of words were more consistent as opposed to the group that had the organised words. An autonomous assumption regarding the experiment could relay that the random list appeared much harder to digest, mentally, therefore more concentration went into studying them and that the organised list may have seemed like more words to remember as the lists were more spread out and separated into categories, thus making the experiment seem more overwhelming.

## **Discussion**

The results from this experiment do not support Bowers et al (1969) experiment, thus supporting the null hypothesis made at the beginning of this experiment. There was little difference between the participants from both groups. Although the random listed group was more successful and scored more consistently, also proving to be higher in showing the mode, median and mean. Sleep deprivation could be a factor in the group that had the organised list, in that three of the participants were night shift workers. Also, one of the organised group participant's claimed to be dyslexic.

## **References**

- Appendix 1 Random list
- Appendix 2 Organised list
- Appendix 3 Instructions for the memory experiment
- Appendix 4 Debriefing experiment
- Appendix 5 Results (table format)
- Appendix 6 Graph

## **Bibliography**

- Class notes, 2002-3
- Baddeley A, 1990, Human Memory
- Jarvis M et al, Angles on Psychology
- Wortman and Loftus, 1992, Psychology fourth edition

**Appendix 1**

**UNORGANISED LIST OF COUNTRIES TO MEMORISE**

KENYA  
THAILAND  
FRANCE  
ARGENTINA  
CONGO  
PAKISTAN  
SPAIN  
BRAZIL  
NIGERIA  
MONGOLIA  
ITALY  
MEXICO  
ZANZIBAR  
INDONESIA  
HUNGARY  
CUBA  
MOROCCO  
MALAYSIA  
POLAND  
PERU  
ETHIOPIA  
MYANMAR  
GERMANY  
URUGAY

**Appendix 2****ORGANISED LIST OF COUNTRIES TO MEMORISE**

AFRICA	ASIA
Kenya	Thailand
Congo	Pakistan
Nigeria	Mongolia
Zanzibar	Indonesia
Morocco	Malaysia
Ethiopia	Myanmar

EUROPE	SOUTH AMERICA
France	Argentina
Spain	Brazil
Hungary	Mexico
Poland	Cuba
Italy	Peru
Germany	Uruguay



### **Appendix 3**

#### **INSTRUCTIONS FOR MEMORY EXPERIMENT**

1. Read and follow the instructions carefully.
2. Look at the following list of countries.
3. When informed, you will be asked to study the list for 3 minutes.
4. Once the 3 minutes are over, you will be asked to no longer look at the list and proceed to turn it over, away from view.
5. You will receive a blank sheet of paper, to write down the countries that you can remember. You will be allowed 2 minutes only.
6. Do not worry about spelling mistakes and thank you for your cooperation.

**Appendix 4****DEBRIEFING OF THE EXPERIMENT**

An explanation of the study was given by stating the aim of the study being memory and reasons why the subjects were not fully told what the experiment entailed. This was because the subjects could then have designed ways to organise the word lists. This was justified as the experiment was harmless and debriefing was given afterwards. The experiment was conducted in a quiet room with no distractions so as not to give any stimulus, which may aid the subjects' recall. This is an attempt to control any extraneous variables. The subjects were also told before the experiment that they could withdraw from the experiment at any time during the procedure.

**Appendix 5****RESULTS**

<b>ORGANISED LIST OF COUNTRIES</b>	<b>UNORGANISED LIST OF COUNTRIES</b>
13	12
12	11
7	12
12	13
9	15
15	11
18	10
4	13
10	17
10	8
110 = Total number of correct countries from 10 participants	122 = Total number of correct countries from 10 participants

The results demonstrate no significant variation, however I was surprised to find that the random list of countries had a higher score in the total, median and mean (see below).

	MODE	MEDIAN	MEAN	RANGE
TOTAL ORGANISED LIST	10, 12	11	11	15
TOTAL UNORGANISED LIST	11, 12, 13	12	12.2	10

**Appendix 6**

**GRAPH**

\*There is no correlation shown, in the graph below.

\*The maximum amount of words remembered, in both categories, range from 9 to 14.