An experiment on memory recall.

Introduction

The aim of my research is to analyse and look into further detail on how different encoding styles affect our memory recall. This is linked to Atkinson and Shiffrin who had a multi store memory theory which suggests that there are three separate memory stores: sensory memory, short term memory and long term memory. In this particular theory I will be focusing more on the short term memory store as that is what the experiment is based on. According to their theory, by remembering words using our acoustic sense we remember seven words (± two words) when listening for a duration of 15-30 seconds. We do this from encoding. This is where information is changed (or ended) so that we can make sense of it. Light waves are converted into images, sound waves are converted into words, and words are converted into meanings. Once encoded the information can be stored.

Aim

The aim of my experiment is to explore the different encoding styles (acoustic and visual) and to find out if it has an effect on our memory recall.

Hypothesis

As Atkinson and Shiffrin estimated that we could remember around 7 words when spoken to us. I think that I could do a lot more if I can look at the image so I can re-visualize them when trying to recall them. Therefore my prediction is that the participants will recall more words visually shown to them as opposed to the words verbally shown.

Method

Design

I am using a laboratory experiment for this with 24 participants. A laboratory experiment is good because I can manipulate the variables (Independent variable and dependent variable); the procedure is standardized and therefore replicable making the experiment reliable. I will use 15 different words for each experiment. To make this test as fair as possible I will relate the words on each experiment. For instance, if I used the word cat for the visual memory test I would use something like dog for the acoustic test. I will try to vary the 15 words on the separate tests and throughout the 30 I will make sure that nothing gets repeated. My independent variables are the visual and acoustic memory aids as these are the things I am changing and analyzing. My dependent variable is the

amount of words that are remembered as this is the thing I am measuring. The amount of time I give the participants and the amount of words I ask them to remember are all control variables because I need to make sure that these are kept the same in order for my test to be as accurate as possible

Participants

In this experiment the participants I will use are a group of year elevens at a secondary school. They will be selected by opportunity sampling as this will be the easiest way to get the experiment running as soon as possible. The advantages of opportunity sampling are that it allows a larger quantity of sampling much more easily and quickly. Usually the results collected are quite accurately therefore it can be a much more convenient.

Materials

I will use 30 everyday objects, 15 for each experiment. For the visual, I will put the pictures on a PowerPoint slide and onto a projector so that all the participants have a clear view. For the acoustic experiment I will have 15 words listed on a piece of paper. The table I will record and will be done with a pen, paper, pencil and a ruler and I will also give the participants this equipment so they can record the words they have remembered.

Procedure

This experiment will last for 30 seconds. I will issue the participants with a piece of pen and paper before the experiment. For the acoustic I will repeat each of the 15 words twice. After, I will give and time the participants one minute to recall and list the words that they remember. I will then write down the 15 words on a whiteboard and produce a simple table showing their results. For the visual, I will have the 15 pictures up on a PowerPoint which will be put on a projector where I will give them 30 seconds to look at them. Again, I will then time one minute where they will list down the pictures they remember and I will produce a table. Finally, I will compare my results and see whether my hypothesis was right and they visual test did better. Or if my hypothesis was wrong and the acoustic test came out better.

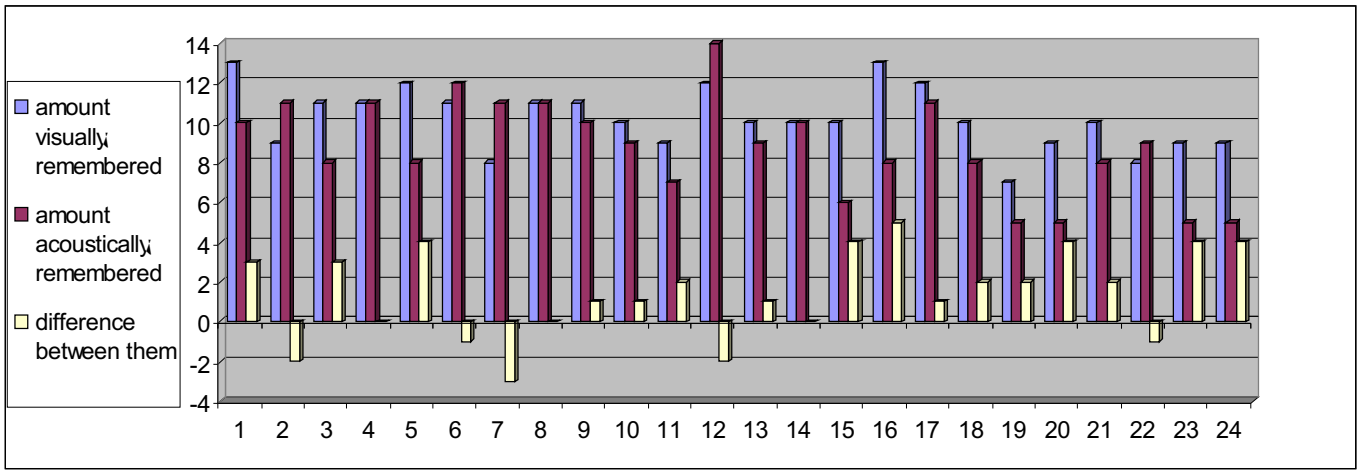
Ethics

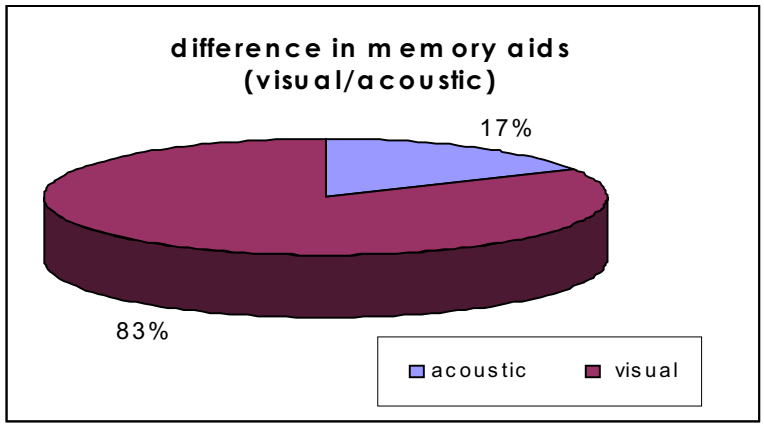
In this experiment I had to consider the 'four C's'. These are consent, confidentiality, conduct and competence. To make sure I include consent I will tell the participants what the research is about and then tell them that they have a right to withdraw at any time through the procedure. I will not deceive them into taking part and will ask for their full permission. After the experiment I will debrief all of the participants. I will

keep everything confidential by keeping the identity of my participants unknown. They will be represented as number data in my research to protect their anonymity. I will also keep any extra data from my participants to myself as it will be unethical to give information to anyone else. I will have competence in my experiment by working within my limits and not giving any advice that I do not fully know or understand as some people tend to think that anyone studying psychology is able to advise them. Conduct will be in my experiment as well as all the equipment being used is everyday items that are not harmful. I will not do anything during my experiment that may cause any of the participants any psychological harm or physical harm. For all of my participants I will make sure they feel as good about themselves from when they have started to when they have finished my experiment. I will be honest about my opinions and will never make up any data or use someone else's data claiming that its mine. The last thing that I have to ethically consider is that everything that is done will be done legally.

Results

Participant	Visual	Acoustic	Difference	Participant	Visual	Acoustic	Difference
1	13	10	+3	13	10	9	+1
2	9	11	-2	14	10	10	0
3	11	8	+3	15	10	6	+4
4	11	11	0	16	13	8	+5
5	12	8	+4	17	12	11	+1
6	11	12	-1	18	10	8	+2
7	8	11	-3	19	7	5	+2
8	11	11	0	20	9	5	+4
9	11	10	+1	21	10	8	+2
10	10	9	+1	22	8	9	-1
11	9	7	+2	23	9	5	+4
12	12	14	-2	24	9	5	+4





My table shows that around 1 more word is remembered when the memory test is done visually rather than acoustically which agrees with my hypothesis. I have worked out the mean to find out this average. The bar chart is a clearer way to show my findings. The white bars to represent the difference between the memory aids have been done to show how it mostly agrees with the hypothesis. The white bars going down to minus numbers are to show how many more words the participants remembered acoustically whereas all of the white bars that go up to a positive number show how many more words are remembered visually. I have also created a pie chart to show the statistics. As you can see 87% of the difference in words remembered from the participants was visually and only a mere 17% of the total of the difference in words were remembered acoustically. This supports my hypothesis greatly as my main findings show that more words are remembered when using a visual aid. I also think it supports my hypothesis as a much greater number of words were remembered opposed to Atkinson and Shiffrins theory whish said 7 (± two words) would be remembered. Their theory was right if I base it on my results as the average worked out as 9 (8.79) words were remembered acoustically. But when I worked out the average for the words remembered visually it came up to 10 (10.2) words being remembered instead so it has increased.

Discussion

From this experiment we have been able to determine the results of the visual memory aid being a better way for us to encode things in our short term memory opposed to acoustically. I have definitely succeeded with my aims and hypothesis. The aim was to explore different encoding styles and to see if it affected our memory recall. I have done this by experimenting with them and have found out the results. I have also done my hypothesis by finding out that visually remembering things, it makes our memory recall better. I worked out the averages and more words were remembered than the theory of Atkinson and Shiffrin when done visually. When done acoustically it was at the top end of their theory. In addition, this shows that mainly all participants are better encoding so we may be better transferring light waves to images.
There might have been some problems in the experiment. From minor things going wrong like distractions in during it. The wasn't done in an

isolated area and all the participants were kept in the same room so there is possibilities from getting distracted from one test more than the other. Instead they should have done the experiments in smaller groups to reduce the amount of distraction. This experiment also was not reliable as it was not repeated. It should have been repeated with either different words or a different set of participants to make the results more secure and valid. The participants knew what the hypothesis is so there could as well be some elements of demand characteristics which would make this experiment biased. This is where the participants will try to please the researchers by trying to do what the hypothesis and aims are. This could easily be improved by not informing them on which encoding style the researchers thought would do better.