International Baccalaureate
Form 3/CS

Internal assessment: group 3
Individual candidate cover sheet

SUBMIT TO: **MODERATOR** ARRIVAL DATE: **20 APR / 20 OCT** SESSION: MAY 08

SCHOOL NUMBER:

SCHOOL NAME: S

* *Type or write legibly using black ink and retain a copy of this form.*
* *Attach one completed copy of this form to the work of each candidate represented in the sample.*

SUBJECT: PSYCHOLOGY LEVEL: SL

CANDIDATE NAME:

CANDIDATE SESSION NUMBER:

TITLE(S) AND DATES OF WORK: (complete if appropriate)

(1) AN EXPERIMENT INVESTIGATING THE
(2) EFFECTS OF SUGGESTION ON HUMAN
(3) MEMORY
(4)

Teacher declaration
To the best of my knowledge, the material submitted is the authentic work of the candidate.

Signature of teacher: Date: 2008-03-17

Types of work undertaken (to be completed by teacher)
(for example, written assignment/essay /case study/f ieldwork/portfol io/photography/v ideo/computer)

Geography SL: note whether the one piece is *fieldwork* or a *research assignment* and to which theme it is linked.

Business and management SL: note which of the prescribed list of topics/subtop ics *(Business and management guide, February 2000, page 45)* the subject matter of the investigation is linked

Other relevant information (where appropriate)

Teacher support (where a candidate could not have completed the work without substantial support, please indicate)

International Baccalaureate **Form 3/CS (reverse)**

SCHOOL NAME: .....

SUBJECT: PSYCHOLOGY LEVEL: SL

CANDIDATE NAME: _

ASSESSMENT CRITERIA: *Complete the boxes for the appropriate subject*

	A	B	C	D	E	F	TOTAL
	0–2	0–5	0–4	0–5	0–2	0–2	0–20
History HL and SL:							
	0–5	0–5	0–5	0–10	0–5		0–30
Geography HL:							
Geography SL: (Note: Criterion B has two alternatives—fieldwork or research assignment)	0–5	0–5	0–5	0–10	0–5		0–30
	0–2	0–4	0–5	0–5	0–4		0–20
Economics HL and SL:							

	A	B	C	D	TOTAL	MEAN TOTAL
	0–5	0–5	0–10	0–10	0–30	0–30
Philosophy critical analysis:						
	0–5	0–5	0–10	0–10	0–30	
Philosophy philosophical dialogue:						

	A	B	C	D	E	F	G	TOTAL
	0–5	0–2	0–2	0–2	0–4	0–8	0–2	0–25
Psychology HL:								
	0–2	0–2	0–2	0–2	0–4	0–6	0–2	0–20
Psychology SL:	2	2	2	2	4	5	2	19
	0–2	0–5	0–3	0–5	0–3	0–2		0–20
Social and cultural anthropology HL:								
	0–4	0–4	0–4	0–4	0–4			0–20
Social and cultural anthropology SL:								
	0–4	0–5	0–7	0–5	0–4			0–25
Business and management HL:								
	0–4	0–4	0–4	0–4	0–4			0–20
Business and management SL:								
	0–6	0–4	0–8	0–5	0–2			0–25
Islamic history HL and SL:								
	0–4	0–5	0–5	0–5	0–2	0–4		0–25
ITGS HL portfolio piece 1:								
ITGS HL portfolio piece 2:								
ITGS HL portfolio piece 3:								
ITGS HL portfolio overall marks								

	G	H	I	J	K	L	M	TOTAL
	0–3	0–4	0–10	0–6	0–3	0–6	0–3	0–35
ITGS SL project:								

	N	O	P	Q	R			TOTAL
	0–3	0–4	0–4	0–7	0–2			0–20
ITGS HL portfolio extension								

An experiment investigating the effects of suggestion on human memory

Psychology Standard Level

Date of submission: May 2008
Word count: 1500

Table of contents

Abstract

This experimental research is on human memory's susceptibility to suggestion. It is a replication of Loftus & Zanni's experiment on memory distortion from 1975. The aim is to see how misleading post-event information, in the form of questions and statements on a memory test, will affect participants' memory of a picture. The research hypothesis states that participants who receive presupposing questions and statements will score less on the memory test than the participants who receive the non-presupposing questions and statements. The experiment uses an independent measures design, and the participants are an opportunity sample of adolescents of both genders. The results did not support the research hypothesis; remarkably, the experimental group scored 70 per cent correct, whereas the control group scored 61 per cent. The subsequent conclusion was, however, not that these results challenged the reliability of Loftus & Zanni's results, but that with some modifications their experiment could have been replicated to a greater degree.

Introduction

Fredric Bartlett (1932) has performed a number of experiments on reconstructive memory. In one of these he asked his participants to reproduce stories from the folklore of foreign cultures, which in content and structure were unfamiliar to his Western participants. The participants' memorial reproductions showed reconstructions that were "more logical, coherent and generally 'sensible'" based on their cultural conceptions. This meant that, contrary to the stimulus-response theory (associationist models) which suggests that memory involves processes in which the output matches the input; memory actually involves interpretative and reconstructive process affected by prior knowledge and experiences.

These findings now make up the essence of what is referred to as the Schema Theory (e.g. Rumelhart & Norman, 1983). It says that what we already know about the world greatly influences what we remember. The benefit of schematised memory lies in its efficiency; the 'essence' and not the details are what we most commit to memory thus we are able to store and retrieve more information than otherwise possible, it is also apart of the 'effort after meaning'. However, the interpretative and reconstructive nature of our memory becomes a great concern in courts, where the accuracy and reliability of eyewitness testimony is extremely important.

The American psychologist Elisabeth Loftus and her associates have performed a series of studies on memory distortion. In Loftus and Zanni's (1975) experiment the participants viewed a video clip of a car accident, subsequent to which they were asked a number of questions on the video. A group were asked, for instance, "did you see a broken headlight?", while another was asked "did you see the broken headlight?" In fact, a broken head light was not featured in the video, but the latter question presupposed it. 7 per cent of those asked the former question replied "yes", while 15 per cent of those asked the latter question replied "yes". The conclusion was that memory can be easily distorted and modified. These experiments have, however, faced some criticism; Cohen (1986) points out that insignificant details are easily distorted, and McCloskey and Zaragoza (1985, 1989) suggest that the results are potentially effected by experimenter's expectancy.

The aim of this study is to determine if misleading information (in the form of questions) will distort memory, through a partial replication of Loftus and Zanni's (1975) experiments.

Research Hypothesis (HI): Participants who receive the presupposing questions/statements will have lower correct scores on the memory test than the participants who receive the non-presupposing questions/statements.

Method

Design

To prevent participants from working out the aim of the experiment independents samples were required; this method also eliminated order effects. However, convenience and a time constraint prevented an effective control of subject variables, but the large size of the samples to some extent may have balanced them out. Further controls included, the single-blind method, the participants not being allowed to interact during the experiment and the number of questions/statements on the test. Informed consent was obtained from the participants. They were debriefed upon the conclusion of the experiment, and a debriefing letter on the results was sent to them at a later date. The independent variables are the presupposing and non-presupposing questions/statements. The dependent variable is the amount of correct answers achieved in the memory test.

Participants

The participants were and opportunity sample consisting of two classes, the target population would be students of the same year in the school but this is compromised by the opportunity sample. One sample contained 20 participants and the other 23 participants. They were between the ages of 15-16 and of both genders. They came from the school's two pre-IB classes to avoid any difficulties with the comprehension of English in the experiment. The experiment's two conditions were allocated according to class, both for convenience and as a control to prevent participants from discovering that the memory tests were different in case of interaction.

Material

- Consent forms (see appendix I)
- Parent's consent forms (see appendix II)
- Picture (see appendix III)
- Questionnaire (see appendix IV)

- Debriefing letter (see appendix V)
- Standardised instructions (see appendix VII)

Procedure

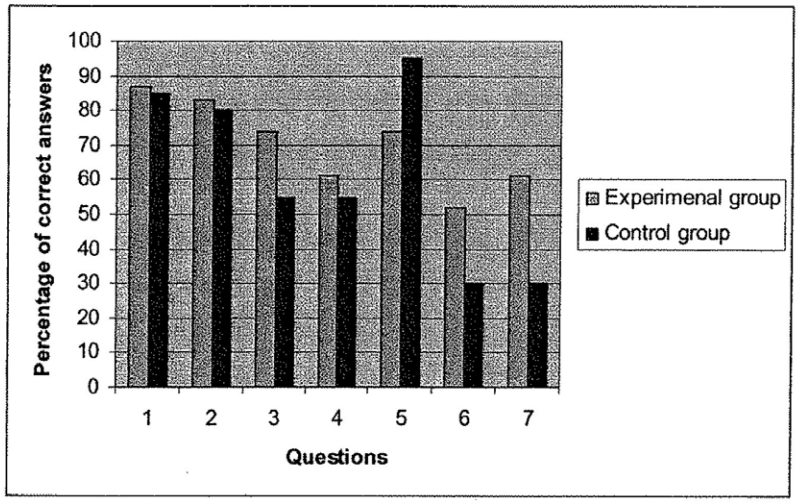
Each group received standardized instructions and questions were addressed. Thereupon the picture was displayed on an overhead for each group in 60 seconds. They thereafter received the questionnaires containing seven questions and statements on the content of the picture to which simple yes-no answers were required. Upon conclusion and collection of tests the participants were shortly debriefed.

Results

Table I: Processed data on amount of correct answers

	Mean	Range	Percentage
Control group:	12	14	61
Experimental group:	16	9	70

Figure I: Percentage of correct answers in each question in the two groups



Raw data is in appendix VI. As the percentage of correct answers in the table shows, the experimental group actually performed better on the memory test (70%) than the

control group (61%). Although the 9 per cent difference is not great the results are surprising. Furthermore, as the mean estimates show the central tendency of the scores was higher in the experimental group (16) than in the control group (12). The dispersion of the results around the mean is, additionally, higher in the control group (14) than in the experimental group (9). This means that the experimental group's scores were more clustered around their high mean value while there was larger discrepancy in the control group. Though not considerably better the experimental group actually performed better on the test than the control group. However, there are some remarkable results. For instance, the only question that the control group performed better on the experimental group is no.5, and they did it with a considerable margin. What is more, the answers of one participant had to be excluded from the calculations because they could not be incorporated into the data processing.

Discussion

The results show that the research hypothesis cannot be retained. Indeed, they show an opposite tendency the experimental group performed better on the memory test than the control group. These results are not consistent with Loftus' and Zanni's from their 1975 experiments. Here 15 per cent of the participants asked the presupposing question replied "yes", compared to the 7 per cent of those participants asked the non-presupposing question.

However, this does not necessarily mean a challenge to the reliability of Loftus' results, but can be largely accredited to methodological weaknesses. Cohen (1986) points out that people are more likely to be misled if the misleading information concerns insignificant details which "are peripheral to the main event". Our questions/statements were many times on minor details which the participants, most probably, did not pay attention to (or forgot if they did). But since only yes/no answers were available and still almost all participants replied to the questions it means that many simply guessed. Actually, only one participant confessed his/her ignorance.

Moreover, as opposed to Loftus and Zanni, who presented their participants with a video clip with one main event (a car accident), in this experiment the participants were presented with a picture containing figures up to various things, so there was no one theme around which the participants could focus. This means

that the participants were not able to fully exploit the schematic nature of memory which people usually do in real-life situations, leading to a lack of ecological validity in this experiment. An additional confounding variable in this experiment is the time at which it was performed; it was on a late school-day afternoon so, naturally, participants might have been tired, and this affected their motivation and performance on the test. Consequently, to improve future research I would: use a monothematic picture/video to gain a greater degree of ecological validity and give the benefit of schematic memory to participants; pose questions on details relevant to the main theme; optimise the participants' motivation and performance by choosing suitable times in the day to conduct the experiments; and, ideally, select participants with greater care.

This experiment, however, had several strengths. All ethical guidelines were followed and care was taken to limit confounding variables. For instance, McCloskey & Zaragoza (1985, 1989) criticised Loftus' results for being potentially confounded by experimenter's expectancy. They argued that participants of her experiments, when they heard the misleading information (in the form of questions), might have responded in the manner they thought was expected. This confounding variable was limited in this experiment due to the lowered level of interaction between the experimenters and participants since the questions were presented in a questionnaire. Additionally, the use of the single-blind method increases the reliability of the results of this study. To prevent language from posing any barrier IB students were pick as participants. Since the participants of this experiment were of both genders, around the same age and, predominantly, of the same culture, it would be interesting to conduct research with variable based on these factors.

In conclusion, the results of this experiment did not support the research hypothesis. However, this does not challenge the reliability of Loftus and associates' results. With some modification their experiments could have been replicated to a greater degree.

References

Grahame Hill, *A Level Psychology: Through Diagrams* (2001, UK, by Oxford University Press)

Michael W. Eysenck, *Cognitive Psychology: A Student's Handbook* (1995, UK, by Psychology Press)

- McColskey & Zaragoza (1985, 1989)

Richard Gross, *Key Studies in Psychology* (1999, third edition, by Hodder Arnold H&S)

- Loftus & Zanni (1975)
- Cohen (1986)
- Rumelhart & Norman (1983)

Appendix I: Consent form

Consent Form

I have been informed about the research and understand that I will not be harmed in any way.
I have a right to withdraw from the experiment at any time and I know that I will remain anonymous.
I will be given more information about the results later on.

I give my informed consent to participating in this research.

Name: _____

Date: _____

E-mail: _____

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Appendix II: Parents' consent form

Dear parents.

We are three students from the IB2 psychology class. We have performed a harmless experiment concerning memory in your child and his/her classmates.

Because your child is under the age of sixteen we need you consent to use his/her results from the psychology test in our report. We are testing the susceptibility of human memory to distorting post-event information. The participants have responded to few questions and statements based on a picture previously shown to them. Your child will remain anonymous, the results confidential, and the experiment is not harmful in any way.

Thank you.

Signature: _____

Date: _____

Appendix III: Picture

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Appendix IV: Questionnaire

Non-misleading

Please answer yes or no to the questions.

1. Did you see a dog? __
2. Was the boy holding a pair of scissors? __
3. Was there a bird in the upper right corner? __
4. Was the man in the lower right corner holding and umbrella? __
5. Was the man in the upper right corner making ice cream? __
6. Were there three children in the picture? __
7. Was the newspaper upside-down? __

Misleading

Please answer yes or no to the questions.

1. Did you see the dog? __
2. A boy was holding a pair of scissors. __
3. There was a bird in the upper right corner. __
4. The man in the lower right corner is holding an umbrella. __
5. The man in the upper right corner is making ice cream. __
6. There are three children in the picture. __
7. The newspaper is upside-down. __

Appendix V: Debriefing letter

Dear participants,

Thank you for participating in our experiment. The aim of the experiment was to investigate how misleading questions could affect the memory. Two different groups were involved in the experiment and both groups watched the same picture. One group then received misleading questions and the other got non-misleading questions. Our hypothesis was that the group with non-misleading questions would have more accurate answers since the other groups' memory would be distorted by the misleading questions.

However, we did not get support for our hypothesis. There was no significant difference in correct answers between the groups. Our conclusion is that memory is not immune to distortions. In this experiment a number of other variables played in that could have biased the results.

Thank you again for participating.

Appendix VI: Raw data

Table 1: Number of correct answers

Questions:	Control group (20 participants):	Experimental group (23 participants):
1.	17	20
2.	16	19
3.	11	17
4.	11	14
5.	19	17
6.	6	12
7.	6	14

Calculations:

Control group

Mean: (17 + 16 + 11 + 11 + 19 + 6 + 6)/7 = 12

Range: (19 - 6) +1 = 16

Percentage: (17 + 16 + 11 + 11 + 19 + 6 + 6)/120 *100 = 61

Experimental group

Mean: (20 + 19 + 17 + 14 + 17 + 12 + 14)/7 = 16

Range: (20 – 12) + 1 = 9

Percentage: (20 + 19 + 17 + 14 + 17 + 12 + 14)/161 * 100 = 70

Appendix VII: Standardised instructions

We introduced ourselves.

We are here today to, with your consent, perform an experiment on our memory. The experiment has two components. First you will view a picture on an overhead for 60 seconds; during this time you are to commit to your memory as many details as possible from the picture. After this time period you will receive a questionnaire with seven questions and statements about details on the picture to which are only to respond with simple yes and no answers. During this time you will not be allowed to interact in any way with each other. Upon conclusion turn your paper over and we will come and collect them.