



Pearson

International Advanced Level Psychology

Summary of Studies Unit 1
WPS01

Issue 1. November 2016

Pearson Edexcel International Advanced Level Psychology 2015

Summary of Studies: Unit 1 WPS01

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Introduction

1.1 About this booklet

This selected studies summary booklet is produced to support teachers delivering the International Advanced Level Psychology to support their students with the published research studies that are named in the specification but may not be easily accessible to centres.

The booklet includes the classic and contemporary studies from the topics in the specification. Some of the studies included are compulsory classic and contemporary studies, and some are optional contemporary studies – these are highlighted where appropriate.

1.2 How to use this booklet

This booklet initially gives brief guidance on how classic and/or contemporary studies may be assessed in the International AS and A level Psychology qualification.

Each study contained within this booklet includes a summary of each study including the aim, procedure, findings, and conclusions. To prepare candidates appropriately for assessment this booklet should be used in conjunction with the other resources available on the Pearson website. <http://qualifications.pearson.com/en/qualifications/edexcel-international-advanced-levels/psychology-2015.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials>

Candidates may be assessed on any of the assessment objectives (AO1, AO2, AO3) or a combination of these where appropriate.

1.3 Assessment

Candidates may be asked to consider issues of validity, reliability, credibility, generalisability, objectivity, and subjectivity in their evaluation of studies. They may also be asked to draw on their understanding of ethics where this is appropriate to a study. Candidates should be able to suggest improvements to studies, where appropriate, that could draw on these issues.

Candidates should understand the classic and contemporary studies sufficiently to be able to provide specific details, such as the aim, procedure, results and conclusions.

Assessment of a study can take the form of short-answer questions and extended open response questions. They can be assessed in the written examination using any of the taxonomy (command) words as appropriate.

Assessment Objective 1 (AO1) involves demonstrating knowledge and understanding of the study. This could be regarding the aim(s), procedure, results, and/or conclusion(s) of the study.

AO1 could be assessed as a short answer question (less than 8 marks) or as part of an extended response question (8 marks or more).

Extended response questions use certain taxonomy (command words) to specify the assessment objectives required. For example, if students are asked to 'evaluate' a classic study for 8 marks this will be assessed using a Levels Based Mark Scheme and both AO1 and AO3 material will be required to be able to

achieve 8 marks.

Assessment Objective 2 (AO2) involves application of a classic or contemporary study. This could involve the use of the study to explain a novel stimulus, or to apply to Issues and Debates.

AO2 could be assessed as a short answer question (less than 8 marks) or as part of an extended response question (8 marks or more).

Extended response questions use certain taxonomy (command words) to specify the assessment objectives required. For example, if students are asked to 'discuss' a classic study in relation to a novel stimulus for 8 marks this will be assessed using a Levels Based Mark Scheme and both AO1 and AO2 material will be required to be able to achieve 8 marks.

Assessment Objective 3 (AO3) involves analysing, interpreting, or evaluating the study to make judgements or to suggestion improvements.

AO3 could be assessed as a short answer question (less than 8 marks) or as part of an extended response question (8 marks or more).

Short answer questions (less than 8 marks) will typically use a combination of AO1/AO2 with AO3 as there is the identification or application of material before a judgement/conclusion is made or an improvement is reasoned.

Extended response questions use certain taxonomy (command words) to specify the assessment objectives required. For example, if students are asked to 'evaluate' a classic study in relation to a novel stimulus for 12 marks this will be assessed using a Levels Based Mark Scheme and AO1, AO2, and AO3 material will be required to be able to achieve 12 marks.

1.4 Further support

A range of materials are available to download from the Psychology page of the Pearson website to support you in planning and delivering the new specifications.

Centres may find it beneficial to review this document in conjunction with:

- **IAL Psychology 2015 Sample Assessment Material**
- Assessment Objectives descriptors in the specification
- **Taxonomy (command words)** descriptors in Appendix G of the specification)
- **Levels Based Mark Band** guidance
- **Component guides** that exemplify the topics in the specification.
- **Exemplar responses** to the SAMs materials provided for each paper.
- **Examiner reports**
- teachingpsychology@pearson.com

<http://qualifications.pearson.com/en/qualifications/edexcel-international-advanced-levels/psychology-2015.coursematerials.html#filterQuery=Pearson-UK:Category%2FTeaching-and-learning-materials>

TOPIC A: Social Psychology

Classic study

Moscovici et al. (1969) Influence of a Consistent Minority on the Responses of a Majority in a Color Perception Task.

Aim(s)

They aimed to investigate the influence of a minority upon a majority within a group.

They wanted to investigate innovation (social pressure exercised by a minority) to find out if behavioural style is a general source of influence.

They investigated whether the consistency of the behaviour of a minority, the fact that it resolutely maintains a well-defined point of view in a coherent manner, is a powerful source of influence.

Part 2 aimed to test whether the minority influence had a lasting effect on participant perception.

Procedure

Part 1

Sample: The participants were liberal arts, law and social science students. Female participants were preferred because of their greater involvement in evaluating the colour of an object. They were told that this would be an experiment on colour perception. An explanation of the meaning of 'light intensity' was given prior to the experiment.

The stimuli used consisted of slides with two different types of filters mounted in them:

- (1) photo filters permitting the passage of a beam of light in the blue scale.
- (2) neutral filters which reduced light intensity.

In a set of six slides, three slides were more luminous than three others, colour was projected onto the slides on the screen.

Each experimental group consisted of four participants and two confederates. Participants were seated in a row in front of the screen on which. They were asked to judge the colour and variation in light intensity of a series of slides.

Before passing a judgment, the whole group took a Polack test collectively for two reasons. First, to eliminate participants with visual abnormalities; and second, to emphasize to everyone that the group had normal vision. This ensured that the confederate responses could not be attributed (by the participants) to a difference in vision.

The participants were given instructions about the responses they could give, how the experiment would be conducted, as well as how to estimate light intensity in numerical terms (0 for the dimmest to 5 for the brightest). They were also told that the first trial would be for practice.

During the practice trial the confederates answered at random. In the experimental conditions, the six different slides were presented six times, the order of the slides varying systematically from one series to the next.

In total, there were 36 trials. Each showed six slides and lasted 15 seconds, followed by approximately 5 seconds of darkness before the next six were shown.

In each trial the two confederates exerted influence by calling the colour "green."

Confederate variation: in 12 groups the confederates were seated side by side and gave the first and second responses, in the 20 other groups they occupied the first and fourth places. This was aimed at making the second confederate appear more independent of the first confederate.

Stimulus variation: to test the impact of the commitment to the first response, in 13 groups (including where confederates were seated in position 1 and 4), the continuity of the sequence of the stimuli was interrupted by two one-minute pauses after a sequence of 12 slides.

At the end of the experiment the participant completed a questionnaire about the stimuli and other group members. The real objectives were explained before leaving the room.

In a follow-up to the first experiment, Moscovici et al conducted a test with 11 groups of participants where they diversified the consistency degree of the confederates. Confederates answered 24 times "green" and 12 times "blue," the dispersion of "blue" answers being randomized. Eleven groups participated to this experiment.

Part 2

Participants were told that another researcher interested in vision phenomena, would like their participation in another project that was independent of this one. Ten groups participated in this experiment.

The material consisted of 16 disks in the blue-green zone of Farnsworth 100-hue set perception test. Three disks from each end of the "blue" and "green" scale were unambiguous, the other 10 stimuli might appear ambiguous.

They isolated the subjects using cardboard screens and they had to write their responses individually. Each disk was presented on a neutral background for 5 seconds and it was placed in the centre of the table, visible to everyone. The 16 disks were presented 10 times in a random order.

Results(s)

Participants changed their response (giving 4 or more green responses) in 43.75% of the groups, with 32% of participants yielding to the minority.

57% per cent of the subjects, or two subjects per group on the average, gave the same response as the confederates.

The confederates' seating position, and the way the slides were presented (continuous or discontinuous) did not have any differentiation effect.

Participants were more likely to give similar responses to the confederates when light intensities were weak than when they were strong.

Irrespective of the luminosity the proportion of green response was significantly higher in the experimental groups than in the control groups.

Where one or several responses of the confederates were inconsistent, only 1.25% green responses were recorded, suggesting an influence of the behaviour style of a minority.

Part 2

The data reflected an effect of interaction between minority and majority in the modification of the participant's individual perceptual code, affecting more participants than the change of verbal responses in the main experiment.

Questionnaire responses

The post-experimental questionnaires showed:

(a) The divergence of opinion or response of the consistent minority constrains the participants and the perceptive change is not an attraction towards the minority.

(b) The relative certainty of the majority is probably weakened because of the confrontation/conflict with the minority.

Conclusions

As far as female subjects are concerned, a consistent minority can influence a majority at the level of verbal and perceptual responses.

It is the behavioural style not the pure amount of social pressure which is revealed to be at the origin of influence exerted.

The consistent minority provoked a real modification in the norm of the majority.

Overall, it is conceivable that minorities are more capable of changing the majority's code than social response, while the majority would have more influence on an individual's verbal response than intellectual or perceptive code.

Contemporary study

Burger (2009) Replicating Milgram: Would people still obey today?

Aim(s)

To undertake conducted a partial replication of Milgram's (1963, 1965, 1974) obedience studies that allow for useful comparisons with the original investigations.

To be able to protect the well-being of participants with greater ethical considerations.

To investigate if participants today would still obey an authority figure.

Procedure

Individuals were recruited through advertisements and flyers and the message in these replicated Milgram's recruitment notices. Participants were promised \$50 for two 45-min sessions.

The respondents to the adverts went through a series of screening procedures. They were asked if they had been to college and if they had taken any psychology classes to screen out individuals who might be familiar with Milgram's research. People who had taken more than two psychology classes were excluded from the study.

A series of questions that were questions were created by two clinical psychologists was also included in the first screening process. Burger excluded anyone who answered yes to any of the questions.

A second screening session was held on the Santa Clara University campus. Respondents were given a series of clinical psychology inventories to complete. Then the respondent was interviewed by a licensed clinical psychologist. The psychologist used responses on the anxiety and depression inventories along with responses to a semi-structured interview to assess the respondents. 123 people participated in second screening and 47 (38.2%) were excluded from the study by the clinical psychologist.

76 participants were scheduled for a second on-campus session. Six of these participants were dropped from the study. One did not return for the second session, and five expressed awareness of Milgram's obedience research.

The final sample was 29 men and 41 women. Participants' ages ranged from 20 to 81 years, and the mean age was 42.9 years.

Participants were randomly assigned to one of two conditions but an attempt was made to keep the gender ratios in the conditions equal. Participants assigned to the **base condition** were introduced to the experimenter - a White Caucasian man in his mid-30s. A research assistant then escorted the confederate into the lab room - a White Caucasian male in his 50s. Both were selected because of their resemblance to the experimenter and confederate used by Milgram.

The experimenter gave the participant and confederate a \$50 bill for their participation and said the money was theirs to keep even if they chose to end their participation at any time.

A script taken largely from the one used by Milgram was used. It was explained that the research about the effects of punishment on learning. Participants were informed that one would play the role of teacher and one, the role of learner. Role would be decided through a random drawing, which was rigged so that the participant was always the teacher.

A consent form informed participants that they could end their participation at any time and keep their money and that they might be videotaped during the study.

The participant stood a few feet away while the experimenter secured the confederate's arms to wooden armrests with nylon straps "to prevent excessive movement during the experiment." He also attached an electrode and added electrode to "provide a good contact to prevent blisters or burns."

The confederate was told to try to remember 25 word pairs (e.g., strong-arm) (which were identical to Milgram's) and that the experimenter would read the first word in each pair followed by four other words, they should indicate by pressing one of four buttons which of the words was paired with the word on the original list. Incorrect answers would result in an electric shock and the test would continue until all 25 word pairs were learned.

At this point, the confederate said they had a heart condition and the experimenter told them "While the shocks may be painful, they're not dangerous."

The participant was seated in front of a shock generator in another room. As in Milgram's studies, the experimenter gave the participant a sample shock if the participant agreed (only two declined). It was explained that if the learner gave a wrong answer then the participant was to say "wrong" and tell them the number of volts they were going to administer. Each time the learner gave a wrong answer, the participant was instructed to move up one switch on the shock generator. They were told "It's important that you follow the procedure exactly."

After participants pressed the 75-volt switch, they heard a small grunt. This was then heard after each successive shock, and each was a little louder than the previous one. When the participant pressed the 150-volt switch, the confederate yelled through the wall, "Ugh. That's all. Get me out of here. I told you I had heart trouble. My heart's starting to bother me now. Get me out of here, please. My heart's starting to bother me. I refuse to go on. Let me out."

If the participant hesitated, the experimenter gave one of four prods, in this order:

"Please continue" or "Please go on"

"The experiment requires that you continue"

"It is absolutely essential that you continue"

"You have no other choice, you must continue"

If the participant continued to express reluctance after the fourth prod, the experimenter ended the study. No participant could press any more switches after the 150-volt switch.

As soon as the study was over, the participant was told that the shock generator was not real and the learner was not receiving electric shocks. The confederate entered the lab

room to assure the participant that he was fine. The participant was escorted to a nearby room, where a thorough debriefing took place.

Participants assigned to the **modelled refusal condition** went through the same procedures as participants in the base condition, with a few exceptions.

- Two confederates were used. One was the same man who played the learner in the base condition. The other posed as a participant and was the same gender as the real participant.
- Both teachers watched the learner being strapped into the chair.
- The confederate participant started pressing the electric shock buttons first.

The confederate participant showed no signs of hesitation until hearing the learner after the 75-volts. At that point, the confederate paused for a few seconds before continuing. After pressing the 90-volt switch and hearing the response they said, "I don't know about this." The experimenter responded with his initial prod, "Please continue."

The confederate participant paused, then said, "I don't think I can do this," and pushed his or her chair a few inches back from the table. The real participant was then asked to continue the test, picking up where the other teacher had left off. The confederate participant then sat silently and avoided eye contact with the participant.

Results

70% of the base condition participants continued with the next item on the test and had to be stopped by the experimenter.

63.3% of participants in the modelled refusal condition continued past the 150-volt point, which was not significantly different from the base condition.

Table 1 shows a comparison between the two conditions in Burger's study and Milgram's experiment five.

Behaviour	Base condition N (%)	Modelled refusal N (%)	Milgram (experiment five) N (%)
Stopped at 150v or earlier	12 (30%)	11 (36.7%)	7 (17.5%)
Continued after 150v	28 (70%)	19 (63.3%)	33 (82.5)

Table 1

Participants in the base condition received a prod from the experimenter significantly earlier than participants in the modelled refusal condition.

There was no significant difference in obedience rates between men and women. Women were slightly more likely than men to continue in both conditions. The first-prod score for the men was not significantly different from the first-prod score for the women.

Participants who scored highly in the inventory tests for a high desire for control tended to show reluctance earlier than did participants with a low desire for control, but only in the base condition.

The empathic concern scores of continuers and stoppers did not differ in either the base condition, or the modelled refusal condition.

Conclusions

Findings indicate that the situational factors affecting obedience in Milgram's participants still operate today.

It can be predicted that the participants would have continued to the end of the shock generator's range at a rate like Milgram's participants as research supports the assumption that most of the participants who continued past the 150-volt point would likely have continued to the 450-volt switch.

Seeing another person model refusal had no apparent effect on obedience levels in the present study, which could be a demonstration of the power of the situational forces.

No evidence for gender differences in obedience were found, and nor did differences in education, age, or ethnicity have any effect on participants' behaviour in the study.

There was some evidence that personality traits were related to participants' reactions to the situation as participants who were high in empathic concern expressed a reluctance to continue earlier than those low on this trait, although early reluctance did not translate into refusing to continue.

Candidates should study **ONE contemporary study** as appropriate.

Contemporary study (option 1)

Yi Huang et al. (2014) Conformity to the opinions of other people lasts for no more than 3 days.

Aim(s)

To investigate whether social conformity reflects private acceptance or public compliance by examining the stability of behavioural changes in judgments.

To determine whether long-lasting judgment changes are likely to reflect a change in private opinion, whereas transient judgment changes suggest that public compliance is involved.

To ascertain whether social conformity could persist in the short-term.

Procedure

Study 1

Sample: 17 Chinese students were recruited from South China Normal University (5 men, 12 women) with a mean age of 22 years. All participants were right-handed, had normal or corrected-to-normal vision, and reported no neurological or psychiatric disorders.

The study was approved by the Ethics Committee of the School of Psychology at South China Normal University. All participants gave written informed consent and were informed of their right to discontinue participation at any time. Participants received a payment of 30 yuan (about \$5 U.S.). Participants were informed that they were taking part in research about human perception of facial attractiveness.

280 photographs of faces of young adult Chinese women with neutral expressions were downloaded from free internet sources or were university students (taken with consent). All photographs were colour and of similar quality and general appearance.

Photographs were presented on a computer monitor for 2 s. An 8-point Likert scale (1 = very unattractive, 8 = very attractive) was then added to the display, and participants rated the face. Their initial rating was shown on screen for 0.5 seconds. Then, for 2 seconds, another box indicated an alleged average rating given by 200 other students of the same gender as the participant.

In 25% of trials, the group rating agreed with the participant rating (peers agree condition).

In 75% of trials, the group rating was equally likely to be above or below the participant rating (peers-higher and peers-lower conditions).

After 3 months, participants were called back and asked to complete a second test, which they had not been told about previously. They rated the same faces again. Faces were presented in random order; participants were not reminded of peer-group ratings.

Study 2

This was to ascertain whether social conformity could persist over a one day, three day or seven day interval (as opposed to 3 months) between the initial and the rerating sessions to periods.

Three different groups of student participants were recruited from South China Normal University. 18 students took part in the 1-day group (7 men, 11 women; mean age = 20.72 years) 16 were in the 3-day group (6 men, 10 women; mean age = 20.81 years) and 17 in the 7-day group (8 men, 9 women; mean age = 21.53 years).

Participants performed the same initial rating task as that in Study 1 and they rerated the faces 1, 3, or 7 days later.

Results

Study 1

Rating scores changed, showing that participants changed their ratings of attractiveness in the retest, aligning themselves with the peer-group ratings given 3 months before.

Study 2

For the 1-day group, the rating change between the peers-lower and peers-higher conditions was significant; participants rated faces in the peers-higher condition as more attractive than faces in the peers-lower condition.

The rating change was also significant for the 3-day group, but not for the 7-day group.

Conclusions

Study 1

There was no evidence for long-term influence of social conformity on participants' attractiveness ratings.

Study 2

Overall, social conformity in facial attractiveness judgments persists for up to 3 days, but not for longer than 7 days. The social-conformity effect observed reflected a change in privately held views. However, the short duration may have been the result of participants' daily exposure to large numbers of faces.

It is probable that opinions were quickly revised because of subsequent experience, so that judgments of facial attractiveness were reset back to the original norm. A resetting of individual judgment norms could have occurred more quickly than it would for classes of objects viewed infrequently.

Candidates should study **ONE contemporary study** as appropriate.

Contemporary study (option 2)

Haun et al. (2014) Children Conform to the Behavior of Peers; Other Great Apes Stick With What They Know.

This study has two components. Candidates should learn **study one**.

Aim(s)

To directly compare human and nonhuman tendencies to adjust their behaviour to that of their peers in a single, comparable scenario.

Specifically, to compare 2-year-old children's, chimpanzees', and orangutans' tendencies to abandon an individually acquired behavioural strategy after being exposed to a majority of peers demonstrating an equally effective alternative strategy.

Procedure

Sample: sample of 18 children (Homo sapiens; 9 female, 9 male; mean age = 28 months), 12 chimpanzees (Pan troglodytes; 7 female, 5 male; mean age = 121 months), and 12 orangutans (Pongo pygmaeus; 6 female, 6 male; mean age = 102 months). The planned goal of 18 participants per species was not met because of a lack of available animals.

The experiment consisted of a box with three sections, each was a different colour. The sections were arranged horizontally; the two outer sections were the same height; the middle section was shorter. In the top of each section was a hole.

The box was attached to a steel mesh observation room in the case of the chimpanzees and orangutans, and it was placed on the ground for human children. When a ball was dropped in one of the holes, a reward was dispensed from the bottom of that box. The rewards were controlled. Rewards were highly desirable to participants, with peanuts for chimpanzees and orangutans, and chocolate drops for human children.

Initial phase

Participants learned that balls could be put in all boxes, but only one would give rewards. They dropped balls in the sections until they used the assigned coloured section (rewarding box) in 8 out of 10 consecutive trials. They were then taken approximately 2 meters from the box, and watched while three familiar nonspecific peers (demonstrators) interact with the box one after the other. All participants could observe the actions of the demonstrator and the dispensing of rewards.

The three demonstrators all used the same section, different from the participant's preference, twice and received one reward in return for every ball. After the six demonstrations, the testing period began.

Testing phase

Participants were given three balls, one at a time, and could put each ball into whichever section they chose. All three of choices were rewarded. The choices were coded twice by two coders, as either;

- switch, switching to match the majority response
- stay, staying with the participant's own preference
- other, neither the demonstrated nor the individually preferred one

Results

To calculate tendencies to switch to match peers, the number of stay responses was subtracted from the number of switch responses, resulting in difference scores between -3 and $+3$. Negative scores indicated a preference to stay and positive scores indicated a preference to switch to peer group choice.

Table 1 shows the number of children, chimpanzees and orangutans who switched, stayed or made other choices in the trial.

Participant (n)	Switch	Stay	Other
Children (n=18)	12	6	0
Chimpanzees (n=12)	2	10	0
Orangutans (n=12)	2	8	2

Table 1

Results showed that species differed in their relative tendency to adjust their behaviour to that of their peer's children's tendency to switch exceeded that of the other two ape species.

Conclusions

Children as young as 2 years of age were more likely to adjust their behaviour to that of their peers than were either of the other two great-ape populations.

Where human children conformed in over half of all instances, the two nonhuman great-ape populations almost exclusively stayed with their individually acquired strategies, ignoring the demonstrators.

TOPIC B: Cognitive psychology

Classic study

Bartlett (1932) War of the Ghosts

Aim(s)

To investigate whether the memory of a story is affected by previous knowledge.

To find out if cultural background and unfamiliarity with a story would lead to distortion of memory when it was recalled.

To test if memory is reconstructive and whether people store and retrieve information per expectations formed by cultural schemas.

Procedure

Sample: 20 British participants (7 men, 13 women). The participants were not told the aim of the study, they believed they were being tested on the accuracy of recall.

Bartlett used serial reproduction, which is where participants hear a story or see a drawing and are asked to reproduce it after a short time and then to do so again over a period of days, weeks, months or years.

The story used was a Native American story called 'The War of the Ghosts' which was unfamiliar to participants and contained unknown names and concepts. The story content was also unfamiliar. The story was selected because it would test how memory may be reconstructed based on cultural schema.

Each participant read the story to themselves twice. The first reproduction happened 15 minutes later. There was no set interval beyond this and participants recalled the story at further intervals from 20 hours to almost 10 years.

Results

Bartlett found that participants changed the story as they tried to remember it. This happened in the early stages (15 minutes) and throughout the further reproductions.

The participants overall preserved the order of events and main themes in the story.

The reproduction of style was often changed, with reproduction of the story often being transformed.

7 of the 20 participants omitted the title, and 10 of the participants transformed the title, for example "War-Ghost story". Other transformations included changing 'canoes' to 'boats' and changing the names of the characters.

Much of the content was rationalised by the participants, changing material so it was more acceptable to the participant (Bartlett called this 'effort after meaning'), such as 'the young man did not feel sick but nevertheless they proceeded home'.

Conclusions

Accuracy in reproduction of the story is an exception rather than a norm of memory. Style, rhythm and precise story construction is very rarely reproduced.

After repeated reconstructions the form of, and items in, the story become stereotyped and do not change much after this occurs. However, with infrequent reproduction, omission of detail, simplification and transformation continues indefinitely.

There is a significant amount of interference with the story from reconstructing it. The details are altered to fit the participant's own tendencies and interests.

In all recollections of the story, rationalisation reduced material to a form that was more accessible or common to the participant. This could be because the material is initially connected to something else in memory and treated as a representation of this; it reflects the character and individuality of the person recalling the story; and names, places and events are changed to fit with the social group that the participant belongs to.

Contemporary study

Scholck et al. (2002) Semantic knowledge in patient HM and other patients with bilateral medial and lateral temporal lobe lesions.

Aim(s)

To investigate the effects of damage to the medial temporal lobe (MTL) and anterolateral temporal cortex on semantic knowledge.

Procedure

They studied three post encephalitic amnesic patients with extensive MTL damage and variable damage to lateral temporal cortex, patient H.M. (whose damage is for the most part limited to the MTL but who has additional damage to anterolateral temporal cortex), two patients with lesions limited to the hippocampal formation (HF), and eight control subjects.

A series of nine tests involving 24 living and 24 non-living items was given, along with four additional tests of semantic knowledge.

Sample: 8 male controls; and 1 female and 5 male participants.

- Two participants had damage to the hippocampal formation (HF)
- Three participants had medial temporal lobe lesions with damage to the anterolateral temporal cortex (MTL+)
- HM had a bilateral medial temporal lobe resection for severe epilepsy.

All participants were given nine tests using the same line drawings from two categories; 24 in the category of 'animals' 24 from the category of 'objects'.

Each of the 48 line drawings, or items, could also be assigned to one of 8 sub-categories.

These were:

Non-living things

- 6 electrical household items
- 6 nonelectrical household items
- 6 vehicles
- 6 musical instruments

Living things

- 6 water creatures
- 6 birds
- 6 domestic land animals
- 6 foreign land animals

There was no time limit for the nine tests, unless specifically stated.

1. *Pointing to Picture (cue: Name)*: Participants were given the name of an item as a cue and were asked to identify the appropriate picture from a selection of eight pictures that were from the same category (either animals or objects). They repeated this using all 48 items. Performance was measured as percentage correct answers.

2. *Pointing to Picture (cue: Description)*: Participants were given a verbal description of an item as a cue (without mentioning the physical attributes) and asked to identify the appropriate picture from a selection of eight pictures that were from the same category

(either animals or objects). They repeated this using all 48 items. Performance was measured as percentage correct answers.

3. *Naming (cue: Picture)*: Participants were shown a picture of an item as a cue and then asked to name it. They repeated this using all 48 items. Performance was measured as percentage correct answers.

4. *Naming (cue: Description)*: Participants were given a verbal description of an item as a cue and asked to name it. They repeated this using all 48 items. Performance was measured as percentage correct answers.

5. *Semantic Features*: Participants were asked a total of eight closed questions (requiring just 'yes/no' responses) about each item from a selection of 24 items. Four of the questions were about an item's physical features, and four of the questions were about an item's non-physical features. Examples of questions include; Is a toaster round? Does a zebra live in Africa? They repeated the process of asking the eight closed questions with all 24 items. Performance was measured as percentage correct answers.

6. *Category Fluency*: Participants were asked to name as many examples as they could from 8 sub-categories; four were of living things and four were of non-living things. This test was timed. For each of the eight categories, participants were given 1 min to respond with as many examples as they could, such as examples of vehicles. Performance was measured using a score for the total number of category examples that participants gave.

7. *Category Sorting*: Participants were asked to sort the pictures of all 48 items into one of two superordinate categories; living or manmade. They were then asked to sort the 24 items in each category into narrower ordinate categories, for example to sort the living items into land animals, birds, or water creatures or to sort the manmade things into household items, vehicles, or musical instruments. Finally, they sorted 12 land animals and 12 household items in three different ways using narrower subordinate categories; for example, they had to sort the land animals firstly into foreign or domestic animals, then again into fierce and non-fierce animals and again into animals larger or smaller than a German Shepherd dog. Performance was measured as percentage correct answers.

8. *Definitions to Name*: Participants were given the name of a least common item. They were then asked to define the item as if they were explaining it to someone who did not know what it was and has never seen it before. Schmolck et al had a card with the name of the item in view for the participants. This test was timed. Participants had 1 minute for each definition. This was repeated for the 24 least common items. The frequency of errors was measured in this test. Errors included incomplete or meaningless phrases and immediate repetitions of a phrase.

9. *Definitions to Picture*: Participants were shown a picture of a least common item and were asked to define this item. A line drawing of the item was in view for the participants. This test was timed. 1 min was allowed for each definition. This was repeated for the 24 least common items.

For tests 8 and 9, A tape-recorder was used and the definitions were then transcribed. Each participant's performance was measured using the number of correct statements and the number of inaccurate statements. Schmolck et al also gave a quality score between 0 and 4 to each definition.

To assess the reliability of the 0–4 quality scoring method, they asked 14 raters to try to identify, from the transcripts for test 8, what items were being defined. Raters had to try to identify each item that was defined. They were then asked to quality score to each definition on the scale of 0–4.

A further four semantic tests were given to some of the participants and control group.

10. Pyramid and palm tree: Participants were given two test pictures and a target picture. They were asked which test picture went with the target picture. For example, a target picture of a saddle, with two test pictures of a horse and a goat. There were 52 cards used which each contained two test pictures and a target picture. Participants also repeated this study in a verbal condition, being given two test words and a target word.

11. Object/non-object discrimination: Participants were presented with a line drawing of an object and asked to identify if it was real or not. Non-real objects had been created by combining parts of real object. There were 30 objects and 30 non-objects presented in total.

12. Colouring object: Participants were asked to colour 28 line drawings of objects with the appropriate coloured pencil. Four different coloured pencils were provided to participants.

13. Nouns and verbs: Participants were asked to complete the second sentence of an example given to them. For example, 'Everyday I take a banana. Just like everyday, yesterday I _____ a banana'. In total, participants had to produce 64 irregular past tenses, 64 regular past tenses, 16 regular plurals and 16 irregular plurals.

Results

The results of the main nine tests are summarised in **Table 1** below.

Test	8 people in control group	Patient HM	2 participants with HF lesions	3 participants with MTL+ damage
1. Pointing to Picture (cue: Name) 2. Pointing to Picture (cue: Description) 3. Naming (cue: Picture) 4. Naming (cue: Description) percentage of correct answers given.	98.9% correct over all four tests	96.5% correct over three tests Test 4 66.7% correct	100% correct over all four tests	78.1% correct over all four tests
5. Semantic Features percentage of correct answers given.	91.9% correct over living and non-living items	85.4% living items correct 95.8% non-living items correct	96.9% correct over living and non-living items	76% living items correct 85.8% non-living items correct
6. Category Fluency score for the total number of category examples that participants gave.	128.9 items (average)	43 items	112 items (average)	75.7 items (average)
7. Category Sorting	97.0% correct	93.5% correct	98.5% correct	97.0% correct

percentage of correct answers given.				
8. Definitions to Name quality score given between 0 and 4.	Quality score of 3.2	Quality score of 1.8	Quality score of 3.1	Quality score of 2.0
9. Definitions to Picture quality score given between 0 and 4.	Quality score of 3.2	Quality score of 2.0	Quality score of 3.2	Quality score of 1.8

Table 1

Patients in the MTL group, as well as H.M. provided definitions with poor detail and a significant number of errors. They had difficulty making the items they were defining identifiable. This was the case when a picture of the item was in view, which controlled for impaired name comprehension.

The further four semantic tests are summarised in **Table 2** below.

Test	Control group	Patient HM	Patient GT MTL+	Patient GP MTL+	Patient EP MTL+
10. Pyramid and palm tree percentage of correct answers given.	Verbal 97.6% Non-verbal 97.4%	Verbal 82.7% Non-verbal 86.5%	Verbal 88.5% Non-verbal 88.5%	Verbal 80.8% Non-verbal 88.5%	Verbal 90.4% Non-verbal 94.2%
11. Object/non-object discrimination percentage of correct answers given.	95.8%	-	100%	86.7%	98.3%
12. Colouring object percentage of correct answers given.	92%	-	75%	92.9%	82%
13. Nouns and verbs percentage of correct answers given.	Regular 99.6% Irregular 90.2%	Regular 96% Irregular 91%	Regular 99.2% Irregular 69.8%	Regular 100% Irregular 80.5%	Regular 100% Irregular 82.8%

Table 2

Conclusions

There is a relationship between performance and the extent of damage to lateral temporal cortex, particularly among the patients with MTL+ lesions. Patients with damage limited to the hippocampal formation (HF) performed normally on tests of semantic knowledge. Patients with large medial temporal lobe lesions and damage to anterolateral temporal cortex (MTL+) exhibited mild to moderate impairment on these tests. The severity of the impairments to semantic knowledge of the three MTL+ patients is milder than that of semantic dementia, where the degradation of semantic knowledge is progressively more severe. Patient H.M. was impaired on five of the tests but was less severely impaired than the three MTL+ patients. Schmolck et al. concluded

that deficits in semantic knowledge are most likely to be related to cortical damage lateral to the medial temporal lobe.

Candidates should study **ONE contemporary study** as appropriate.

Contemporary study (option 1)

Darling et al. (2007) Behavioural evidence for separating components within visuo-spatial working memory.

Aim(s)

To investigate whether a DVN (dynamic visual noise) task would interfere with memory recall of an appearance task and a location task.

To investigate whether a tapping task would interfere with memory recall of an appearance task and a location task.

Procedure

Sample: 72 participants (44 female, 28 male, mean age 66 years) were recruited from members of the non-student volunteer participation panel of the Department of Psychology at the University of Aberdeen.

Participants were randomly allocated to one of the six possible combinations of memory task (location or appearance) and interference task (control, tapping and DVN).

Each participant took part in three sets of 24 trials. If they were in either the tapping or DVN (dynamic visual noise) interference task condition, they carried out their allocated interfering task during the 5.5 second and 15.5 second delay intervals (a 0.5 second interval was used as a baseline).

Participants were shown a black screen with 30 white squares. Through random selection, one of these squares was filled with a lowercase letter P in different font styles. The letter was visible for 0.5 seconds, then the display was cleared. Depending on the condition, participants had an interval delay of either 0.5, 5.5 or 15.5 seconds.

The tapping interference task used a keypad with nine keys arranged in a 3 by 3 array. It was shielded from the participant's view and they had to tap the keys in a figure of eight pattern at a rate of one key per second. Participants continued the figure of eight sequence until the response screen appeared, and then to stopped.

The DVN task was presented immediately after the screen went black. Participants were asked to watch the screen whilst the DVN was visible. A square matrix of 80 by 80 dots appeared with each dot coloured black or white at random. These dots were changed from black to white or vice versa, at an average rate of 300 dots per second and then being immediately replaced by the response screen.

At the end of each delay, the white squares reappeared. A letter P was presented in one of the 30 squares. This was either:

- 25% of the times in the same location and of the font.
- 25% of the times in the same location but of a different font.
- 25% of the times in a different location but of the same font.
- 25% of the times in both a different location and different font.

In the appearance condition, participants concentrated on the appearance (font) of the letter P and indicated whether it was the same or different in appearance from the original

In the location condition, participants concentrated on the location of the letter and indicated whether it was in the same or a different location.

Results

Table 1 details mean accuracy scores for participants, broken down by levels of memory task, interference task and delay.

Interference (seconds)	Location			Appearance		
	Control	Tapping	DVN	Control	Tapping	DVN
0.5	23.75	23.91	23.58	22.75	23.00	22.83
5.5	23.00	21.25	22.17	22.00	21.25	21.17
15.5	22.67	19.75	21.42	20.58	20.92	20.08

Table 1

Data indicates greater individual differences in susceptibility of appearance memory to DVN than in susceptibility of location memory to tapping.

Table 2 give the mean recall time (RT) in seconds broken down by memory task, interference type and delay.

Interference (seconds)	Location			Appearance		
	Control	Tapping	DVN	Control	Tapping	DVN
0.5	1.40	1.33	1.45	1.75	1.65	1.62
5.5	1.74	2.02	1.79	2.05	2.06	2.56
15.5	2.19	2.55	2.03	2.63	2.35	2.67

Table 2

Participants carrying out tapping during the delay intervals had longer mean latencies than other participants for location memory tasks but not for appearance memory tasks.

Participants who observed DVN had longer mean latencies than other participants for appearance memory tasks, but not for location memory tasks.

Conclusions

DVN did not interfere with accuracy for appearance memory, whilst there was an effect of tapping on location memory.

Tapping increases RT for location memory, but does not significantly slow appearance memory, whilst DVN increases RT for the appearance memory but does not significantly affect location memory.

The findings imply that appearance information is accessed differently from location information and that the encompassing term 'visuo-spatial' might reflect the operation of separate components of the cognitive system.

Candidates should study **ONE contemporary study** as appropriate.

Contemporary study (option 2)

Sacchi et al. (2007) Changing history: doctored photographs affect memory for past public events.

Aim(s)

To investigate whether doctored photographs of two well know events could change a person's memories of an event.

To find out if viewing doctored images would change the attitudes a person has towards a past event.

To investigate if viewing doctored images of a past event could change behavioural intentions in the future.

Procedure

Sample: 187 participants (31 male and 156 female) who were undergraduates (92% Psychology, 8% other) enrolled at the University of Padua or at the University of Udine, in Italy. The age range was 19–39 (mean age 22.3 years). Participants did not receive any compensation for involvement.

To represent the Beijing event a well-known image of a student standing in front of tanks in Tiananmen Square was used. For the Rome event, a photograph depicting peaceful demonstrators marching in front of the Coliseum was used.

A doctored version of each original photograph was created using Microsoft Picture It! Photo 2001.

For the Beijing event, a conspicuous crowd was added on both sides of the line of tanks. In the photograph for the Rome event, police officers and aggressive-looking demonstrators were placed among the peaceful crowds.

To ensure the doctored Rome photo conveyed violence, two versions were presented to eight independent judges, who rated each image on a peaceful–violent scale. The version rated more violent was selected for the experiment.

Participants viewed one combination of the photographs for the Beijing event and the Rome event, either the original or doctored version.

There were four possible combinations counterbalanced and randomised when presented:

- two original photos (N=48)
- two doctored photos (N=44)
- the doctored Beijing photo and original Rome photo (N=43)
- the original Beijing photo and doctored Rome photo (N=52)

Three sets of multiple-choice questions were used: manipulation check questions, critical questions and attitude questions.

Photographs and questions were presented in a printed questionnaire that participants completed in large groups in classroom settings. No information about the experiment was given.

On the first page participants saw both photographs then answered the question 'Can you tell what major public event of the past 15 years is depicted in each of the following photos?' in a blank space next to each image.

On the next page, one of the two photographs appeared again, this time accompanied by a caption indicating the event and when it took place. On this page, participants also found the manipulation check questions and two short filler exercises.

Manipulation check questions assessed if photographs were believable and participant familiarity with the events. They indicated whether they had already seen the photograph and rated how familiar they were with the event.

On the next page, participants responded based on their memories of the event (being asked not to look back at the photograph). They were then presented with the critical questions specific for that event and the attitude questions.

Critical questions addressed aspects of participant memories that could be biased by the content of the doctored photographs.

Attitude questions tested whether the doctored material could affect attitudes towards the events, for example rating violence.

Finally, a blank page was left for participants to add their comments or to point out aspects of the event that they had found particularly striking.

During the debriefing, participants saw both the original and the doctored version of each photograph, and the real purpose of the study was revealed.

Results

Table 1 shows the results of the manipulation check by participant response.

Type of photograph	Claimed to have seen the photograph before		
	Yes	No	Not sure
Beijing (original)	44%	40%	16%
Beijing (doctored)	45%	34%	21%
Rome (original)	45%	35%	20%
Rome (doctored)	24%	45%	31%

Table 1

Beijing event: Participants in the two conditions were equally likely to recognise the photograph, regardless of whether the version had been modified or not. Ratings of familiarity with the Beijing event did not differ between the two conditions.

When asked critical questions, the participants who viewed the altered material produced higher estimates of the number of people that took part in the Beijing event and how many people were near the tanks.

Attitude questions showed mean ratings on the peaceful–violent and positive–negative scales did not differ between the two conditions.

Rome event: participants who viewed the original version were more likely to recognise the photo than those who saw the doctored version. Ratings of familiarity with also differed with ratings of high familiarity selected by 73.6% of the participants in the original condition, but by 51.6% in the doctored condition.

The critical questions focused on violence. Participants were asked if any physical confrontation occurred between the demonstrators and the law enforcement, if any property was damaged and how many people were injured.

Those exposed to the altered photograph were more likely to respond 'Yes' to all three questions. For example, 34% of those who saw the original claimed there were injuries, but 67% of those who saw the doctored photograph claimed injuries occurred.

Participants who viewed the doctored photo rated the event significantly more violent and they rated the Rome event significantly more negative, than those who saw the original.

Study 2

To test the hypothesis that the exposure to a doctored photograph of a past public event could affect people's behavioural intentions a second study was conducted.

A total of 112 participants (35 male, 73 females, 4 did not specify gender) enrolled at University in Italy. The age range was 50–84 (mean age 64.9). About 56% of the participants were retired, 20% were still working and the remaining 24% did not indicate their occupation. Participants did not receive any kind of compensation for involvement.

The same photographs from Experiment 1 were used as stimulus material and participants viewed only one of four possible combinations (as in the first experiment). The questions were the same, however one question was added for the Rome event to rate how likely they would be to take part in a similar demonstration.

Results showed that in comparison to participants who viewed the original photograph of Rome, when asked if they would take part in a similar demonstration those who saw the doctored photograph gave significantly lower ratings compared to participants in the original condition.

Conclusions

Viewing modified images affected not only the way people remember past public events, but also their attitudes and behavioural intentions. The effect was similar for younger and older adults, regardless of whether the specific events were recent enough to be remembered first hand.

The authenticity of doctored images may have led participants to engage in the reconstructive process of remembering and to retrieve bits of information that were consistent with the misleading suggestion.

According to these findings, anybody intending to deceive people and affect their opinion by circulating such material would have a good chance of being successful.

Overall, it raises the question that if viewing false pictures during the retrieval stage affects recollection of well-known events, what happens when we are exposed to misleading material when we first learn about a new event?

References

Study	Link
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