THE DUSTON SCHOOL

Knowledge itself is power

GCSE Psychology

Memory

Knowledge Organiser

Name:	Form:
Teacher:	Class:

MEMORY

KEY DEBATES
- NATURE (biological) vs. NURTURE (influenced by environment)
- REDUCTIONISM (MSM & theory of reconstructive memory)
- LAB EXPERIMENTS (Braun) vs. CASE STUDIES (Wilson)

THE MULTI-STORE MODEL OF MEMORY

SEPARATE & DISTINCT STORES
Memory has three separate memory stores; the sensory store, short-term memory (STM) and long-term memory (LTM).

SENSORY STORE
Information from our environment is detected by our senses (i.e. smells, sounds, images, tastes and touch), these will briefly enter our sensory memory for a **few seconds,** this store also has **limited capacity.** If we don't pay attention to it, the information **decays (fades until forgotten).**

SHORT TERM MEMORY STORE
Limited **capacity (7+/-2) & duration (30 seconds).** Info. goes from sensory store to STM if attention is paid to it. If more information enters and the store is full, info. becomes **displaced (pushed out).** If not rehearsed it will **decay.**

LONG-TERM MEMORY STORE
Unlimited capacity & duration. When information in STM that goes through **maintenance rehearsal** (repeating information over & over), or **elaborative rehearsal** (giving meaning to information) it **transfers** into LTM. Encoding is mainly semantic (we think about the meaning of information) but can also be visual and auditory. **Retrieval failure & decay** can occur if information is not recalled regularly.

LIMITATIONS
- Over emphasises the importance of rehearsal. Attaching meaning just as effective
- The model is reductionist in its explanation of memory.
- Isn't supported by neuropsychological evidence - LTM more than one store

THEORY OF RECONSTRUCTIVE MEMORY

Memory is influenced by our prior experiences & schemas (mental representation of an object or situation). We fill in the gaps to make memories.

SCHEMAS
people construct their memories based on prior experiences, but we don't tend to recall them in chronological order. Our beliefs can influence the memory.

PRIOR EXPERIENCES
Our memories are influence by prior experiences so are never entirely accurate. E.g. camping trip at 4 years old influence memory of camping at 10.

EXPECTATIONS
Our knowledge & beliefs can influence schemas & distort memories. E.g. if we expect to see a zebra at a zoo we might mistakenly remember a horse as a zebra.

LEADING QUESTIONS
Can be particularly effective in manipulating people's memories through suggestion.

CONFABULATION
Making up details to fill in the blanks in a memory - 'honest lying'.

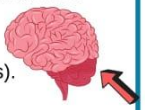
LIMITATIONS
- Too reductionist - there are many complex factors that may affect memory recall,
- It doesn't account for other factors that contribute to recall such as anxiety, age.
- It doesn't explain how memories are processed.

KEY CONCEPTS

INFORMATION PROCESSING
Brain works like a computer: input (through senses) -> encoding (changed into format easier to understand) -> storage (held in memory) -> retrieval (recall of memory) -> output (use recalled info.)

HIPPOCAMPUS (part of limbic system)
Involved in making new memories - must pass through here before entering long-term storage. Important for semantic memories of facts/ autobiographical memories.

CEREBELLUM
Responsible for learning movements and procedural memory (motor skills).



AMNESIA
Caused by brain injury, illness, some medications.

Anterograde amnesia: unable to form new memories. Caused by damage to *hippocampus*
Retrograde amnesia: unable to recall existing memories. Caused by damage to *frontal lobe.*

APPLICATIONS OF RESEARCH

TECHNIQUES USED FOR RECALL IN ADVERTISING


(a) Cues- create context or feeling linked to product so when consumer is in this context/ emotional state it will trigger a memory of the product.
(b) Repetition – build familiarity with brand by repeating them frequently (prevents decay & encourages positive feelings).

(c) Avoiding overload – if there is too much information, some is displaced out of STM; reducing information to essential point should avoid overload.
(d) Use of autobiographical advertising – used to connect emotionally by reminding people of a time in their life (e.g. using Disney ads in Braun's study).

USE OF NEUROPSYCHOLOGY FOR MEASURING MEMORY
Welchsler memory scale evaluates the extent of brain damage in patients who may have had brain injury or suffer from illness like dementia. It produces results on 5 different aspect of memory; auditory, visual, visual working, immediate and delayed memory. **Why?** By determining the extent of the patients damage, they can offer them the best and most appropriate treatment.

NATURE

WILSON ET AL. (2008) - CLIVE WEARING STUDY

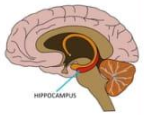
AIM
To report on the case of Clive Wearing who suffered from a severe case of amnesia.

SAMPLE
One male - Clive Wearing

RESEARCH METHOD
Longitudinal case study using interviews, MRI scans IQ tests.

PROCEDURE
- In March 1985. Clive developed HSVE which destroyed large parts of his brain.
- Over 21 years researchers conducted interviews with & observations on Clive, he had neurological tests (verbal reasoning/ IQ tests) & MRI scans.

FINDINGS & CONCLUSION
- Brain scans showed significant abnormalities incl. significant damage to the hippocampus.
- Clive suffered from retrograde & anterograde amnesia.
- Clive could still talk, read, write, play the piano etc. So his procedural memory remained in tact.



Brain damage can affect memory and result in both anterograde & retrograde amnesia.

LIMITATIONS OF STUDY
- Study can't be generalised as sample was one person (sample too small & gender biased).
- Study was unethical as Clive was repeatedly tested over 21 years (could cause distress).

NURTURE

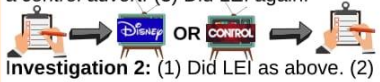
BRAUN ET AL. (2002) STUDY INTO ADVERTS & MEMORY

AIM
To see whether an advert could affect childhood autobiographical memories.

SAMPLE
Experiment 1: 107 USA undergrads
Experiment 2: 167 USA undergrads

RESEARCH METHOD/ DESIGN
Lab experiment

PROCEDURE
Experiment 1: (1) Participants completed a Life Events Inventory (LEI) measuring confidence shaking hands with a character & their memory of Disney. (2) Then watched a *Disney advert* or a *control advert.* (3) Did LEI again.



Investigation 2: (1) Did LEI as above. (2) Watched 1 of 3 adverts (shaking hands with Bugs Bunny; or Ariel; or Disney ride info ad). (3) Did LEI again.

FINDINGS & CONCLUSION
Exp 1: Significantly more in Disney condition increased their 'hand shaking' confidence scores from before & after the advert.
Exp 2: More significant in Bugs Bunny as (78%) & Ariel ad (76%) compared to control (62%).
Autobiographical advertising can affect how people remember the past..

LIMITATIONS OF STUDY
- Sample age & culturally biased (unrepresentative & can't be generalised).
- Lab experiment lacks ecological validity (not reflect real life).

Created by @stephhill58

Reminder of Assessment Objectives

AO1 – Learners must demonstrate knowledge and understanding of psychological ideas, processes and procedures

AO2 – Learners must apply knowledge and understanding of psychological ideas, processes and procedures

AO3 – Learners must analyse and evaluate psychological information, ideas, processes and procedures to make judgements and draw conclusions

Key Terminology

Key term	Definition
Anterograde Amnesia	Loss of the ability to create new memories.
Autobiographical memory	A memory system consisting of episodes recollected from an individual's life, based on a combination of episodic (personal experiences and specific objects, people and events experienced at particular time and place) and semantic (general knowledge and facts about the world) memory.
Capacity (of memory)	The amount of information that can be kept in a memory store at one time.
Chunking	The process of taking individual pieces of information and grouping them into larger units. By grouping each data point into a larger whole, you can improve the amount of information you can remember.
Cues	Internal or external events which trigger a memory.
Decay	When information fades away over time.
Displacement	When new information comes into STM, pushing out (displacing) old information.
Duration (of memory)	The amount of time information can be stored in the memory stores.
Elaborative rehearsal	When you think about the meaning of the word/information – which allows it to be transferred to and stored in LTM.
Encoding	When information is formatted so it can be stored in memory.
Forgetting	The apparent loss or modification of information already encoded and stored in an individual's long term memory.
Interference	Occurs in learning when there is an interaction between the new material and transfer effects of past learned behaviour, memories or thoughts that affect the understanding the new material.
Long-term memory	Informative knowledge can be stored for long periods of time.
Procedural memory	Part of the long-term memory that is responsible for knowing how to do things, also known as motor skills.
Retrieval	To move information from the LTM into our STM so we can use it.
Retrieval cues	Stimuli which triggers information to be remembered (moved from LTM to STM)
Retrograde Amnesia	A loss of memory-access to events that occurred, or information that was learned, before an injury or the onset of a disease.

Schemas	A cognitive framework or concept that helps organise and interpret information. Schemas can allow individuals to take shortcuts in interpreting the vast amount of information that is available in their environment.
Short-term memory	The part of the memory system where information is stored for roughly 30 seconds.
Working memory	A system for temporarily storing and managing the information required to carry out complex cognitive tasks such as learning, reasoning, and comprehension.

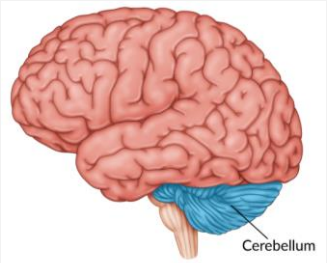
Unit Summary

Key Concepts	**Information processing** When our brain processes information, it follows 5 stages: input, encoding, storage, retrieval and output. **Types of forgetting** • *Displacement* – STM has a limited capacity of 7+/-2 items. Therefore, when it is full, new information pushes out the old information – which will be forgotten (UNLESS it has moved into long term memory through rehearsal). • *Decay* – Information fades away over time. This can happen in the sensory store if the information isn't paid attention to, in STM if the information isn't rehearsed and in LTM if the information is not regularly retrieved • *Retrieval failure due to a lack of cues*- When information is placed into our long-term memory, associated 'cues' are stored at the same time. These cues can be external (the context we're in, e.g. the room, temperature) or internal (the state we're in, e.g. emotional state, intoxication). If these cues are not available at the time that information needs to be recalled (and used), then you may fail to retrieve that information from long term memory (the information is available, but we cannot access them – retrieval failure).
Biopsychology time!	Different parts of the brain are theorised to be involved in different types of memory. However, in order to do this – we need to look at why people have **memory loss** and consider how their brains may be different to a 'normal' brain. Amnesia is a form of memory loss. There are different types of amnesia, the main 2 being: • Anterograde amnesia – the inability to form new memories, after damage. • Retrograde amnesia – the inability to recall information learned from before the amnesia developed Research suggests that patients with anterograde amnesia often have a damaged hippocampus, which suggests that hippocampus is involved in forming new memories. The hippocampus is involved in moving information in our short-term memory into our long-term memory. That means, that information can only be remembered if it is able to pass through the hippocampus to be turned into a long-term memory. Therefore, if someone has damaged to their hippocampus – information can't pass through it and be turned into a long-term memory. Damage to the **frontal lobe** (directly behind your forehead) is believed to be a cause of retrograde amnesia. This theory comes from research showing a relationship between frontal lobe damage and retrograde amnesia in Alzheimer's patients. 'Remote memory tests' (tests looking at accuracy of memory about distant past) were carried out on participants with frontal love damage and the results were a significant correlation between retrograde amnesia and having frontal lobe damage (Mayes, 1986).

Procedural memory

Procedural memory refers to our memory for how to do things and is stored in our long term memory. For example, how to ride a bike.

The part of the brain responsible for procedural memory is known as the **cerebellum**. Which is located at the back of the brain. When the cerebellum is damaged, people often have difficulty learning a new skill or improving an old one.

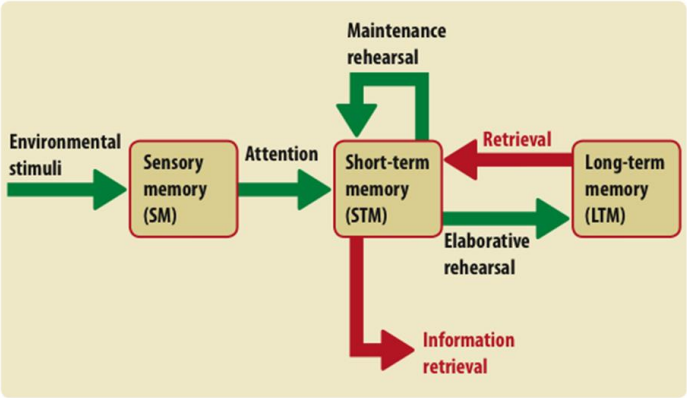


Key Theory 1

Multi-store model of memory

Atkinson & Shiffrin (1972) proposed a theory that states that human memory is made up of 3 stores:

- Sensory memory
- Short-term memory
- Long-term memory



Everything that is going on in our environment is picked up by our senses (e.g. sight, sound, smell) and enters the sensory store. If the person pays **attention** to the information, it will be transferred into long-term memory. If the person doesn't pay attention to the information, it will **decay** and be forgotten. Information that is paid attention to moves into the short-term memory (STM). In order to 'maintain' information in STM, people will perform **maintenance rehearsal** (repeating it again and again in your head). If this maintenance rehearsal continues for long enough, the information may be **transferred** into LTM. Alternatively, **elaborative rehearsal** may be used to transfer information from the STM to the LTM, this is when you think about the meaning of the word/information. In order to USE information stored in the LTM, we need to retrieve it – this means to move it from the LTM into our STM so we can use it.

Characteristics of each store

	Sensory store	**STM**	**LTM**
Encoding	According to the sense (e.g. a sound is encoded acoustically)	Mainly acoustic	Mainly semantic (meaning)
Capacity	Large	7+/-2 (5-9 items)	Potentially unlimited
Duration	2 seconds	30 seconds	Potentially unlimited

Criticisms

- *Rehearsal versus meaning:* The multi-store model suggests that information can only be kept in long-term memory if it is rehearsed. However, there are some things we can remember, in the long-term, without needing to rehearse it. This is the case for information that is particularly meaningful. Therefore, the model can be criticised as it overemphasises the role of rehearsal and ignores the importance of meaning in memory.
- *Oversimplifies STM*: The model suggests that there is one single 'store' in which all short-term memories are stored. However, research (e.g. the KF case study)

	suggests that memory is actually much more complex, and there may be separate stores for 'auditory' short term memory and 'visual' short-term memory. ○ *Oversimplifies LTM:* Neuropsychological evidence suggests that different parts of the brain are responsible for different types of long-term memory – suggesting that not all long-term memories are 'kept' in the same place. For example, evidence suggests that the hippocampus is responsible for our memories of the past events in our lives (autobiographical memories), whereas the cerebellum is responsible for procedural memory
Core Study 1	**Wilson, B. A., Kopelman, M., & Kapur, N. (2008).** **Prominent and persistent loss of past awareness in amnesia: Delusion, impaired consciousness or coping strategy?** **The Clive Wearing case study.** *Find details on a following page*
Key Theory 2 ***The Theory of Reconstructive Memory***	The theory of reconstructive memory suggests that when we remember an event, we may recall some parts of it – but we reconstruct exactly what happened in our own way, based on our prior experiences and our expectations, as well as something known as 'schemas'. This means that when we remember an event, we aren't remembering exactly what happens, but some version of it. **Schemas** Schemas are mental representations we have about an object or situation, based on prior experience. We also have schemas for how different situations play out – for example, we know that the process of going to a restaurant involves – waiting for a waiter to speak to you, them telling you where to sit, sitting down, getting the menu, the waiter coming back after some time to ask what you'd like to drink etc… **Confabulation** is when you're remembering an event and you make things up – but it isn't the same as lying as you're not doing it intentionally. When you remember events, you may only remember parts of the event and you're left with lots of gaps. Bartlett suggested that in the situation, people will make up details or use aspects of other memories to fill these gaps. They may also use their schemas to fill these gaps, which may be based on their **expectations** of what will happen – e.g. when they remember that they were at their friend's house, they may say their cat was there when they weren't – as this is usually what happens when they're at their friend's house. Previous **experiences** can also affect our memory through interference. For example, when we recall an event, we may accidentally recall aspects of 2 different events. **Distortion** is when your memory of an event differs from the reality of the event. This can be the result of **leading questions**, which influence the responder to give a particular answer. For example Loftus and Palmer (1974) found that by asking the question 'did you see the broken glass?' compared to 'did you see any broken glass?' can make witnesses of an accident believe that there was broken glass when in fact their wasn't. **Criticisms** ○ *Reductionism:* There are many complex factors that may affect memory recall, by reducing it to problems with reconstruction is **reductionist**. Many other factors such as anxiety and age can contribute to recall, as can the factors in the acronym ADVOKATE used by police. ○ *The concept of schemas:* Critics have argued that schemas are a very vague and abstract concept. One of the main issues is that we can't actually see or observe

	schemas – brain scans will show us which parts of the brain are active but don't tell us what actual processes are taking place within the brain. ○ *Research quality.* One criticism of the reconstructive theory is that the research used to support it is of poor quality. E.g. Loftus and Palmer's participants watched a video of a car crash in a psychology lab and then had their memory tested, which is very different from actually being present and witnessing a car crash or crime. For example, witnessing a car accident in real life may involve more anxiety – which research shows effects the quality of a witness' testimony (either by improving or worsening it). Foster et al. (1994) points out that in real life, witnesses are more motivated to be accurate due to potential consequences – so perhaps in real life, the witness statement would be more accurate. ○ *Theory is too complex.* It states that some aspects of memory will be recalled and some won't be. However, it is unclear exactly what information will or won't be successfully recalled. This makes it difficult for us to predict what information people will be able to recall. ○ *How are memories processed?* Bartlett explains that memory is an active process – however he doesn't actually explain how memories are made in the first place or what the process of recalling information actually involves. As a result, this explanation is very vague and incomplete.
Core Study 2	**Braun, K.A., Ellis, R., Loftus, E.F. (2002).** **Make my memory: How advertising can change our memories of the past** *Read details on a following page.*
Practical Application 1 ***Using memory research in advertisement***	When a company wants to sell a product and are producing adverts, they need to make sure these adverts are memorable for consumers. This means they are more likely to think about the product at a later point and therefore, make a purchase. Memory research has informed how advertisers design their adverts. ☼ **Use of cues:** Advertisers use cues to create a certain context or feeling when advertising their products. This links to the cue-dependent theory of memory. When the consumer is the same situation or emotional state, the advertisement will act as a cue, to trigger the memory of the product. ☼ **Repetition:** Advertisers use repetition in advertising to make consumers feel more familiar with the brand. It helps the memory get transferred to and stay in long-term memory and prevents decay. ☼ **Avoiding overload:** Overload is when someone takes in too much information, which leads to displacement (pushing over information out of the short term memory). Therefore, advertisers will make sure that their slogans are kept short (so they can be remembered in full, without part of it getting displaced) and essential product details are kept to a minimum to avoid overload. ☼ **Autobiographical advertising:** Autobiographical advertising refers to adverts which intend to bring back people's memories of their past to influence how they feel about a product that is being advertised. The idea of this is to provoke happy childhood memories, to make people want to buy the product.
Practical Application 2	**The development of neuropsychology for measuring different memory functions** When someone experiences brain damage, e.g. as the result of an accident or an illness, their memory can be damaged. Dementia is a well-known illness, which causes a loss of memory, normally in the elderly (but not always!) Psychologists have devised various ways of measuring how much someone's memory is affected as a results of brain damage. One example is the Wechsler Memory Scale.

Core Studies

The multi-Store Model of Memory Research study; Wilson, Kopelman & Kapur (2008)- Prominent and persistent loss of past awareness in amnesia: delusion, impaired consciousness or coping strategy.

Aim

- The aim of this case report/study was to document the neurophysiological assessments and psychological experiences of Clive wearing who suffered from a severe and rare case of both anterograde and retrograde amnesia.

Procedure

- **Research method**-This was a **longitudinal case study (over 21 years)** which gathered in-depth detailed information about Clive wearing who suffered a severe and rare case of amnesia following a viral infection – **encephalitis.**
- Clive Wearing (CW) was born in the United Kingdom in 1938 and was an outstanding musician and gifted musical scholar.
- The research involved detailed observations and **in-depth interviews** as well as taking brain scans at intervals
- Neurological assessment in November 1985 stated that CW's Verbal and Performance IQ scores, although in the average range, had declined from his pre-encephalic ability. His **short-term memory (STM**) was normal but his **long-term memory (LTM)** was severely impaired.
- In July 1991 an **MRI scan** was carried out on CW's brain. This showed marked bilateral abnormalities in the following brain areas: **hippocampal formations, amygdalas, mammillary bodies, and temporal poles**. There were also abnormalities in many other brain areas e.g. left fornix, left medial frontal cortex.
- A second MRI (3-Tesla) was carried out in January 2006. Comparing the 1991 and 2006 scans and, allowing for improved imaging technology, there was very little change.

Results

- Clive's verbal and performance IQ scores, although in the average range, had declined compared to his ability before the illness.
- His short-term memory was normal but his **long-term memory** was severely affected.
- Scans showed Clive's brain was very different from normal in the following areas: **hippocampal formation, amygdala, mammillary bodies and temporal lobes.**
- Clive always scored zero on test of delayed recall (LTM).
- His **episodic memory** was severely affected, and there were also some problems with his **semantic memory**.
- He could not lay down new memories nor recall previous ones, showing that he suffered from both **anterograde and retrograde amnesia**.
- However, Clive still had the ability to talk, read, write, conduct and sight-read music.
- In 1995, Wilson et al. suggested Clive's preoccupation of having regained consciousness could perhaps be interpreted as a delusion. However, they alter decided that he may just have been trying to make sense of why he couldn't remember things, as he did not show any other psychiatric features associated with delusions.

Conclusion

- There is an interaction between cognition and physiology.
- Physiological causes in the brain such as brain damage in the hippocampal and limbic regions affect the social and cognitive interactions of the individual.

- The viral infection encephalitis can lead to severe brain damage/abnormalities.
- Brain damage/abnormalities can result in both **retrograde and anterograde amnesia.**
- Brain damage/abnormalities can have severe negative effects on memory.

Evaluation-criticisms

- It is difficult to make generalisations about the effect of brain damage from studying just one person.It may be that other people would be affected differently under the same circumstances.
- The case has been used to draw conclusions about normal human memory and how it works. However, because Clive Wearing is an unusual case it may not be reliable to do this.
- Some of the commentary on the case relied on the researchers' interpretation of CW's behaviour, especially as he was not able to easily explain his own experience. This means some of the findings may be open to researcher bias.
- The study raises a number of ethical concerns including the lack of confidentiality (the participant was named), the way he was tested when it did not benefit him directly (not considering his welfare) and the fact that he seemed to be distressed by the investigation (especially when he could not explain certain aspects of his experiences when questioned).
- Because the researchers did not know Clive before he suffered amnesia they had to rely on his family members' accounts of his life before his illness. This relied on some level of interpretation, making some findings subjective.

Reconstructive Memory Research study; Braun, Ellis & Loftus (2002)-Make my memory- How advertising can change our memories of the past.

Experiment 1

Aim

The first experiment aimed to investigate whether autobiographical advertising can prompt consumers to imagine their childhood experiences so their memories become more consistent with the images evoked in the advertising i.e. to determine whether autobiographically focused advertising can directly affect how consumers remember prior childhood experiences.

Hypotheses:

- Elements and images portrayed in advertisements will appear as part of a consumer's reconstructed memory, regardless of whether or not the events had actually happened.
- If an advertisement causes imagining of a childhood experience, this imagination process will lead consumers to believe the ad-based experience actually happened to them as a child. (This is known as advertising inflation.

Procedure

- This was a **laboratory experiment** with an **independent measures design** (participants only took part in
- one condition).
- Data was gathered through the use of **questionnaires.**
- The **independent variable (IV**) was whether the participant viewed a Disney advertisement or a non-Disney
- advertisement.
- The **dependent variable (DV)** was the difference between the scores given in Week 1 and Week 2 for the critical item in a questionnaire (shaking hands with a favourite TV character at a theme resort). A score of zero would indicate no memory change, a positive score- a memory inflation and a negative score- a memory deflation.
- **107** undergraduates (**64 females, 43 males)** from a **Midwestern university in the USA.**

- Participants received course credit for take part.
- Participants were randomly allocated to one of the two conditions which placed **46 in the Disney ad condition**
- and **51 in the non-Disney ad (control) condition.**

Week 1:
Participants completed a **questionnaire** which asked them to rate, on a line scale from 0 – 100 (where 0 = definitely did not happen, 100 = definitely did happen), the likelihood that an event happened to them before they were ten years old. Twenty childhood events were listed, including the critical event 'Met and shook hands with a favourite TV character at a theme resort'.
Week 2:
Participants in the experimental group were given the Disney ad whilst those in the non-experimental (control) group were given a non-Disney ad. Participants were asked to:

a) Write down how the ad made them feel and what it made them think about.
b) Rate the ad as 'unfavourable', 'favourable', 'bad-good', 'unpleasant-pleasant' on four 100 mm line attitude scales where a higher score indicated more favourable attitudes.
c) Rate four statements, using scales of 0 – 100 (where 0 = strongly disagree and 100 = strongly agree) how involving the ad was for them.

The experimenter then said there had been a problem with coding the results of the questionnaire completed in Week 1 so would they please complete it again. Participants then undertook a short distraction task after which they were asked, in a different questionnaire, about their memories of Disney.
Finally, as a way of assessing demand characteristics, participants were asked what they thought the purpose of the experiment was and whether or not they believed their memories of Disney had been influenced by the advertising.

Experiment 2

Aim
To see whether false information in an advert could make participants think that those events had happened to them as a child.

Procedure
Experiment 2 was a variation of Experiment 1.

- There were three groups in this experiment. Group 1 received an advert suggesting they had shaken hands with Bugs Bunny at Disney Land (an impossibility because Bugs Bunny is a Warner Brothers character);
- Group 2 received an ad suggesting they had shaken hands with Ariel, the Little Mermaid (an impossibility as she had not been introduced as a Disney character when the participants were under the age of 10 years).
- Group 3 (the control group) received a non-autobiographical, informational Disney ad. Participants were psychology undergraduates (104 females, 63 males) from a Western University in the USA who received course credit for taking part.

The same basic procedure from Experiment 1 was followed and findings showed that:

Findings
- The two autobiographical ads were more involving for participants than the informational ad.
- All groups increased their confidence that they had shaken hands with a cartoon character but the increases were more pronounced in the two autobiographical conditions.
- 76% in the Ariel condition, 78% in the Bugs Bunny condition, 62% in the non-autobiographical condition.

Evaluation-criticisms

- Lacked ecological validity as people were not normally exposed to adverts under such controlled conditions. For example, it is artificial to expect people to analyse an advert as much as they had to do in this study.
- Lacked construct validity as the measure for imagination inflation was a very narrow one. It focused on one event and this was also measured using a crude scoring system.

- The sample was age biased. As undergraduates, the participants represented a very narrow age range. It might be that children and older adults are influenced differently by autobiographical advertising, especially when it relies on triggering past memories.
- The sample was culturally biased. America is a very commercial country and so its citizens are exposed to a lot of advertisements. This may impact on how they respond to autobiographical advertising. It may, for example, make them more resistant than other cultures because they are used to it.
- There are ethical issues in relation to this study. Participants were deceived and therefore had their memories manipulated without their consent.

Example exam section – 2018

7 (a) Identify which of the following memory stores has a duration of between 15 and 30 seconds.

A sensory store

B short-term memory

C long-term memory

D all three of the above

Your answer ☐ **[1]**

(b) Identify which of the following memory stores has an unlimited capacity.

A sensory store

B short-term memory

C long-term memory

D all three of the above

Your answer ☐ **[1]**

(c) Identify which of the following memory stores encodes data visually.

A sensory store

B short-term memory

C long-term memory

D all three of the above

Your answer ☐ **[1]**

8 A psychologist tested 25 participants to investigate how many different letters in a row they could accurately recall at once. Each participant was tested using 100 different strings of letters of varying lengths. From this, a measure of central tendency for each participant was calculated as shown in the table below.

A table to show the mean length of the letter string (to one significant figure) accurately recalled by 25 participants

Mean length of letter string recalled	Four	Five	Six	Seven	Eight
Frequency	2	5	7	8	3

(a) Outline what is meant by a measure of central tendency.

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..... **[2]**

(b) Draw a graph to represent the data in this table.

[4]

9 There are a number of stages of information processing.

Draw a line to match each stage with its correct example. [2]

Stage	Example
Storage	Alan remembered what he had eaten for breakfast that morning.
Retrieval	Barbara made a mental record of her new boss's name.
	Carol read an email from a customer.

10

A lot to remember.

Sean works as a waiter. He is about to take an order from a large group of people where eleven drinks are asked for. Unfortunately, he realises he has left his notepad in the kitchen. He is too embarrassed to tell the customers this and decides he will try to remember all eleven drinks.

Using the source:

(a) Explain what is meant by displacement with reference to Sean's memory.

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..... **[3]**

(b) Describe **one** technique that would help Sean remember all eleven drinks.

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..... **[3]**

11 Outline how the findings from Wilson et al.'s (2008) study of Clive Wearing relate to the area of neuropsychology.

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..... **[3]**

12 Evaluate Wilson et al.'s (2008) study of Clive Wearing.

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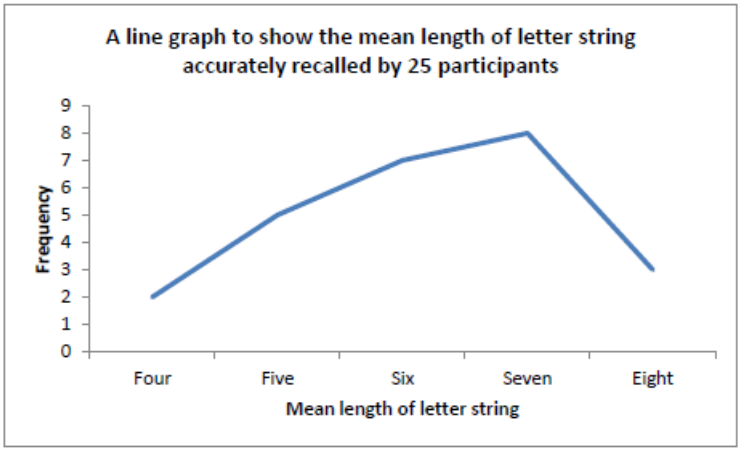
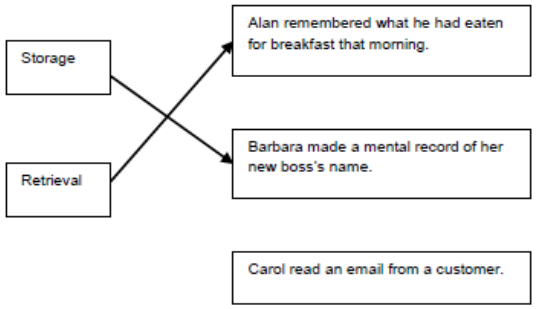
..... **[4]**

Mark scheme

7(a)	(a)	B	1	
	(b)	C	1	
	(c)	D	1	
8	(a)	1 mark for the idea of a score that is typical/average (or similar) 1 mark for the idea that this score represents the whole data set	2	If the response has both required elements but lacks clarity, then limit to 1 mark.
	(b)	This data would need to be presented as a line graph or histogram. 1 mark for a relevant and clear title 1 mark for accurate labelling of both axes 1 mark for appropriate scales being used 1 mark for accurate plotting of data  	4	If a candidate uses an inappropriate graph to present the data, it may still be appropriate to credit the title and possibly the labelling of axes.
9		1 mark for each correctly matched box as shown below.  	2	For each additional line drawn over the 2 required, subtract 1 mark.
10	(a)	1 mark for another term or phrase that demonstrates displacement e.g. being shunted/pushed out 1 mark for the reason displacement occurs e.g. memory overloaded, limited capacity/space, etc 1 mark for an additional detail e.g. information becomes unavailable (rather than inaccessible), occurs in STM, concept of 'first in first out', etc	3	For full marks, there needs to be some reference to Sean's situation in relation to displacement e.g. his memory will be overloaded by the number of drinks he had to remember.
10	(b)	1 mark for identification of the memory technique whether explicit (e.g. chunking, use of cues, imagery, rehearsal) or implicit (e.g. relating one piece of information to another piece by meaning) 1 mark for description or explanation of the identified memory aid 1 mark for applying it to the source i.e. having to remember a list of drinks. <u>Examples of a 3-mark answer</u> e.g. 'Sean could use chunking (1) by grouping pairs of drinks e.g. coke and then wine (1) so that each drink does not take up as much space in memory (1)' e.g. 'He could picture something to represent each drink (1) so that he has something more tangible to remember like a beard for a beer (1) and this could act as a trigger when he gets back to the bar (1)'	3	

11		1 mark for a brief or basic statement of findings that include neuropsychological content Or 2 marks for a detailed outline of findings that include neuropsychological content Or 3 marks for a detailed outline of findings that include neuropsychological content and relate this back to the function of memory <u>Examples of a 1-mark answer</u> • Herpes simplex encephalitis can lead to brain damage • CW had significant abnormalities in his hippocampus <u>Examples of a 2-mark answer</u> • 'MRI scanning showed that there were significant abnormalities in hippocampal formations (1) as well as in the amygdala, mammillary bodies and temporal lobes (1).' • 'The hippocampus plays a clear part in the formation of new memories (1) as this was something Clive Wearing could not due to the damage that this part of his brain had experienced (1).' <u>Examples of a 3-mark answer</u> • 'Some of the findings from the Clive Wearing study relied on scanning the brain which shows the importance of using neuropsychology to explain his amnesia (1). These brain scans showed damage to various parts of his brain including the hippocampus and amygdala (1). By mapping the damage to the memory problems that Clive suffered, researchers were able to understand the functions of these parts of the brain in everyday memory (1).' • 'Because CW's short-term memory was found to be normal while his long-term memory was severely impaired (1) we are able to link the long-term memory to those parts of his brain that were damaged as this would explain the dysfunction (1). For example, MRI scans showed significant damage to the hippocampus which is now widely accepted as a part of the brain which is important for the formation of new memories (1).'	**3**	

12		Evaluation points could include; difficulties of making generalisations based on one person, the issues of using an atypical case to represent understanding of normal human memory, issues of interpretation, ethical issues around the way the study was conducted. **Level 2 (3-4 marks):** There is a good evaluation which offers breadth and/or depth. Points may be brief but should still be relevant and used to reach a substantiated judgement in response to the question. **Level 1 (1-2 marks):** There may be some basic attempt at evaluation but it will be weak and some points may be inaccurate. Judgements will be either unclear or absent. **(0 marks):** No credit worthy response.	**4**	To gain credit for ethical issues, candidates must go beyond stating that the study is unethical and instead begin to explain how or why.