IB Psychology Revision Guide

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Biological Level of Analysis

General Learning Outcomes

Syllabus Question: ***Outline principles that define the biological level of analysis.***

The three principles that define the biological level of analysis are:

I. Emotions and behavior are products of the anatomy and physiology of the nervous and endocrine systems.
II. Patterns of behavior can be inherited.
III. Animal research may inform our understanding of human behavior.
IV.

Syllabus Question: ***Explain how principles that define the biological level of analysis may be demonstrated in research.***

Principle 1: Emotions and behavior are products of the anatomy and physiology of the nervous and endocrine systems.

I. Suggests that behavior is genetically inherited. The patterns of behavior we see today are theorized to have been of evolutionary benefits.
    a. What is inherited may be a predisposition for a certain behavior that require particular environmental stimuli before behavior will manifest

Research that demonstrates this principle are:

Heston (1996)	
What was the study on?	An adoption study, which assume that if offspring are separated from their biological parents we can conclude that any physical and behavioral similarities between parent and child are caused by genetic factors
Aim of the experiment	Study was too see whether schizophrenia is genetic or not
Conditions of the experiment	If genetic, adoption would not affect number of children later diagnosed with schizophrenia but due to biological inheritance a higher incident of schizophrenia would be expected among adopted children of schizophrenic mothers than those without schizophrenic mothers If nurture, incidence rate would be approximately same as other adoptees
Results	Incident of schizophrenia in general population is about 1% and was similar for those who were adopted with no family history of

	schizophrenia Over 10% of adopted children with family history of schizophrenia were later diagnosed with it
Conclusion	Research shows that schizophrenia has a strong genetic component
Link to syllabus question	This research demonstrates that schizophrenia can be inherited and therefore shows that patterns of behavior can be inherited.

Bailey and Pillard (1991)	
What is this study about?	Studied monozygotic and dizygotic twins and measured how often when one twin was homosexual the other was also homosexual
Aim	To whether homosexuality can be caused by genetics.
Conditions	Tested MZ and DZ twins
Results	There is a difference in concordance for homosexuality DZ twins had a concordance rate of 22% MZ twins had a concordance rate of 52%
Conclusion	Results suggest that there environmental factors to explain why MZ twins didn't reach 100% and that there is a strong genetic factor as to why MZ twins had double the concordance rate of homosexuality than DZ
Link to question	Research demonstrates the principle by showing the homosexuality can be inherited and can be genetic.

Principle 2: Animal research may inform our understanding of human behavior.

I. Based on idea that humans and the many different species of animals or different because of evolution and therefore suggests we are fundamentally the same thus it is valid to try to make predictions on human behavior based on animal research.
    a. The mechanisms that underlie behavior are the core similarity we share with animals

Research that demonstrates this principle are:

Martinez and Kesner (1991)	
What was this study about?	To test the effects of the neurotransmitter acetylcholine on memory formation of mazes in rats.
Aim	To see whether acetylcholine plays a role in memory formation
Conditions	Rats were trained to go through a maze and received food at the end. Once rats could do this experimenters injected: One group of rats with scopolamine which blocks acetylcholine sites thus decreasing available acetylcholine A second group of rats with physostigmine, which blocks production of cholinesterase, which removes acetylcholine from synapse and return neuron to resting state The control group was injected nothing.
Results	Rats injected with scopolamine were slower at finding way around maze

	and made more errors than compared to other two groups Physostigmine group ran through maze quicker and made less errors
Conclusion	Concluded that acetylcholine played an important role in a memory for maze
Link to question	Demonstrates how conduction research on animals allows us to inform our understanding of behavior.

Matsuzawa (2007)	
What is this research about?	Tested spatial memory in humans and chimpanzees
Aim	To compare the differences of spatial memory between young chimpanzees and humans
Conditions	Researchers took three pairs of chimps and taught them to recognize the numbers 1-9 on a computer screen Both the chimps and human participants were seated at a computer terminal, where the numbers flashed up very briefly on a touch-screen monitor in a random sequence The numbers were then replaced with blank squares and the participant had to remember which number appeared in which location and to tough the squares in the appropriate sequence
Results	Human participants made many errors and accuracy decreased the numbers were replaced with blank squares more quickly Chimpanzees showed remarkable memory for spatial distribution of numbers, with no difference when numbers were shown for shorter durations
Conclusion	Concluded that the memory of chimpanzees was a necessary adaption to survive and humans didn't need it anymore
Link to question	An example of evolution and shows us how studying animals allowed us to see differences in aspects of memory between chimpanzees and humans

Principle 3: Emotions and behavior are products of the anatomy and physiology of the nervous and endocrine systems

I. Suggests that all observable behavior, as well as internal mental activity of an individual can be traced back to physiological events
II. Links have between found between psychological and physiological activity in the effects of neurotransmitters, hormones and brain localization.

Research that demonstrate this principle are:

Martinez and Kesner (1991)	
What was this study about?	To test the effects of the neurotransmitter acetylcholine on memory formation of mazes in rats.
Aim	To see whether acetylcholine plays a role in memory formation
Conditions	Rats were trained to go through a maze and received food at the end. Once rats could do this experimenters injected: One group of rats with scopolamine which blocks acetylcholine sites thus decreasing available acetylcholine A second group of rats with physostigmine, which blocks production of cholinesterase, which removes acetylcholine from synapse and return neuron to resting state The control group was injected nothing.
Results	Rats injected with scopolamine were slower at finding way around maze and made more errors than compared to other two groups Physostigmine group ran through maze quicker and made less errors
Conclusion	Concluded that acetylcholine played an important role in a memory for maze
Link to question	Demonstrates the effects of neurotransmitters and therefore how physiological aspects of our body influence the way we operate.

Schachter and Singer (1962)	
What is this study about?	To see the effects of placebos and see the different effects of hormones when in different environmental contexts
Aim	Proposed that adrenaline causes emotion but the nature of the emotion was dependent on contextual factors
Method	They recruited volunteers to receive a vitamin injection and informed them that they would be participating in vision experiments. None of the 184 male participants received a vitamin injection. Three groups received adrenaline injection and a fourth group received a placebo injection. The three groups receiving the adrenaline injection were either given correct or incorrect information about the effects of the injection The participants were placed in one of the two conditions. Euphoria, a confederate of the experimenters encourages the participant to join in games. Anger, a confederate fills out a mock questionnaire with the participants but gets increasingly outraged by personal nature of questions Experimenters use observational data based on structured observations of participants in each condition and asked them to complete a form that assessed their mood in terms of happiness and anger
Results	In the euphoria condition, the groups who received an adrenaline

	injection with incorrect information about effects showed more euphoric and happy behavior
Conclusion	Conclude that emotion occurs by cognitive labeling
Link to question	Shows how a physiological aspect such as hormones can affect our behavior.

Physiology and Behavior

I. Localization refers to the idea that behavior, emotions and thoughts originate in the brain in specific locations
   a. Left hemisphere:
      i. Dormant for language, writing, logical, analytic and calculating thought
   b. Right hemisphere
      i. Dormant for visuospatial tasks such as drawing, face recognition, visuospatial problems, synthetic and holistic thought

Sperry (1968)	
What was this study about?	The effects of brain localization on a patient who underwent split brain surgery .
Aim	Presented studies investigating behavioral, neurological and psychological consequences of split-brain surgery resulting in disconnected hemispheres. Studies were used to suggest that each hemisphere: Has slightly different functions, possesses an independent stream of conscious awareness, has its own set of memories inaccessible to the other
Method	A natural experiment was conducted on patients who underwent split brain surgery. The capabilities of each hemisphere was tested by presenting visual information, at fast speeds so patients eyes can't refocus, to either left or right visual field when patient was looking straight ahead. Information presented to left visual field will be received by right hemisphere Presenting tactile information to either left or right hand behind a screen. Tactile information from objects felt by right hand will be received by left hemisphere
Results	**Visual stimuli presented in one visual field at a time** II. Objects shown once to a visual field are only recognized if presented again in same visual field III. Objects presented in right visuals, received by left hemisphere, can be named verbally and in writing IV. Objects presented in left field, received by right hemisphere, ca not be named verbally or in writing but can be identified through pointing a. Suggests two hemispheres have different abilities and functions and therefore shows localization **Different visual stimuli presented simultaneously to different visual fields** V. If different visual stimuli are presented simultaneously to different visual fields and subject is asked to draw with left hand what was seen, subject will draw the stimuli from left visual, if asked what left hand has drawn, subject replies with

	what was seen in right visual field VI. If two related words are simultaneously presented to different visual fields, left hand will select what was seen by left visual field amongst objects, the right hand will write what was seen in right visual field without being influencing by what was seen by left visual field a. Left hand is for what was seen by left visual field b. Right hand is for what was seen by right visual field c. What was seen by left visual field is processed by right hemisphere d. What was seen by right visual field will be processed by left hemisphere **Tactile stimuli presented to different hands** VII. An object felt by left hand can be recognized by left hand again but cannot be named or recognized by right hand amongst objects
Conclusion	Certain functions and behaviors are suggested to be localized to certain hemispheres of the brain.

Syllabus Question: ***Using or one more examples, explain the effects of neurotransmission on human behavior.***

I. When your brain is stimulated by your environment, it reacts by sending electrical impulses through your body to react. The method these impulses are sent is neurotransmission, when electrical impulses travel down the axon it releases neurotransmitters which cross the synapse junction. Neurotransmitters are chemical messengers that send message from one neuron to another

II. Examples of neurotransmitters include:

Acetylcholine	Results in muscle contraction and a role in the development of memory in the hippocampus
Dopamine	Results in voluntary movement, learning and feelings of pleasure
Noradrenalin	Results in arousal, alertness and stimulation of sympathetic nervous system
Serotonin	Results in sleep, arousal levels and emotion

Research that demonstrates the effects of neurotransmission on behavior include:

Martinez and Kesner (1991)	
What was this study about?	To test the effects of the neurotransmitter acetylcholine on memory formation of mazes in rats.
Aim	To see whether acetylcholine plays a role in memory formation
Conditions	Rats were trained to go through a maze and received food at the end. Once rats could do this experimenters injected: One group of rats with scopolamine which blocks acetylcholine sites thus decreasing available acetylcholine A second group of rats with physostigmine, which blocks production of cholinesterase, which removes acetylcholine from synapse and return neuron to resting state The control group was injected nothing.
Results	Rats injected with scopolamine were slower at finding way around maze and made more errors than compared to other two groups Physostigmine group ran through maze quicker and made less errors
Conclusion	Concluded that acetylcholine played an important role in a memory for maze
Link to question	Demonstrates the effects of neurotransmitters on human behavior and functions.

Kasamatsu and Hirai (1999)	
What was the study about?	Carried out an experiment to see how sensory deprivation affects the brain
Aim	To see how sensory deprivation affects the brain.
Method	Researchers studied a group of Buddhist monks who went on a 72-hour pilgrimage to a mountain in Japan. During their stay, they did not speak, consume food, and were exposed to cold weather. After 48 hours they began to have hallucinations, researchers took blood samples before the monks ascended the mountain and immediately after monks reported hallucinations
Results	Found that serotonin levels had increased in monk's brains. Higher level of serotonin activated the hypothalamus and frontal cortex resulting in the hallucinations.
Conclusion	Researchers concluded that sensory deprivation triggered release of serotonin.

Syllabus Question: ***Using one or more examples, explain functions of 2 or more hormones in human behavior.***

I. Hormones are chemical that affect behavior. They are produced by glands that make up the endocrine system. Hormones enter directly into the bloodstream and therefore take longer to produce changes in behavior than neurotransmitters

II. Examples of hormones include:

Adrenaline	Fight or flight response, arousal
Cortisol	Arousal, stress hormone, memory
Melatonin	Regulation of sleep
Oxytocin	Mother-child attachment
Testosterone and Oestrogen	Development, emotion

Research that demonstrates the functions of hormones in human behavior include:

Schachter and Singer (1962)	
What is this study about?	To see the effects of placebos and see the different effects of hormones when in different environmental contexts
Aim	Proposed that adrenaline causes emotion but the nature of the emotion was dependent on contextual factors
Method	They recruited volunteers to receive a vitamin injection and informed them that they would be participating in vision experiments. None of the 184 male participants received a vitamin injection. Three groups received adrenaline injection and a fourth group received a placebo injection. The three groups receiving the adrenaline injection were either given correct or incorrect information about the effects of the injection The participants were placed in one of the two conditions. Euphoria, a confederate of the experimenters encourages the participant to join in games. Anger, a confederate fills out a mock questionnaire with the participants but gets increasingly outraged by personal nature of questions Experimenters use observational data based on structured observations of participants in each condition and asked them to complete a form that assessed their mood in terms of happiness and anger
Results	In the euphoria condition, the groups who received an adrenaline injection with incorrect information about effects showed more euphoric and happy behavior
Conclusion	Conclude that emotion occurs by cognitive labeling
Link to question	Shows how a physiological aspect such as hormones can affect our behavior.

Morhenn et al. (2008)	
What was this study about?	To test the effects of massaging on human behavior.
Aim	To see if how massaging affect behavior.
Method	Randomly assigned 96 students to three groups, massage and trust, rest and trust and massage only. Massage conditions consisted of 15 minute Swedish that were shown to increase oxytocin levels I many people Rest condition required participants to rest for the same amount of time in same room Participants then played a trust game that asked them to make a decision about how much money to give to another participant, knowing the money would be tripled and possibility that the other participant might share the profit . Sending large amounts of money was taken to indicate trust Blood samples were taken to measure oxytocin levels, once at the beginning of their participation and again close to their decision in the same.
Results	Massage only group showed no significant change in oxytocin levels Participants in the massage and trust group who made the decision about sending money sent an average slightly higher than the rest without massage group. But the amount the receiver send back to the decision maker was significantly different Found a positive correlation in participants who were sent money and the change in their oxytocin level, according to whether they had received a massage or simply rested
Conclusion	Concluded that oxytocin levels helped people display trust towards strangers and oxytocin levels are able to predict the amount of sacrifice participants make in a trust game. Suggests oxytocin's effect of on behavior is to increase generosity and cooperation among adults

Syllabus Question: ***Discuss two effects of the environment on physiological processes.***

I. Effects of the environment include and the relationship between light and melatonin and the sleep-wake cycle. There is a relationship between Light and melatonin secretion leading to Seasonal affective disorder.

II. Melatonin is a hormone with a role in the cycle of sleep and is secreted from the pineal gland. Gland secretes melatonin due to changes in light. Research has shown Seasonal Affective Disorder (SAD) is related to seasonal variations in the production of melatonin .Melatonin is produced primarily at night so more is produced during dark winter months

Research that melatonin and light play a role in seasonal affective disorder include:

Terman (1988)	
What did the study show?	Found that nearly 10% of those living in New Hampshire (northern part of USA) suffered from SAD compared to 2% in Florida
Conclusion	Suggests melatonin is involved as northern latitudes get longer nights than southern latitudes

Lam et al. (2000)	
What did the study show?	Found that phototherapy has been found to reduce or eliminate depression Phototherapy involves exposing sufferers to 2 hours of intense light shortly after they wake up in the morning
Conclusion	Suggests light and melatonin plays a role in SAD as light inhibits the secretion of melatonin and exposing to light reduces depression which is linked to melatonin.

L. Rosen et al. (1989)	
What was this study about?	Extended Terman (1988)'s research, who surveyed New Yorkers and found that severity of sadness in a sample of New Yorkers was worse for those interviewed in winter rather than summer, by compare symptomatic seasonal changes in mood and behavior at four different latitudes
Aim	To compare the severity of sadness between those living in different latitudes.
Method	1671 men and women completed and returned a Seasonal Pattern Assessment Questionnaire (SAPQ) with an almost male to female ratio. Questionnaire asked for information about time of year subjects felt best and worse. Degree of change in mood and behavior according to season and factors such as sleep patterns, weight gain, energy level

	and mood Responses were scored 0-24 with 10 being required to suggest winter SAD
Results	Greatest seasonal mood variation was reported in New York, least in Florida Variations in sleep patterns was highest in New Hampshire and New York and lowest in Florida As age of respondent increased, levels of seasonal mood variation decreased Overall, approximately 40% of respondents felt worst in winter months Only 25% of those in Florida felt there was no seasonal variation on mood compared to 50.7% of those in New York Sufferers of SAD were found to be higher in northern latitudes than southern More women suffered SAD than men
Conclusion	Results show that SAD exists and may be to due light and melatonin production

Evaluation	
Strengths	**Weakness**
Results correspond with other studies Addresses geographical locations at four latitudes and relationship to SAD and gender and age	Questions related to winter depression may have triggered negative memories in some respondents and affected their mood at time of questionnaire Older participants may be more susceptible to forgetting negative experience and moods related to season and therefore could have affected responses Questionnaire was mailed to sample, response rate was not high Sample size does not represent general population Questionnaire may have attracted those who may have no had experienced of seasonal variations in mood Factors such as locations, cost of living,

	employment, leisure facilities, age of sample may have affected responses gained

Research that suggest that melatonin may not play a role in seasonal affective disorder include:

Lam et al. (1998)	
What was this study about?	Examined whether there are genetic links between SAD and personality.
Method	Gave 163 MZ twins and 134 DZ twins questionnaires measuring levels of SAD and levels of personality
Results	Results suggest that correlations found between SAD scores and some personality scores can be attributed to genetics
Conclusion	Results suggest that correlations found between SAD scores and some personality scores can be attributed to genetics

Schuller et al. (1996)	
What was this study about?	Investigated the personalities of a group of SAD sufferers and compare them to people who also suffered depression, but not related to seasons
Method	Participants were all out patients of a clinic in Canada. 100 participants were assessed during an episode of depression. 43 patients were classified as suffered SAD. 57 were classified as non-seasonally depressed. All participants were diagnosed as having a major depressive episode Were given a personality test called NEO-PI that tests: Neuroticism (Anxiety and moodiness), Extroversion (Sociability and impulsiveness), Openness, Agreeableness, Conscientiousness
Results	Results showed there was a substantial difference in scores of the two groups on openness scale and SAD group scores consistently higher than the non-seasonal group. SAD group emerged as considerably more open that other depressed people
Conclusion	Researchers suggest that a important factor in SAD may be personality type and that certain personalities react strongly to SAD and amplifies the normal depressing nature of winter

I. The environment has effects on our biological rhythms, biological rhythms are periodic fluctuations in physiological functioning.

Types of biological rhythms include:

Circadian rhythm	Repeated every 24 hours and is an example of the sleep-wake cycle
Ultradian rhythm	Shorter than 24 hours, an example of this is that it occurs within sleep
Infradian rhythm	Lasts longer than 24 hours such as the menstrual cycle
Circacannual rhythms	Repeated every year, an example is hibernation in animals

Two factors control biological rhythms.

Endogenous factors are our internal bodily mechanisms. An example is Michael Sifre (1975) a French geologist who spent 7 months in an underground cave with no cues at all to time. His sleep-wake cycle was fairly irregular at first but eventually settled into 25 hours

Exogenous factors are the environment, such as temperature or light. The most important external cue for the sleep wake cycle is presence of light. Sunlight readjusts the cycle and is referred to as a zeitegber. Aschoff (1979) showed that many species of animals that were maintained in constant darkness will reset their internal clocks with a brief flash of light.

Russell et al. (1980)	
What was the study about?	Investigated zeitgebers and the regulation of the menstrual cycle
Method	Collected daily samples of women's sweat and placed it on the upper lips of a group of female participants
Results	The menstrual cycle of the donors and recipients were synchronized, indicating that pheromones act as a zeitgeber for the menstrual cycle

Wilkinson (1968)	
What was the study about?	To test the effects of temperature on our physiological functioning. The low body temperature point in our daily cycle is called the "dead spot" and is when people perform badly no matter what they are doing and report that they would prefer to be asleep
Method	Tested Navy recruits on vigilance, arithmetic and other criteria after various schedules of sleep and sleep loss
Results	Tests showed that there was no loss of ability on short tests conducted on a highly motivated

	sleep-deprived person If individual had spent a full 8-10 hours doing various tasks requiring very astute observation, then deterioration was apparent Peak performance coincided with highest body temperature and poor performance with low temperature

Other effects of the environment that can affect our physiological function include shift work. Shift work usually involved three 8-hour working periods rotating anti clockwise or a phase advance schedule which goes from night to evening to day shift instead of a phase delay which goes from night to day to evening. Phase delay is the best order of shift rotation.

Research has shown that such shift rotations can cause internal desynchronization. Long term disorientation, stress, insomnia, exhaustion and negative effects on reaction speed, co-ordination skills, attention and problem solving.

Phase advance schedule:

III. Creates a mismatch or desynchronization between body rhythms of arousal and zeitgebers of activity levels
IV. Don't allow enough adjustment time for body rhythms to catch up with new activity levels
V. Delay the catching up of body rhythms by shortening rather than lengthening days

Research on the effects of shift work includes:

Czeisler et al. (1982)	
What was the study about?	Experimented to see whether the negative effects of shift work patterns can be reduced by using research on biological clocks
Method	Participants were all men, aged 19-68, and worked at an industrial plant following a phase advance schedule and were split into three groups: Control group consisted of 68 men who didn't work shifts but did comparable jobs to shift workers Research group 1 who were put on a phase delay shift schedule Research group 2 who were put on a three week schedule with identical shifts to the other

	research group Measures were taken of worker's satisfaction and health for three months and productivity was measured for 9 months
Results	Both research groups reported improved satisfaction Three week group expressed greater improvement and showed greater improvements in health and work productivity than one week group Control group showed little change
Conclusion	Results suggest that negative effects of shift rotation can be reduced by making worker's schedules more compatible with human circadian rhythms
Evaluation	
Strengths	**Weakness**
High mundane realism and ecological validity Control group showed that improvements were not due to experimenter bias Addressed age differences	Sample doesn't represent general population Only men, no females Only industrial workers, might be different for other jobs

Syllabus Question; ***Examine one interaction between cognition and physiology in terms of behavior. Evaluate two relevant studies.***

I. Cognition refers to the mental processes of knowing, including aspects such as awareness, perception , reasoning and judgment
II. An example of an interaction between cognition and physiology is amnesia. Amnesia is the inability to learn new information or retrieve information that is already stored in memory. Amnesia can be caused by brain injury or infection or due to alcohol misuse which causes Korsakoff's syndrome
    i. Anterograde amnesia is the failure to store memories after a trauma
    ii. Retrograde amnesia is the failure to recall memories that have been stored before a trauma.

Memory is piece of information that we store in our brains and can be retrieved at a later date.

Types of memory	
Episodic memory	A form of long term memory concerned with personal experiences or episodes that happened in a given place at a specific time
Semantic memory	A form of longer term memory consisting of general knowledge about the world, language etc
Implicit memory	Remembering information without consciously memorizing it
Explicit memory	Remembering information that involves conscious awareness and remembering it

Episodic and semantic memory have been shown to be stored in different parts of the brain and suggest that these are partially separate episodic and semantic memory systems.

Tulving (1989)	
Aim	Aimed to show the distinction between episodic and semantic memory
Method	A small dose of radioactive gold was injected into the bloodstream of volunteers, including Tulving. They then thought about personal events or about information in semantic memory. Blood flow in different areas of the brain was recorded Increased blood flow indicated that certain part of the brain was active
Results	When episodic memory was used, the frontal cortex was active When semantic memory was used the posterior or

	back regions of the cortex was active
Conclusion	Episodic and semantic memory are different and separate.
Evaluation	
Strengths	**Weakness**
Shows that there is a difference in content between information in episodic and semantic memory	Research doesn't if there is a difference in the processes involved as both kinds of memories are interrelated

Tulving et al. (1982)	
Aim	Tested the differences between explicit and implicit memories
Method	Participants learnt a list of rate words and one hour or week later their memories were tested in two ways: Implicit memory- Participants were asked to fill in the blanks to make words. Half of the solutions were words from the original list but they were not told this. Using implicit memories as participants weren't consciously recalling the words Explicit memory- Participants were given a list of words and asked to identify the words that were on their original list. Explicit as they had to consciously recall the words they learnt .
Results	Implicit memory- Participants were better able to complete the fragmented words that were in their original list opposed to words that weren't in the list. Fragment completion performance did not change significantly over time Explicit memory- Recognition memory was much worse after one week than after one hour
Conclusion	Results demonstrate a difference between the two kinds of memory
Evaluation	
Strengths	**Weaknesses**
Use of rare words disallows the use of schemas or previous knowledge of words	Can be argued that fragment-completion task was actually testing explicit not implicit memory because participants deliberately searched through original lists Doesn't explain why there was a difference in

	performance after the retention interval on implicit and explicit memory

Research has shown that there may be different levels of impairment and ability to form or recall the different kinds of memories

Spiers et al. (2001)- Reviewed 147 cases of amnesia and found that there was evidence of impairment on tests of episodic memory in all patients but several of them had reasonable ability to form new semantic memories

Vargha-Khadem et al. (1997)	
Aim	Studied two patients who had suffered bilateral hippocampus damage at an early age before they had had the opportunity develop semantic memories Both patients had the very poor episodic memory but both attended ordinary schools and their levels of speech, language development, literacy and factual knowledge were within normal range
Results	Findings suggest that the two memories depend on different brain regions but they are very close to each other so brain damage in the area usually results in amnesiacs having problems with both episodic and semantic memory A follow up study by Vargha-Khadem et al. (2002) on one of the patients at age 20 showed that his semantic memory continued to be better than his episodic memory
Conclusion	Shows how amnesia can affect different types of memory.
Link to question	Shows the effect of how a cognitive process can be negatively affected through our physiology,

Graf et al. (1984)	
Aim	To see the differences in amnesiacs and non-amnesiacs in memory tests for explicit and implicit memory.
Method	Presented participants words list with each list followed by one of four memory tests Three of tests very conventional explicit memory tests such as free call, cued recall, and recognition memory. The fourth tests was word completion and involved implicit memory Participants were given three-letter words stems and they had write down the first word they thought of starting with those letters. Implicit memory was assessed by the extent to which word completions corresponded to words from previous list.
Results	Results showed that amnesic patients did much worse than normals on all three explicit memory tests but performed as well as normals on implicit memory tests
Supporting study	Ryan et al. (2000) showed that amnesic patients can show impaired implicit memory performance when task is complex and requires remembering the relations among objects

Two famous case studies showing the effects of our physiology on our cognition is Clive Wearing and Henry Molaison.

Case studies are in-depth analysis by using all research methods on an individual that is usually atypical

Clive Wearing

Suffered from a brain infection called herpes encephalitis affecting the parts of his brain concerned with memory and was left with a memory span of only a few seconds. His ability to perceive what he saw and heard was unimpaired but he did not retained any impression of anything for a blink. Once he blinked he would forget the view before the blink.

He suffered from anterograde and retrograde amnesia. His episodic and some of his semantic memory were lost. He could still play the piano and conduct music that he knew before his illness. The fact that he could do this is evidence of a distributed memory system and that implicit memory is linked to something else beside the hippocampus. His emotional memory is also intact as he is very affectionate towards his wife.

Henry Molaison (HM)

Suffered from epileptic seizures in the 1950s and it wasn't possible to control them with drugs, the doctors than decided to remove a structure from the hippocampus from both hemispheres of his brain as it was the origin of his seizures. The operation stopped his epilepsy but had a dramatic negative effect on his memory.

His personality and intellect remained the same and he could still talk and recall skills he knew previously showing his semantic memory is intact and he could form short-term memories but couldn't form long term ones. He can memorize a number and recall it 15 minutes but forget it after a while. He could read the same magazine over and over again without knowing it.

It took HM 6 years to know his way around his house. This shows he had memory capacity and intellectually he was intact as he was aware of his problem.

For many years he thought that the year was 1953 and that he was 27 years old but realized that it couldn't be possible so he started to guess a more appropriate answer. This shows he tried to reconstruct his memories.

In 1997, after being studied for 44 years, an MRI scanned was conducted on him and revealed that the hippocampus, amygdale and other areas close was damaged. This allowed researchers to know which areas of the brain are related to memory and learning.

Generic Evaluation for case studies	
Strengths	**Weaknesses**
I. Studies like these can raise interesting questions for further research	VIII. Researchers can sometimes become too close to participants in these studies so their accounts can become subjective
II. In there are enough similar cases then generalizations can start to be made	IX. Highly time consuming
III. Very in depth, rich data achieved through a variety of research method	X. Ethical implications as its long and intense so it can get stressful
IV. Each case is unique providing insights into things that we would not know from laboratory research	XI. These studies don't come by often.
V. High ecological validity as it is a case study.	XII. Can't generalize as people in case studies are atypical
VI. Longitudinal as we see changes in behavior over time and therefore find things out that we wouldn't have.	
VII. Can be ethical as you're not forcing them.	

Conclusion and evaluation

i. Research on anterograde amnesia suggest that episodic memory is more vulnerable to disruption by brain damage than semantic memory
ii. Research on retrograde amnesia supports distinction between episodic and semantic memory and that often one or the other type of memory is affected
iii. Distinction between episodic and semantic memory doesn't address findings on amnesic patients that have intact repetition priming effects and skill learning
iv. Distinction between explicit and implicit memory is useful in categorizing tests of long-term memory on which amnesic patients perform poorly in
v. Finding that amnesic patients generally perform well on tests involving implicit memory and poorly on tests involving explicit memory provides a useful starting point for theorizing about amnesia
vi. Notion that amnesic patients have deficient explicit memory is an explanation of their memory impairments

Syllabus Question: ***Discuss the use of brain imaging technologies in investigating the relationship between biological factors and behavior.***

Before modern brain imaging techniques were invented and used widespread, scientific research into brain function was, until the 20th century, largely limited to case studies of individuals who were known to have suffered some kind of brain damage or head injury. It was unethical to conduct the kind of experiment required to test the effects of, for example, the effect on behavior on a person after a portion of a volunteers brain is removed. Examples of these case studies include Phineas Gage and Paul Broca and his patient "Tan".

Modern brain imaging technologies allow us to build a more accurate understanding how the brain works.

Examples of brain imaging technologies include:

Brain imaging techniques			
Technique	**How it works**	**Strength**	**Weakness**
Electroencephalogram (EEG)	Electrodes are placed outside of a person's head in specific locations using a special cap or helmet so that electrodes are fitted to standardized places on skull. Electrodes detect changes in electric activity below them, when areas of brain are active, the EEG produces a graphical representation of the activity from each electrode		Not sufficiently accurate for most research into localization of the brain as electrodes are outside the skull and this make the electrodes detect an uncountable number of neurons on the surface of the skull We get vague ideas of what parts of the brain are active but not enough
Computed tomography (CT)	Combines computer and x-ray technology Images acquired from a CT scan can be taken from top, bottom, back, front or sides of the head and can show the brain at any depth	Extremely useful for showing structural changes in the brain	Structural images is the only kind of image CT scans can produce

Magnetic resonance imaging (MRI)	When the body is exposed to a strong magnetic field, protons in the water inside body change their alignment When a magnetic field is used in conjunction with radio frequency fields, alignment of hydrogen atoms is changed in a way as to be detectable by a scanner The signal from the scanner is transformed into a visual representation of the area of the part of body being studied	Can represent a slice of the brain taken from any angle and create a 3D image of the brain Still being enhanced allowing more precise images Produces more detailed information and can detect very small tumors	Exposure to magnetism can be dangerous for people with metal screws used after surgery for bones Brain function cannot be shown, only structure
Functional MRI (fMRI)	Modification of the regular MRI technique by taking advantage of the fact that when neurons in a particular region are active, more blood is sent to that region fMRI can map metabolic changes that indicate brain activity to show us with a picture that shows with increasing precision which parts of the brain are active while certain activities are being performed or certain emotions or thoughts occurs	More flexible than MRI to provide dynamic rather than static information More precise than PET Produces 3D images that provide structural and functional information	Blood flow follows neuronal activity by about a second, fMRI assesses blood flow, it does not give immediate evidence of brain activity
Positron emission tomography (PET)	Requires the injection of a radioactive substance into a participant	Good for showing dynamic image of activity Most appropriate for	Much less precise than the fMRI Does not provide a real time analysis, but

	Usually a form of a sugar that produces gamma rays as it is metabolized by the brain Relies on knowledge that parts of the brain will metabolize the sugar at different rates according to whether they are more or less active Gamma rays produced are detected by the machine the person is placed in The signal is turned into a computer image that displays a colorful map of activity in the different parts of the brain	conditions that do not show structural changes early enough to be detected by MRI or CT Shows the brain in action and which part is active when different tasks are performed	shows activity over a 60-second period

Research demonstrating these brain imaging technologies in action include:

MRI	
Goldstein et al. (1999)	
Aim	Aim of the experiment was to scan the whole of brain cortex in a sample of patients with schizophrenia and compare the size of each region with that in a control group of healthy volunteers
Method	29 patients were diagnosed with schizophrenia according to DSIM-III-R system and there was a control group of healthy adults Match pair designs was used in which two groups were matched for sex, age, ethnicity, socio-economic status, handedness and catchment area Brain of each participant was scanned using a MRI scanner and average sizes of 48 areas of brain were compared in the patients and controls, controlling for head size

Results	In patients with schizophrenia, several areas of the cortex were significantly smaller than control group

MRI	
Sanderson et al. (1999)	
Aim	Investigated reasons for the relatively high frequency of schizophrenia in learning disabled populations and to see whether the major presenting symptom is schizophrenia or learning disability
Method	Three groups of patients and one group of normal controls were compared, each group matched on age and sex and scanned by MRI: I. 20 patients with learning disability II. 25 patients with schizophrenia III. 23 patients with both disorders IV. 29 normal controls
Results	Scans of group with schizophrenia and group with both learning difficulties and schizophrenia were very similar in terms of both general structure and structure of amygdale-hippocampus Amygdala-hippocampus in both groups was significantly smaller than those in normal controls Brains of learning-disabled patients who did not have schizophrenia were smaller than those of the other three groups, but amygdale-hippocampus was larger Therefore brain structure of people with both resembles that of people with schizophrenia but not that of those with learning disability

MRI	
Draganski et al. (2004)	
Aim	Aimed to determine whether both function and structural changes could be detected in the human brain as a result of learning a new motor skill
Method	Twenty one females and three males where used and half of the participants spent three months learning to perform a basic juggling routine for a minimum of 60 seconds MRI scans were done before and after the three months of practice and a third scan was made three months later, during which time participants were not supposed to practice their new skills
Results	No significant group differences in brain structure in first scan, two areas of brain were significantly different in size after training Difference became smaller in third scan, when practice had stopped for three months
Conclusion	Differences were due to an increase in volume in two regions of the juggler's brains which are associated with the retention of visually detected movement information rather than physical coordination Therefore the practice of watching balls moving through the air repetitively and learning to move in response to this has strengthened the connections between neurons in parts of the brain responsible for this activity

fMRI	
Gabrieli et al. (1996)	
Aim	Used fMRI to study the parts of brain involved in processing of meaning
Methods	Participants were given two tasks to perform a. Deciding whether words were concrete or abstract b. Deciding whether words were in capital letter i. Gabrieli et al. argued that first task involved processing of meaning and second didn't
Results	fMRI indicated that parts of the left prefrontal cortex

	were more active when the meaning task was being performed Found that words that had been processed for meaning were recalled much better than words not processed for meaning
Conclusion	Concluded that the process visualized in left inferior pre-frontal cortex may be thought of as a search for meaning

fMRI	
Brefczynski- Lewis et al. (2007)	
Aim	Examined differences in brain activity that might have resulted from having engaged in meditation over a long period of time
Method	Experimenters compared newly trained meditators with people with between 10 000 and 54 000 hours of meditation practice in a Tibetan Buddhist method Hypothesis was that meditating activates specific parts of brain not active at rest and that those with most experience would show less activity in those regions than less experience as experienced people reduce the amount of effort required to sustain attention 7 of the 12 experienced meditators were Asian and were compared with untrained Caucasian participants with an interest in learning to meditate To prevent this interest to be a cofounding variable, a third group of participants were promised a financial incentive if their attention regions were most activity fMRI scans were conducted while they concentrated on a dot on a screen in front of them and while at rest with no concentration Experimenters played various noises in an attempt to distracted participants from their meditation and force them to work harder to sustain attention
Results	V. fMRI scans revealed that attention-related networks in brain and visual cortex were more active during meditation than during

	rest periods and novice meditators found it harder than experts to sustain attention VI. Experienced meditators showed less activation in areas of brain associated with daydreams, emotional processing and other thoughts not related to task VII. Experienced meditators showed a response to disturbing stimuli but not by losing concentration but by adjusting their concentration to resist distraction VIII. Statistical tests were conducted to eliminated age, brain culture, ethnicity differences IX. Concluded that differences were due to neuroplasticity
Conclusion	Concluded that differences were due to neuroplasticity

Genetics and behavior

Syllabus Question: ***With reference to relevant research studies, to what extent does genetic inheritance influence behavior?***

The nature versus nurture debate is about the extent to which human behavior is attributed to environmental or genetic factors.

Researches into mental disorders such as schizophrenia have shown that it has a genetic component:

Heston (1996)	
What was the study on?	An adoption study, which assume that if offspring are separated from their biological parents we can conclude that any physical and behavioral similarities between parent and child are caused by genetic factors
Aim of the experiment	Study was too see whether schizophrenia is genetic or not
Conditions of the experiment	If genetic, adoption would not affect number of children later diagnosed with schizophrenia but due to biological inheritance a higher incident of schizophrenia would be expected among adopted children of schizophrenic mothers than those without schizophrenic mothers If nurture, incidence rate would be approximately same as other adoptees
Results	Incident of schizophrenia in general population is about 1% and was similar for those who were adopted with no family history of schizophrenia Over 10% of adopted children with family history of schizophrenia were later diagnosed with it
Conclusion	Research shows that schizophrenia has a strong genetic component
Link to syllabus question	This research demonstrates that schizophrenia can be inherited and therefore shows that there is a genetic component

Homosexuality:

Bailey and Pillard (1991)	
What is this study about?	Studied monozygotic and dizygotic twins and measured how often when one twin was homosexual the other was also homosexual
Aim	To whether homosexuality can be caused by genetics.
Conditions	Tested MZ and DZ twins
Results	There is a difference in concordance for homosexuality DZ twins had a concordance rate of 22% MZ twins had a concordance rate of 52%
Conclusion	Results suggest that there environmental factors to explain why MZ twins didn't reach 100% and that there is a strong genetic factor as to why MZ twins had double the concordance rate of homosexuality than DZ
Link to question	Research demonstrates the principle by showing the homosexuality can be

	inherited and can be genetic.

Santtila et al. (2008)	
Aim	To see whether homosexuality is genetic and can be inherited. The researchers wanted to test the idea that reported rates of homosexuality might underestimate the frequency of homosexual attraction and is more appropriate to study potential for homosexual response
Method	Carried out an enormous twin study in Finland using 6001 females and 3252 males Researchers asked twins to answer a questionnaire to establish sexual orientation, asked how likely they would agree to engage in sexual intercourse with a handsome person of the same sex if asked and no one knew
Results	MZ Males and Females had a 53,4% and 52.6% for potential for homosexual response respectively A 38.0% and 59.4% to overt homosexual behavior respectively DZ Males and Females had a 23.4% and 26.4% for potential for homosexual response, respectively 0% chance to overt homosexual behavior for both groups Concordance rates for both potential for homosexual response and overt homosexual behavior indicated there is a genetic component as MZ twins were more than twice as likely to answer the questions the same way

Depression

Research for the notion that depression may be due to genetics:

McGuffin et al. (1996)	
Aim	To see whether depression can be genetic
Method	Sampled 214 pairs of twins, at least one of whom was being treated for major depression
Results	45% of MZ twins and 20% of DZ twins of patients had also suffered major depression, suggesting moderate genetic influence MZ twins may be reared more similarly to fraternal twins, therefore genes may not be only factor

Silberg et al. (1999)	
Aim	To assess both the role of genes and recent life events on depression
Method	Participants were taken from an ongoing projected called Virgina Twin Study of Adolescent Behavioural Development. Each adolescent completed a standard psychiatric interview to assess depression. Life events measured both by questionnaire given to the young people and an interview with their parents 902 pairs of twins took part I. 182 pre-puberty girls II. 314 pubertal girls III. 237 pre-puberty boys IV. 171 puberty boys
Results	Girls suffered more depression than boys. On average more susceptible to depression in response to life events. Girls who suffered depression after a negative life event were often those whose twin also suffered depression Suggests a role for genes in determining individual differences in vulnerability to depression in response to life events
Conclusion	Suggests a role for genes in determining individual differences in vulnerability to depression in response to life events

Research that is both for and against depression and genetics

Klein et al. (1995)- Examined depression in families of 100 patients suffering from dysthymia or major depression. Found that:

Both dysthymia and major depression were more common in families of both groups of patients than in the general population

In bipolar cases, the families of patients of unipolar disorder are at no increased from bipolar disorder than the rest of the population, but relatives of patients with bipolar disorder are at greater risk from unipolar

Suggests that bipolar disorder is more influenced by genes than unipolar depression

Kendler et al. (1992)- Carried out a twin study on sufferers of relatively mild major depressive disorder and found little difference between probability of identical and fraternal twins sharing depression. Compared to **McGuffin et al. (1996**) research suggests that there is a genetic component for depression in more severe cases only

Research that is against depression and genetics

Brown and Harris (1978)	
Aim	Aimed to investigate the link between depression and both current and past life events in the lives of suffers Focused on working-class women as women tend to experience more depression than men and because working class people tend to experience more stress than the middle class
Method	A complex structured interview called the life events and difficulties scale (LEDS) was used Interviewers were trained to use LEDS a. Group of 539 women in Camberwell, London was interview using LEDS and details about what stressful events had occurred in previous year along with back circumstance in which they occurred where obtained.

	LEDS also aimed to uncover stressful childhood events b. Interviews prepared a written account of each event of source of stress which is rated by a panel of researchers for how stressful it would be for a typical person. To avoid bias, raters had no knowledge of whether person were looking at had suffered depression c. Associations between those who suffered depression and who had recently had a stressful life and who had had stressful events in their childhood were looked for
Results	Both recent high levels of stress and having suffered a stressful childhood event left people vulnerable to depression 80% of women who suffered depression had had a major stressful life event in previous year opposed to 40% who didn't Factors that caused this include: I. Lack of intimate relationship II. Lack of paid employment III. Presence of three or more children at home IV. Stressful childhood events
Conclusion	Concluded that there was a link between recent negative life events and depression Loss in childhood made women more vulnerable to depression Lack of social support and family discord made women more vulnerable to depression

There is a theory that social causation (low socio-economic status) causes psychopathology, social drift is the idea that people with individuals and families with mental disorders tend to drift into lower SES.

Research suggests that low socioeconomic status can relate to depression.

Ritscher et al. (2001)- Tested for social causation and drift effects in study of 756 participants across two generations. Found that low parental educational level was associated with increased rates of depression in following generation even when there was previously no depression in family history

Parental depression did not predict lower SES in offspring. Study supports role of causation

Radziszewska et al. (1996)- Compared rates of depression in 15 year olds whose parents adopted different parenting styles

Results showed that lowest rates of depression were found in authoritative, firm and kind strategies with a degree of freedom. Highest rates of depression in unengaged parents who took no interest in children. Authoritative and permissive parents had children with intermediate levels of depression. Most frequent in higher SES groups possibly because in low SES groups it's too time consuming and hard

Lupien et al (2000)- Suggested that high levels of stress in parents affect children's development by affecting their own levels of stress. 139 mothers were regularly assessed for stress and depression by telephone interview. Their children (217) were assessed for cortisol levels and for cognitive functioning

Results showed that low SES mothers reported more stress which in turn was reflected in cortisal levels and cognitive functioning of their children

Evaluation of question:

General evaluation of the research presented in this question is that it does not actually locate the gene or genes responsible for the behavior. Research on depression has shown there may be genetic factors but research on SES has shown that it may be also to due environmental factors. Therefore, genes have some role in influencing behavior but they work together with environmental factors to form a behavior.

Syllabus Question: ***Examine one evolutionary explanation of behavior.***

I. Charles Darwin's theory of evolution states that those who adapt best to the environment will have a greater chance of surviving, having children, and passing on their genes to their offspring
II. Most inherited behaviors stem from the time of environment of evolutionary adaption (EEA)
    a. The period in human evolution during which our genes were shaped and naturally selected to solve survival problems operating then
III. In the biological level of analysis, one principle is that patterns of behavior can be inherited as behavior is due to evolution and that the behavior we see today is from advantageous genes
    a. Evolutionary psychology is based on some of the key principles of the BLOA
        i. A predisposition for certain behaviors is inherited
        ii. Principles of evolution dictate that genetically based behaviors of individuals who has reproduced are passed on and genetically based behaviors that are unsuccessful are lost over time
            1. Therefore the behaviors we see today must have helped our ancestors survive and have therefore lived on today
                a. Adaptive behaviors
    b. Evolutionary theory suggests that aspects of behavior or emotional reaction that appear disorders may actually have or had an important evolutionary survival function and therefore adaptive
        i. But may be maladaptive because:
            1. Represents over activity or excessive genetic expression
            2. No longer adaptive in the modern world since they evolved in a different environment of evolutionary adaption
                a. Genome lag hypothesis
        ii. May still exist due to:
            1. Strong linked to genes or adaptive behavior
            2. Actually has benefits to genetic relatives
                a. Inclusive fitness
            3. Result from genetic predisposition when triggered by environmental cues
            4. Have not had sufficient evolutionary time to disappear due to environmental selection conditions and pressures
    c. Explanations for human mental disorders include:
        i. Genome lag are behaviors that are no especially adaptive today but they have not been removed though natural selection
        ii. The increased fitness theory is that the genes underlying mental disorders are responsible for other more desirable traits
            1. Mental disorders such as mania are what made the greatest world leaders great

Schizophrenia has been proposed to have been a behavior that has been passed on through evolution.

Heston (1996)	
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Aim of the experiment	Study was too see whether schizophrenia is genetic or not
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Results	Incident of schizophrenia in general population is about 1% and was similar for those who were adopted with no family history of schizophrenia Over 10% of adopted children with family history of schizophrenia were later diagnosed with it
Conclusion	Research shows that schizophrenia has a strong genetic component
Link to syllabus question	This research demonstrates that schizophrenia can be inherited and therefore shows that patterns of behavior can be inherited.

There are several theories to the evolutionary origin of schizophrenia and why even though it is seen as an maladaptive behavior it has been passed on through genes.

One explanation to the evolutionary origins of schizophrenia was proposed by Stevens and Price (1996) and called the group-splitting hypothesis. It suggests that characteristics of schizoid personality **(mood changes, bizarre beliefs, hallucinations, delusions, and strange speech)** serve an adaptive function under certain conditions .A crazy person may act as a leader and enable a subgroup to split off from a main group. Can be valuable at times when main group has become too large to be optimum as when group sizes increases so do the risk from predation, difficulties in finding enough food and intergroup rivalries.

Another explanation is the origin of language theory. Crow (2000) suggested that schizophrenia is the price humans pay for language. Explains how despite the fact that schizophrenia should reduce reproductive capacity, the apparently genetic condition exists. But language has clear adaptive advantages. Proposes that a genetic mutation on the Y-chromosome at some time in our ancestral past led to the development of language but also predisposed individuals to certain mental illness

Homosexuality has also been suggested to an adaptive behavior and genetic even though homosexuality means that there will be far smaller chance of reproduction and therefore this behavior cannot be adaptive or genetic.

Zietsch et al. (2008) provided a possible answer to how homosexuality can be genetic as it is more likely to prevent reproduction

Through an evolutionary psychology perspective he considered that the presence of an individual homosexual person in a family offers some kind or reproductive advantage to others in the family, possibly by sharing resources and care of others and therefore increasing the reproductive fitness of the family

He investigated the idea that the genes which incline a man towards homosexuality are advantageous in a heterosexual man, possibly by somehow increasing his attractiveness to women. He mailed questionnaires to 4904 identical twins, asking them about sexual orientation, number of opposite- sex partners and gender identity.

Results showed that, sex-atypical gender identity is associated with having more heterosexual partners than others and that this was exaggerated in a twin pair. When one twin was homosexual, the heterosexual twins' brothers of homosexual men had a large number of sex partners

When we inherit some of the genetic predisposition for homosexuality, but do not consider ourselves homosexual, we have inherited some characteristics that are usually associated to the opposite sex and this makes us more attractive to them

Bailey and Pillard (1991)	
What is this study about?	Studied monozygotic and dizygotic twins and measured how often when one twin was homosexual the other was also homosexual
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Evaluation of question

Research on schizophrenia and homosexuality suggest that there may be an evolutionary origin and advantage to these behaviors. Research on genetics for these two behavior support that there is a genetic influence and therefore suggests it can be inherited. Ultimately this means that there may be an evolutionary root to these behaviors.

Cognitive Level of Analysis

General Learning Outcomes

Syllabus Question: ***Outline principles that define the cognitive level of analysis.***

I. There are two principles that define the cognitive level of analysis
   a. Mental processes can be studied scientifically
      i. Based on following claims:
         1. Viewing mental processes in terms of information processing has made it possible to formulate testable theories about unobservable cognitive structures and processes
         2. Modals or theories can be tested by conventional scientific methods without having to rely on introspection for data collection
         3. Study of mental processes has enabled psychologists to address important psychological phenomena which behaviorism couldn't address
         4. Advances in modern cognitive psychology, cognitive neuroscience and other fields bear witness to success of addressing psychological phenomena at the cognitive level of analysis
         5. Study of phenomena at the cognitive level of analysis can often be integrated with study of these same phenomena at the biological and sociocultural levels therefore leading to more comprehensive explanations
   b. Mental representations guide behavior
      i. There are cognitive mediators between what happens in the environment and how we react to it. The processing that intervenes Is based on the way the world is represented in our memory. Examples of mental representations are schemas, which organize our knowledge of objects, events, ourselves and others

Syllabus Question: ***Explain how principles that define the cognitive level of analysis may be demonstrated in research.***

1. Mental processes can be studied scientifically

Research that demonstrate this principle include:

Goldstein et al. (1999)	
Aim	Aim of the experiment was to scan the whole of brain cortex in a sample of patients with schizophrenia and compare the size of each region with that in a control group of healthy volunteers
Method	29 patients were diagnosed with schizophrenia according to DSIM-III-R system and there was a control group of healthy adults Match pair designs was used in which two groups were matched for sex, age, ethnicity, socio-economic status, handedness and catchment area Brain of each participant was scanned using a MRI scanner and average sizes of 48 areas of brain were compared in the patients and controls, controlling for head size
Results	In patients with schizophrenia, several areas of the cortex were significantly smaller than control group

2. Mental representations guide behavior

Bransford and Johnson (1972)	
Aim	Attempted to identify more precisely the processing stage or stages at which schemas are likely to exert their influence
Method	Study involved participants hearing a long speech under three different experimental conditions: I. No title condition, participants only heard the paragraph II. Title before, participants heard the same paragraph after being told "The paragraph you will hear will be about washing clothes" III. The title after condition, participants were told the paragraphs about washing clothes after they had listened it

	After hearing the paragraph participants indicated how easy they found to understand the speech and tried to recall as much as they could
Results	Participants in the no title and title after conditions found the paragraph difficult to comprehend than the title before group
Conclusion	Concluded that the title before condition participants activated schematic knowledge about what is involved in washing clothes and helped disambiguate the paragraph The title after information came too late to provide necessary context, so participants couldn't comprehend it and forgotten it

Cognitive processes

Syllabus Question: ***Evaluate schema theory with reference to research studies.***

I. A schema is a cognitive structure that provides a framework for organizing information about the world, events, people and actions, integrated chunks of knowledge stored in long-term memory
   a. There are different terms to refer to different schemas
      i. **Scripts**
         1. Schemas which provide information about the sequence of events that occur in a unchanging order in particular contexts
      ii. **Self-schemas**
         1. Schema that organize information we have about ourselves
      iii. **Social schemas**
         1. Schemas that represent information about groups of people, stereotypes
   b. Schemas allow us to form expectations
   c. Schemas perform many interrelated functions:
      i. Organize information in memory
      ii. Can be activated to increase information-processing efficiency
      iii. Enable the generation of expectations about objects, events and people
      iv. Regulate behavior
      v. Relatively stable and usually very resistant to change thus ensuring continuity in ways we process information and ways we act
   d. Schemas also lead to distortions and mistakes when
      i. Settings are unfamiliar and require different approaches
      ii. Wrong schemas are activated

II. Advantages of schemas:
   a. Allows us to store the central meaning or main bits of new information without necessarily remembering the precise details. This saves memory resources
   b. Helps use understand new information more readily and fill in or guess missing aspects of it through default values
   c. Makes the world more coherent and predictable

III. Disadvantages of schemas
   a. Information that doesn't fit our schemas, especially minor details, may be ignored and forgotten or distorted in order for us to make sense of it
   b. Guesses and filling in of memory by default values may be completely inaccurate and may cause inaccurate, stereotyped and prejudiced remembering

IV. Schema theory aims to explain how memories are organized. This is based on the idea that new encounters with the world are rarely completely new, the way we process information at any particular moment is determined by relevant previous knowledge we stored in our memory and organized in the form of schemas.

Research that provides evidence for schemas include:

Bartlett (1932)	
Aim	To test the effects of schema on recall. Bartlett asked English participants to read "The War of the Ghosts", a Native American folk tale
Method	Participants' memory for this story was tested by using: **Serial reproduction-** The first participant reads the original story and reproduces it on paper and this is read by the second participant who reproduces it for a third participant and continues until the sixth or seventh reproductions are completed by an equal number of participants **Repeated reproduction-** The same participant contributes all six or seven reproductions, these reproductions or separated by intervals of 15 minutes to several years from reading the original story
Results	The two methods led to very similar findings With the serial reproduction method, the stories became shorter each time and there were distortions in the story that participants introduced. These distortions made the story more understandable from the participants experiences and cultural background, things cultural unfamiliar to the participants were replaced with familiar ones. (Hunting seals to fishing). Shows that schemas were used
Evaluation	
Strength	**Weaknesses**
Provides us with evidence that the way we remember depends on our prior knowledge in the form of schemas Ecologically valid	Only used English participants, different cultures may produce different results and these participants are not of the general population Bartlett didn't give very specific instructions to his participants; as a result the distortions were due

	to conscious guessing rather than deficient memory. **Gauld and Stephenson (1967)** found that instructions stressing the need for accurate recall eliminated almost half the errors usually obtained His approach to research lacked objectivity, psychologists believed that well controlled experiments are the only way to produce objective data. Bartlett's methods were casual as he simply asked a group of participants to recall the story at various intervals and there were no special conditions for this recall Possible that other factors affected their performance such as the conditions around them at the time of recall. The distortions could be simply guesses by participants who were trying to make their own recall seem coherent and complete rather than genuine distortions

Bransford and Johnson (1972)	
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Results	Participants in the no title and title after conditions found the paragraph difficult to comprehend than the title before group

Conclusion	Concluded that the title before condition participants activated schematic knowledge about what is involved in washing clothes and helped disambiguate the paragraph The title after information came too late to provide necessary context, so participants couldn't comprehend it and forgotten it
Evaluation	
Strengths	**Weakness**
Research has three experimental conditions so results are more objective and it allowed the effects and evidence of schemas to be more apparent	These participants don't represent the general population and so difficult to generalize Lacks ecological validity and mundane realism in the no title condition as people would usually know what a speech they're about to listen is about. Also, this was a laboratory experiment so this makes ecological validity and mundane realism worse There could have been demand characteristics as participants knew they were in an experiment and knew they were going to listen to a speech so they could have paid special attention to it when in real life they wouldn't

Marcae et al. (1994)	
Aim	Examine the relationship between the effects of schema on stereotypes
Method	First task, participants had to form impressions of a number of target persons described their name and 10 personality characteristics At the time same participants were also doing a comprehension test for which there were two conditions I. Half of participants were told the jobs of the target persons II. Half were not
Results	Participants who relied on job stereotypes did perform better at both tasks For example knowing that someone as a doctor made the participants give characteristics such as caring, reliable, intelligent

Martin and Halverson (1987) argued that children as young as 2 or 3 who have acquired basic gender identity start to form gender schemas, which consist of organized sets of beliefs about the sexes

The schema that is formed is an ingroup/outgroup schema. Organized information about which toys and activities are suitable for boys and which are suitable for girls. Own-gender schema which is how to behave in gender stereotyped ways

These are used by children to organize and make sense of their experiences and if they are exposed to information that does not fit one of their schemas then the information would be distorted to make fit the schema.

Martin and Halverson (1983)- Showed 5-6 year old children pictures of schema consistent and inconsistent activates. Schema inconsistent activates were often misremembered 1 week later as schema consistent

Bradbard et al. (1986)- Boys and girls between ages 4-9 were presented with gender neutral objects and were told that some of the objects were boy objects and others were girl objects . Results showed that children spent much more time playing with objects they had been told were appropriate to their gender. A week later the children remembered whether any given object was a boy or a girl object

Masters et al. (1979)- Young children of 4 and 5 were influenced in their choice of toy more by gender label attached to the toy than by the gender of the model seen playing with the toy

Evaluation of gender schema theory:

I. Helps explain why children's gender role belief and attitudes often change rather little after middle childhood
II. Focuses on child as being actively involved in making sense of the world in the light of its present knowledge
III. Theory emphasizes too much the role of the individual child in gender development and de-emphasizes the important of factors
IV. Likely the importance of schemas and other cognitive factors in determining behavior is exaggerated within theory
V. Doesn't explain why gender schemas develop and take the form they do

Evaluation of schema theory

Research has provided strong evidence for the existence of schemas and provided insight into its purpose. Bartlett's original research was more ecologically valid than most but was criticized for being informal and lack of experimental controls. But many recent and well controlled experiments have consistently shown the reconstructive effect of schemas on memory.

Bartlett and other reconstructive memory researchers have been accused of over emphasizing the inaccuracy of memory and using unfamiliar material to support their claims. Research has shown that emphasizing the importance of accuracy in memory has found to eliminate inaccuracies.

The concept of a schema and its actions is still a little vague.

<u>Syllabus Question:</u> Evaluate two models or theories of one cognitive process with reference to research studies.

A theory of memory is **Craik and Lockhart's (1972)** Levels of Processing theory.

The LOP is the extent to which something is processed, not in terms of how much processing is done but in terms of how much meaning is extracted. The more meaningfully processes something, the more likely it will be stored in long term memory but if you process something superficially then it won't be stored

The LOP basically revolves around the notion that the more meaningful or in depth something is processed the better it will be remembered, research has shown that factors such as the depth of processing, elaboration, organization and the distinctiveness of information will make information more easily stored in long term memory

In the Levels of processing theory there are three main kinds of processing

I. Structural level of processing
    a. Encodes the physical features of the relevant stimulus
II. Phonological level of processing
    a. Delivers information about how words sound
III. Semantic processing
    a. Level that extracts the meaning of information

Craik and Lockhart proposed that as information moves from each of the three levels of processing, depth of processing increases and this allows information to be better remembered

Craik and Tulving's (1975) series of experiments	
Experiment 1	
Aim	To demonstrate that memory is an automatic by-product of semantic processing
Method	In one experiment participants were shown a list of words and asked a question for each and the answer was yes and no, the questions were of three types I. Case (shallow processing) II. Rhyme (phonemic processing) III. Sentence (semantic or deep processing) Participants were tested on either intentional or incidental learning
Results	Words processed semantically were recalled best Words processed phonemically were recalled second best

	Intentional learners did better than the incidental learners but in both conditions semantic processing produced the highest results for that condition
Experiment 2	
Aim	Craik and Tulving conducted an experiment where shallow questions were more difficult to perform and thus would take longer than a deeper semantic task
Method	Participant had to say whether a word shown had the pattern CCVVC (C= Consonant, V= Vowel)
Results	The deeper but shorter task still produced better recall and therefore supports the importance of depth
Experiment 3	
Aim	Craik and Tulving tested how elaboration of processing can lead to greater recall
Method	Participants presented on each trail with a word and a sentence containing a blank and asked to decide whether the word fitted into the incomplete sentence Elaboration was manipulated by varying the complexity of the sentence between simple and complex sentences
Results	Recall was twice as high for words accompanying complex sentences, this suggests that elaborating benefits long term memory

Mandler (1967)	
Aim	Demonstrate the effects of organization on lasting memory
Method	Gave participants a pack of 52 picture cards with each printed with a word. Asked to sort cards into piles using between two and seven categories with any system they wished. Were asked to repeat sorting until they had achieved two identical sort. If any participants were still trying to do this after 1.4 hours they were excluded After they could do this, they were given an unexpected free recall test
Results	Recall was poorest for those who used only two categories and best for those who used seven
Conclusion	Participants who used several categories in sorting were imposing more organization on the

	list Organization is a necessary condition for memory

Eysenck and Eysenck (1980)	
Aim	Tested the effects of distinctiveness on memory
Method	Used nouns having irregular grapheme-phoneme correspondence (eg comb with its silent b) I. Participants were split into three conditions a. To perform the shallow task (non-semantic) of saying such words as if they were regular (pronouncing comb with the b) resulting in a unique memory trace b. Or simply pronounce the word in their normal way (non semantic, non distinctive) c. Or the nouns were processed in terms of meaning (semantic, distinctive) Participants they went through an unexpected recognition test
Results	Non-semantic distinctive condition were much better at remembering than the other two
Conclusion	Concluded that distinctiveness was important in memory

Research against the levels of processing theory

Morris, Bransford and Franks (1977)- Found that stored information is remembered only if it is relevant to the memory test. Participants who were tested with a rhyming recognition test recalled words that had been processed in terms of sound than their actually meaning. Goes against the prediction of LOP

In this case processing the meaning of the list words wasn't helpful when the memory test required identification of words rhyming with lost words, information acquired from shallow rhyme task was more relevant

Evaluation for the Levels of processing theory

1. LOP has been supported in a large number of experiments
2. There is no convincing measure of processing depth
3. More of a description of what happens than an explanatory theory
4. Criticized on empirical grounds, simple order in which LOP is based on
5. Research has shown that deeper processing does not guarantee better memory
6. LOP doesn't address the retrieval stage of memory processes
7. Hard to decide whether a particular task involves shallow or deep processing because of the lack of any independent measure of processing depth.
8. Craik and Tulving (1975) assumed that semantic processing involved greater depth than phonemic processing, with no real evidence, only the fact that semantic processing resulted in more memorability.
9. Participants may not have stopped at the expected level of processing in experiments.

The Multi-store memory model

The MSM was proposed by **Atkinson and Shiffrin (1968).** According to the MSM consists of three memory stores:

Store	**Function**
Sensory	Information received by the senses enters its corresponding sensory stores and registers in a way reflecting its initial form. Visual information enters the visual sensory store, iconic memory. Auditory information enters the auditory sensory store, echoic memory Sensory stores have unlimited capacity but information stores it will be forgotten unless given attention. Attention is the control process responsible for the transfer of information of information from the sensory store to the STS. Only information given attention will transfer to STS
Short-term stores (STS)	Has an extremely limited capacity and will be lost unless it is maintained through rehearsal. Information rehearsed enough get transferred to the LTS .
Long-term stores (LTS)	Has unlimited capacity and information and can last a life time Information in the LTS is recalled by the process

	of retrieval

Research that shows evidence for the multi-store memory model include:

Peterson and Peterson (1959)	
Aim	To test the MSM and its theory.
Method	Presented participants with consonant triplets (KDS, CLS) to memorize. The triplets were presented one at a time and had to be recalled after an interval during which participants had to count backwards in threes from a given number The counting task lasted for 3,6,9,12,15,18 seconds after which participants had to recall the triplet
Results	As time interval increased, recall of the triplets became progressively worse After a 3 second interval participants could recall around 80% of the triplets After 18 seconds, recall fell to less than 10% Shows that when rehearsal is prevented, information is rapidly loss from the STS
Evaluation	Shows evidence of the MSM Lacks mundane realism and ecological validity Sample doesn't represent general population Different time intervals tested the length of short term memory

Free recall is when participants study a list of items, usually unrelated, presented one at a time and then attempt to recall these words in any order. Typical findings are that the words at the beginning and at the end of the list are better recalled than those in the middle

Primary effect- Better recall of first few items

Recency effect- Better recall of the last few items

The pattern that emerged when recall is plotted against the position of the words in the list is called the serial position curve.

Glanzer and Cunitz (1996)	
Aim	To test the serial position effect
Method	Half the participants recalled the words immediately after presentation (IFR) Other half recalled after a delay of 30 seconds (DFR). To prevent further rehearsal of list words during the delay, participants in this condition had to count backwards in three from a three digit number
Results	IFR showed the serial position effect. The first few items were stored in the LTS as the first few items were given attention. The recency effect was explained by saying that those words were in the STS and could be recalled DFR showed the primary effect but no recency effect

Case studies have also shown evidence for the MSM.

Cases of anterograde amnesia such as H.M or Clive Wearing provide strong evidence for the distinction between STM and LTM. Anterograde amnesia is often caused by brain damage to the hippocampus and those suffering from it seem incapable of transferring new factual information between STM and LTM.

Patients afflicted by anterograde amnesia often retain most of their long term memory for events up until the moment of brain damage and maintain their procedural memories. While they seem incapable of gaining new long term declarative memory for semantic or episodic information most are able to learn new procedural skill.

If these people are given free recall experiements, they show good recency effects but extremely poor primacy effects. (**Baddeley and Warrington, 1970)**

<u>Evaluation for the Multi-store memory model</u>

I. Well supported by relevant experimental and neuropsychological studies
II. Simplistic view of how memory works
    a. Importance of rehearsal has been doubted
    b. New research has shown that both STS and LTS rely on different codes to represent information
        i. Semantic processing takes place in STS
        ii. LTS uses a variety of codes such as visual, acoustic and semantic codes

c. The linear order of the MSM is too simplistic to account for the multiple ways in which different memory stores communicate
d. The STS has been subdivided into a number of distinct and interacting short term memory components
    i. Led to new models such as the working memory model
        1. View STS as a far more active and important system than just a temporary stop for information before its processed into the LTS
e. LTS has been subdivided into different components specializing in the storage of different types of information
    i. Declarative, procedural memory
f. Emphasizes on the stores and doesn't investigate the processing between each in detail and it does state how attention and rehearsal is required but it doesn't explain how much

III. Under-emphasizes the interactions between the stores.
IV. STM and LTM are more complex and less unitary than the model assumes.
V. Rehearsal is too simple a process to account for the transfer of information from STM to LTM, the model ignores factors such as the effort and strategy subjects may use when learning and does not account for the type of information taken into memory. (**Dealt by LOP)**

<u>Syllabus Question:</u> Explain how biological factors may affect one cognitive process.

Case study examples: **HM, Clive Wearing**

Experiment examples: **Sperry (1968)**

Neurotransmitters: **Martinez and Kezner (1991)**

<u>Syllabus Question:</u> Discuss how social or cultural factors affect one cognitive process.

Bartlett's work has shown that schemas originating from one particular culture affected how text from another culture is recalled. Different cultures have been shown to remember things different and at different levels of effectiveness. There is also a link between culture and face recognition.

Bartlett (1932)	
Aim	To test the effects of schema on recall. Bartlett asked English participants to read "The War of the Ghosts", a Native American folk tale
Method	Participants' memory for this story was tested by using: **Serial reproduction-** The first participant reads the original story and reproduces it on paper and this is read by the second participant who reproduces it for a third participant and continues until the sixth or seventh reproductions are completed by an equal number of participants **Repeated reproduction-** The same participant contributes all six or seven reproductions, these reproductions or separated by intervals of 15 minutes to several years from reading the original story
Results	The two methods led to very similar findings With the serial reproduction method, the stories became shorter each time and there were distortions in the story that participants introduced. These distortions made the story more understandable from the participants experiences and cultural background, things cultural unfamiliar to the participants were replaced with familiar ones. (Hunting seals to fishing). Shows that schemas were used
Evaluation	
Strength	**Weaknesses**
Provides us with evidence that the way we remember depends on our prior knowledge in the form of schemas Ecologically valid	Only used English participants, different cultures may produce different results and these participants are not of the general population Bartlett didn't give very specific instructions to his participants; as a result the distortions were due to conscious guessing rather than deficient

	memory. **Gauld and Stephenson (1967)** found that instructions stressing the need for accurate recall eliminated almost half the errors usually obtained His approach to research lacked objectivity, psychologists believed that well controlled experiments are the only way to produce objective data. Bartlett's methods were casual as he simply asked a group of participants to recall the story at various intervals and there were no special conditions for this recall Possible that other factors affected their performance such as the conditions around them at the time of recall. The distortions could be simply guesses by participants who were trying to make their own recall seem coherent and complete rather than genuine distortions

Cross cultural research have shown that American students and those in Liberia learn differently.

Cole and Scribner (1974)	
Aim	To investigate the differences in learning and development of memory among tribal people in rural Liberia
Method	To overcome barriers of language and culture, researchers observed everyday cognitive activities before conducting the experiment and used college educated locals as experimenters Conducted a free recall test and presented the nonschooled Liberian participants with a list of items they were familiar with
Results	Liberian children showed no regular increase in memory performance during middle childhood unless they had attended school for several year Non schooled people improved their performance on these tasks very little after the age 9 or 10 They remembered approximately ten items on the first trial and managed to recall only two more items after 15 practice trials

	Liberian children who were attending school learnt the materials rapidly like the school children of the same age in the United States Found that if they presented the list in a meaningful way as part of a story, the non schooled Liberian participants recalled them easily, clustering the objects according to the roles they played in a story School children in Liberia and United States learnt the list more rapidly but also used categorical similarities to aid their recall After the first trail they clustered their responses Non schooled Liberian participants did very little clustering

Kagan et al. (1979) - Tested children's memorization skills among Mayan people, and when Mayan children were presented with a free-recall task their performance lagged considerably behind those of age-mates in the United States

Rogoff and Waddel (1982)	
Method	Constructed a diorama of a Mayan village located near a mountain and lake, similar to the locale in which they children lived Each child watched a local experimenter selected 20 miniature objects from a set of 80 and placed them into the diorama. Objects included things that would be found in a real town The objects were then returned to a group of 60 others remaining on a table After a few minutes, the children had to reconstruct the full scene they were shown
Results	Results showed that under these conditions, the memory performance of the Mayan children was slightly superior to that of their United States counterparts

Ross and Millson (1970)- Investigated whether reliance on oral traditions might make people better at remembering**.** They compared the memories of American and Ghanian college students in remembering stories that were read aloud

Results showed that Ghanian students were better than Americans at remembering the stories

Concluded that cultures with an oral tradition were better at remembering things, but **Cole et al. (1971)** found that nonliterate African subjects didn't perform better when they were tested with lists of words instead of stories. Suggests that cultural differences in memory as a function of oral tradition may be limited to meaningful material.

Malpass and Kravitz (1969)- Showed photographs of either African American or European American individuals to observers in either a predominately African American or European American university

Results indicated that observers recognized individuals of their own race better than they did people of the other race.

Bigler and Liben (1993)- European American children were asked to recall stories about European or African Americans that were either consistent or inconsistent with racial stereotypes**.** Negative traits were associated with either the European or African American child in the stories

Results showed that children with better memory for counter-stereotypical stories had lower degrees of racial stereotyping and greater ability to classify people among multiple dimensions

Concluded that memory may affect stereotypes and the way by which we understand people

<u>Syllabus Question:</u> With reference to relevant to research studies, to what extent is one cognitive process reliable.

Research on eyewitness memory lends itself to this question. Much of eyewitness memory research is based on Bartlett's research on reconstructive memory. Eyewitnesses do not reproduce what they witness but reconstruct their memories on the basis of relevant schematic information.

In Bartlett's War of the Ghost, participants replaced details of the story when they were recalling it with their own culture or personal relevant schematic knowledge. Therefore, from research on schemas it is shown that memory can be an unreliable process.

Reliability in a research context means that if you can fully replicate the results of an experiment then it is considered reliable. In the context of memory, reliability means if you can accurate reproduce a piece of information from memory without any distortions

Research on leading questions, a question that contains hints about what the right answer to it may be, have shown that memory may be unreliable.

Loftus and Palmer (1974)	
Aim	To test the effects of leading questions and schemas on memory
Method	Participants watched seven film clips of different car accidents. After each clip, participants described what they saw and answered questions about it. The critical question asked about the speed of the cars in the accident. The experiment involved five experimental conditions which were defined by the verb used to ask the question about the car's speed. The critical question was "About how fast were the cars going when they hit each other?" For the other conditions the verb hit was replaced with contacted, collided, bumped and smashed into.
Results	The average estimates of speed increased when a stronger verb was used in the critical questions
Conclusion	Leading questions affect memory and may negatively affect it. Schemas may be argued to have been used as the verb may have activated a certain schema.
Study 2	
Method	Participants were presented with a one-minute film showing a multiple car accident and were then asked questions about it with a critical question about speed. Three conditions were used and two groups were

	asked questions about the speed by using either smashed or hit. The control group was not asked anything about speed. One week later, all participants were asked: "Did you see any broken glass?" There were no broken glass.
Results	32% of those who had been asked about the car's speed with the verb smash claimed to have seen broken glass compared to only 14% of the participants in the hit group.
Conclusion	The schema activated by the verb smashed must have aroused a stronger expectation of broken glass than that activated by the verb hit. But 12% in control group also reported seeing glass.

Loftus et al. (1987)- In this study the researchers studied the weapons effect, the theory that when a witness is asked to report for example, a robbery where the thief pointed a weapon against the victim, at the time of the crime the witness will most likely be focused on the weapon than the face of the criminal. Therefore reducing the reliability of the witness being able to identify the criminal.

Participants heard a discussion going in the next to the one they were in. There were two conditions:

- No weapons condition in which a man with greasy hands emerged from the next room holding a pen

- Weapon condition in which a man came out of the next room holding a paperknife covered in blood

All participants were then asked to identify the man from a selection of 50 photographs.

Participants in the no weapons condition were more accurate. Loftus et al. explained that the attention allocated were different between the two conditions. The weapon drew more attention to itself than the pen, so less attention was paid to the man's face. This explanation was supported by an analysis of the participant's eye movements.

In these three studies, they all lack ecological validity as it was performed in a laboratory condition and doesn't represent what happens in real life. Also, in real life you may get more information than from a film clip or a picture slide. Also participants knew they were going to be shown something interesting therefore this may have made participants pay for attention then they normally would.

The Yerkes-Dodson Law also helps explain the reliability of memory in the context of eyewitness memory. The Yerkes-Dodson Law states that arousal, stress or anxiety can increase performance up to a certain level, but past that level it will hinder our performance.

Deffenbacher et al. (2004)- Conducted a meta-analysis of studies investigating the role of emotion on eyewitness testimony. They found that anxiety and stress reduces the reliable recall of crime details including information about the behavior of the main characters.

Other studies have shown that anxiety and stress and stress seem to improve eyewitness accuracy. Deffenbeacher et al. suggests that increases of anxiety up to a certain level increase accuracy but further increase may produce the opposite effect.

Yuille and Cutshall (1986)- Found that real-life recall can be very accurate. They analyzed interviews from people who had witnessed a crime in which one person was shot dead and another was seriously injured. There were interviews with the police immediately after the crime and several months later with the researchers. Yuille and Cutshall found that the accuracy and amount of information recalled di not decrease over time. The eyewitnesses' accounts were not distorted by leading questions posed by the police.

These findings suggest that post-event information may distort memory less in real life than in the laboratory.

Evaluation

The memories of eyewitnesses are fragile and are susceptible to distortions, therefore negatively affecting the reliability of memory. The evidence that post-event information can easily distort an eyewitnesses' recall of the incident indicates the unreliable nature of eyewitness memory.

But post event information is less likely to distort recall in real life than in a laboratory. Also, there are differences between eyewitness reports obtained in the laboratory than those provided in real life. The reports of real accidents or crimes, unlike those in experimental studies, are very often provided by the victims themselves. Watching a video of an accident is far less stressful than observing one in real life. Also, cases of mistaken eyewitness identification in real life have real and very serious consequences than in experiments. Most of the memory distortions demonstrated seem to involve minor details rather than central aspects of the crime.

But, **Ihlebaek et al. (2003)** found that witnessing an event through a video was more reliable than witnessing in real life.

<u>Syllabus Question;</u> Discuss the use of technology in investigating cognitive processes.

Refer to BLOA section on brain imaging techniques and use relevant studies.

For example:

1. **Gabrieli et al. (1996)**
2. **Sperry**
3. **Brefcynskil- Lewis et al. (2007**
4. **HM**

Platt (2002) found in fMRI studies, the prefrontal cortex and parietal cortex activated during decision making and **Paulus et al. (2001)** found that the activation is stronger when the decisions studied involve risk

Huettel et al. (2006) presented participants with pairs of monetary gambles and had to choose among them**.** Included both risky and ambiguous decisions**, r**isky decisions have several possible outcomes, the probabilities of which are known

Results showed that fMRI scans showed that the prefrontal cortex and parietal cortex showed increase levels of activation. Preference for ambiguity increased activation in lateral prefrontal cortex. Preference for risk was associated with increased activity in posterior parietal cortex. Impulsiveness in decision-making was associated with activity in prefrontal cortex. Found that prefrontal cortex was associated with less impulsivity in decision-making under uncertainty

Ochsner and Gross (2008) through fMRI scans, found that when participants are asked use cognitive reappraisal in cognitively reinterpreting the meaning of emotional stimuli in ways that change their emotional value, they found that:

1. Increases in prefrontal cortex, more active it is the more successful the reappraisal
2. Decreases in amygdale which are associated with negative emotions
3. Increases in nucleus accumbens, associated with positive emotions

Wager et al. (2008)	
Method	Carried out a study involving three conditions and participants took part in all three and during these conditions, participants viewed imaged presented during fMRI scanning
Condtions	Look/neutral condition- Participants viewed neutral imaged Look/negative condition- Participants viewed negative images In both these conditions participants were asked to look at the images and experience whatever emotional response they might elicit Reappraise/negative condition- Participants viewed negative images and were asked to generate positive reinterpretations of those imaged so as to reduce their negative emotional impact Following presentation of each image participants were asked to rate their emotional reaction
Results	Reappraisal was successful in lowered emotional impact of negative images and resulted in increased activation in the prefrontal cortex Reduced activity in amygdale caused increased activity in nucleus accumbens

Cognition and emotion

Syllabus Question: To what extent do cognitive and biological factors interact in emotion.

The Two Factor Theory

According to **Schater and Singer (1962)'s** two factor theory, two factors interact to determine specific emotions: physiological arousal and an emotional interpretation and labeling of the physiological arousal. According to the TFT, experiencing distinct emotions in specific settings requires the interaction between physiological arousal and an interpretation of what has caused the arousal in that setting. The strength of the physiological arousal determines the intensity of the emotional experience, its interpretation determines which particular emotion is experienced

Schachter and Singer (1962)	
What is this study about?	To see the effects of placebos and see the different effects of hormones when in different environmental contexts
Aim	Proposed that adrenaline causes emotion but the nature of the emotion was dependent on contextual factors
Method	They recruited volunteers to receive a vitamin injection and informed them that they would be participating in vision experiments. None of the 184 male participants received a vitamin injection. Three groups received adrenaline injection and a fourth group received a placebo injection. The three groups receiving the adrenaline injection were either given correct or incorrect information about the effects of the injection The participants were placed in one of the two conditions. Euphoria, a confederate of the experimenters encourages the participant to join in games. Anger, a confederate fills out a mock questionnaire with the participants but gets increasingly outraged by personal nature of questions Experimenters use observational data based on structured observations of participants in each condition and asked them to complete a form that assessed their mood in terms of happiness and anger
Results	In the euphoria condition, the groups who received an adrenaline injection with incorrect information about effects showed more euphoric and happy behavior
Conclusion	Conclude that emotion occurs by cognitive labeling
Evaluation	1. Methodologically lacking as physiological arousal was measured by pulse rate only 2. Subsequent research by Marshal and Zimbardo (1979) found that arousal produced by adrenaline injections is unpleasant rather than neutral 3. There has been replication failures 4. Lacks ecological validity

	5. Does not systematically link specific types of cognitions to specific emotional states 6. The judges who rated emotion knew which condition the participants were in, this may have biased their ratings 7. Judges didn't use a standardized coding system for recording the participant's behavior

The James- Lange Theory

The James-Lange theory of emotion states that different emotion-arousing external stimuli will produce specific physiological responses that in turn directly cause specific emotional feelings. Thus, external stimuli of a dangerous object will cause the physiological response of adrenaline release/increased heart rate, which in turn is felt as the emotion of fear. Physiological arousal is necessary and sufficient for emotions to occur.

Ax (1953) found different physiological changes associated with particular emotions, for example fear seemed associated with physiological effects of adrenaline, anger with the effects of noradrenaline. **Schwartz et al (1981)** also found distinct physiological reactions for anger, fear, happiness and sadness. **Laird (1974)** found that facial feedback affected mood.

But specific physiological changes have not been found for every emotion, only the strongest and most basic ones. **Maranon (1924)** found that physiological arousal is not suffiecient to cause emotion, by injecting subjects with adrenaline. Over two thirds of them reported only physical symptoms- the rest merely reported "as if" they were feeling an emotion.

Lazarus's appraisal theory

Proposed by Lazarus (1982, 1991), refers to the evaluation of situations according to the significance they have for us. We experience emotions when we appraise events as beneficial or harmful to our well-being. There are two types of appraisal:

I. Primary appraisal relates to deciding whether a situation is personally relevant
    a. Three components to appraisal
        i. Motivational relevance
            1. Is situation relevant to goals set, an emotion will only be experienced if answer is positive
        ii. Motivational congruence
            1. Is situation favorable to my goals, positive and negative emotions will follow yes and no answered respectively
        iii. Accountability
            1. Who is responsible for what is happening

Outcome of primary appraisal is not full emotion but a basic positive and negative approach and avoidance responses towards or away from the situation that caused them. Experiencing more specific emotions require secondary appraisal

II. Secondary appraisal aim is to provide information about the individuals coping options in a situation
    a. Three components:
        i. Problem-focused components
            1. Can I cope with the situation by changing it to make it less threatening?
        ii. Emotion-focused components
            1. Can I change the situation by changing the way I feel about it to reduce emotional impact?
        iii. Future expectancy
            1. To what extent can I expect the situation to change?
        iv. Which emotion we experience in a particular situation is determined by the pattern of answers individuals give to the questions above

The Core Relational Theme (CRT) is the summary of all the appraisal judgments that define specific emotions

Re-appraisal may also occur, this is when the stimulus situation and coping strategies are monitored, with the primary and secondary appraisals being modified if necessary.

Research that supported Lazarus' appraisal theory of emotion include:

Smith and Lazarus (1993) asked participants to identify with the central character of stories they were reading. In one of the stories, the character is appraising his very poor performance in an important course**.** Accountability was manipulated by either describing the situation as one that involved an unhelpful teacher or the character's bad working habits

Results showed that manipulation of appraisal components led to the participants reporting emotional states that were largely consistent with appraisal theory

Herrald and Tomaka (2002)	
Aim	Investigated the relationships between different emotions, patterns of cognitive appraisal and cardiovascular reactivity during real emotional episodes
Method	Participants were asked to express their opinion on a variety of college-related topics in the presences of a confederate behaving in a way to make them feel anger, shame, or pride by using behavior based on CRTs outlined by Lazarus Physiological arousal was measured by

	monitoring participant's cardiac activity and blood pressure
Results	Largely consistent with Lazarus' theory Discrete emotions were closely associated with specific appraisal patterns Anger and shame were associated with greater physiological arousal than pride

Speisman et al. (1964)	

Method	Showed participants a stressful firm depicting boys undergoing circumcision in the context of a puberty rite. Film was accompanied by a soundtrack and by manipulating the soundtrack, investigators defined four experimental condition:
	1. Trauma
	  1. Pain experienced by boys and the use of a sharp knife were emphasizes
	2. Denial
	  1. Boys' anticipating of entering manhood was pointed thus de-emphasizing the negative aspects of the film
	3. Intellectualization
	  1. Soundtrack ignore the emotional aspects of the situation and emphasized instead the traditions of aboriginal culture
	4. Silent
	  1. No soundtrack
	
	Arousal state was measured galvanic skin response (GSR), a measure of electrical conductivity of skin and an indicator of autonomic arousal and heart rate

Results	GSR and heart rate were highest in trauma and lowest in intellectualization and silent conditions Denial was in the middle
Conclusion	Concluded that the way participants appraised what they saw in the film affected their physiological reaction to it

Ohman (2000)	
Method	Presented pictures of spiders or snakes to participants who feared spiders, feared snakes, and no fears of either Two experimental conditions 1. Stimuli were presented at durations that enabled the participants to consciously recognize them 2. Pictures were shown for 30 milliseconds and followed by a neutral stimulus, participants would not be aware of the context of stimuli presented
Results	Phobic participants showed nearly identical physiological responses to picture of their phobic animals, regardless of whether or not they had conscious seen the spiders or snakes presented
Conclusion	Results indicate that appraisal can occur as unconscious levels I. Whalen et al. (1998) 1. Used the same technique to show participants photos of faces with fearful expression for about 30 milliseconds and participants reported no conscious awareness of the fearful faces i. Imaging data showed activation within amygdale

Syllabus Question: Evaluate one theory of how emotion may affect one cognitive process.

Two concepts called repression and flashbulb memory show us the effects of emotion on memory. Repression suggests that it could cause forgetting and flash bulb memory suggests that it prevents forgetting. Both are due to emotional effects.

Brown and Kulik (1977) define FBM as memories of the circumstances in which one first learned of a very surprising consequential or emotionally arousing event. FBMs are most likely to occur when the event was not only emotionally surprising to the person but also had consequences for their own life. They proposed a theory of the formation and maintenance of FBMs.

1. Form in situations where we encounter surprising and highly emotional information
2. Maintained by means of overt rehearsal (discussion) and covert rehearsal (private rehearsing)
3. Differs from other memories in that they are more vivid, last longer and are more consistent and accurate
4. Require the involvement of a specialized neural mechanism which stores information permanently in a unique memory system, in order to be created

Research that shows evidence for FBM include:

Brown and Kulik (1977)	
Aim	To show evidence for flash bulb memory.
Method	Asked 80 American participants (40 white and 40 black) to answer questions about 10 events Nine were mostly assassinations or attempted assassinations of well-known American personalities. Tenth was a self-selected event of personal relevance and involving unexpected shock Participants were asked to recall the circumstances they found themselves in when they first head the news about the 10 event. They were also asked to indicate how often they had rehearsed (overtly or covertly) information about each event
Results	Assassination of Kennedy led to the highest number of FBMs with over 90% of participants recalling its reception context in vivid detail African Americans reported more FBMs for leaders of civil rights movements than Caucasian Americans Most participants recalled a personal FBM
Conclusion	The results shows evidence for flash bulb memory

	and the role of emotion in it. The results suggest that emotional significant events that affect people emotionally in negative or positive ways create a "FBM" effect. But events such as JFK being assassinated may not be as emotionally significant to African Americans as the assassination of Martin Luther King.

Conway et al. (1994) used both UK and non-UK citizens to study FBMs caused by unexpected resignation of Margaret Thatcher in 1990**.** They found that 85.6% of UK citizens and considerably fewer non-UK citizens had FBM after 11 months. *This shows evidence of emotion playing a role in helping consolidate memory as it is argued that Margaret Thatcher's resignation is emotionally significant to UK citizens than compared to non-UK citizens. Non-UK citizens had considerably few FBMs than UK citizens therefore suggesting the role of emotion in FBM.*

It has been demonstrated in research that current attitudes and emotion towards a certain event or thing affect memory and that the memories of these events are partly reconstructed based on people's current appraisal of events. **Breckler (1994)** found that people's current attitudes towards blood donation impacted their memories about how they felt when they donated blood in the past. **Holmberg and Holmes (1994)** found that men whose marriages had become less happy over time tended to recall early interactions in the marriage as being more negative than they had originally reported. But the data was co relational so we can't say that changes in appraisal actually cause changes in memory for emotions.

Research that goes against FBM:

Neisser and Harsch (1992) asked participants to report on circumstances when they learnt about the Challenger space disaster**.** Participants reported on this event twice one day after the disaster and 2 and half years later. Results showed that one day after event 21% of participants reported hearing it on TV **and** two and half years later this rose to 45%.

Concluded that the participants memories of how they learnt the news changed over time and that their memories about how they heard the news deteriorated during the two and half years.

Suggests that FBM may not exist and that FBMs are just normal memories and that emotionally intensive memories doesn't always mean that it'll make it more accurate. **Talarico and Rubin (2003)** found that emotional intensity was often associated with greater memory confidence, but not with accuracy. They asked participants to recall events of 911 on four different occasions:

1. A day after
2. A week after
3. 42 days after

4. 224 days after

They also tested participants memory for an everyday event that had happened at around the same time with the attack. Memory was tested four times, same arrangement

Results showed that the FBMs remained very vivid throughout the study and that participants were very confident about their accuracy but not more consistent than the participant's everyday memories the everyday event

Also, FBM's may be just a result of extra attention and rehearsal being given to a certain event because of the emotional significant or shock of it. We are more likely to talk to people about a very shocking event and rehearse it in our head than more mundane events. Therefore creating the vividness in the memory and "accuracy" of it and as a result FBM.

Repression

Repression is a concept from psychodynamic psychology which focuses heavily on emotion. Freud proposed that forgetting is motivated by the desire to avoid displeasure, so embarrassing, unpleasant or anxiety-producing experiences are repressed and pushed down into the unconscious. Repression is a protective defensive mechanism that involves the ego actively blocking the conscious recall of memories which become inaccessible. Direct recall attempts will either fail, lead to distorted recall or digression from the topic.

Sigmund Freud argued that repression was the most important of defense mechanisms and that it not only accounted for his patient's anxiety disorders but was a common cause of everyday forgetting.

But theoretically speaking, forgetting more unpleasant than pleasant memories could just mean that people rehearse upsetting material less because they do not want to think or talk to others about it. It is also difficult to assess the extent to which the repressor chooses not to search for the memory or is unable to.

Experimental evidence is difficult to gather due to the ethical problems of probing for traumatic memories or creating them by exposing subjects to unpleasant, anxiety provoking experiences. Also, studies that have been conducted show mixed results and where negative emotions have been found to increase, there has been debate over the cause on whether or not emotion can affect memory.

Loftus and Burns (1982) showed two groups a film of a bank robbery, but exposed one of the groups to a far more violent version where a young boy was shot in the face. The group that saw this version later showed far poorer recall of detail than the control group. In this study, Freud may have suggested repression, but **Loftus (1987)** could explain the forgetting with the weapons focus effect.

Sociocultural Level of Analysis

General learning outcomes

Syllabus Question: Outline principles that define the sociocultural level of analysis.

I. There are three principles that define the sociocultural level of analysis:
   a. The social and cultural environment influences individual behavior
      i. Other people have influence on the way we behave.
      ii. Social norms and internalized standards of behavior regulate our social lives
      iii. Group behavior and conformity
      iv. SLT
   b. We want connectedness with and a sense of belonging to others
      i. In and outgroups and SIT
   c. We construct our conceptions of the individual and social self
      i. Stereotypes, ingroup, outgroups, SIT

Syllabus Question: Explain how principles that define the sociocultural level of analysis may be demonstrated in research.

1. The social and cultural environment influences individual behavior.
   a. This means that people around us or whatever is happening around us will influence our behavior

Research that demonstrate this principle include:

Asch (1951)	
Aim	To investigate the effects of the social environment on conformity
Method	Participants were told they were taking part in a study of visual perception and were asked to indicate which one of three comparison lines is equal in length to a standard line. This was repeated 18 times, the task was so easy that participants would almost always get it all correct if done by themselves. In the main control of the study participants had to state their answers aloud in the presence of people they think were six other participants. They were confederates and behaved in a way prearranged by the experimenter. The

	confederates gave the wrong answer on 12 of the 18 trials and the real participant was always the last to answer .These set of 18 trials was repeated many times, each time testing a genuine participant
Results	Participants conformed and went along with the wrong answer given by the majority on nearly 37% of critical trials 76% of participants conformed on at least one critical trial. Only 24% of participants remained independent throughout the experiment After the experiment, when asked why they conformed, participants said that they wanted to gain approval and avoid criticism and social disapproval

2. We wanted connectedness and a sense of belonging to others

This principle can be demonstrated by conformity research and research on SIT and ingroup and outgroups. **Asch (1951)'s** conformity study shows this as participants said that they didn't want to get criticized and socially disapproved and gain approval instead.

Research that demonstrates this principle include:

Tajfel et al. (1971)	
Aim	To see if being categorized into groups would cause ingroup and out group bias
Method	Divided a number of British schoolboys into two groups. They were divided randomly but were led to believe they were sorted according to their preferences for artwork The boys had to individually distribute points to ingroup and outgroup members and were not allowed to give points to themselves
Results	The boys showed a strong tendency to favor members of their ingroup over the outgroup, this shows ingroup favoritism. The boys would also sacrifice the amount of points they would give to their ingroup in order to maximize the difference from the outgroup. Giving more points to the ingroup would mean you have to give corresponding points to the outgroup, the more you give to ingroup the more

	you have to give to outgroup too. Boys chose to give 7 point to ingroup instead of giving 13 as giving 7 would result in 1 point to outgroup and 13 would result in 13 to outgroup also.
Conclusion	Simply being categorized into groups is enough to show an ingroup and outgroup bias. This demonstrates this principle.

3. We construct our conceptions of the individual and social self

This principle basically means that we have develop our own self based on the social environment. This principle can be demonstrated by SIT, in group outgroup , SSB, etc research.

Research that demonstrates this principle include:

Johnson et al. (1964)	
Aim	Test self serving bias
Method	Participants were psychology students that taught two children how to multiply numbers by 10 and 20 Teaching was done in phases via a one-way intercom 1. First phase involved teaching children how to multiply by 10 2. Second phrase involved teaching children how to multiply by 20 After each phase, the children's worksheets were made available to the participants to assess the learning progress of the children The worksheets were actually marked in a way that in both conditions: 1. Pupil A gave right answers to all questions both worksheets 2. Depending on condition, pupil B either did badly on both tasks or did badly on the first worksheet but improved on the second 3. Participants had therefore either failed or successes in teaching pupil B the two tasks
Results	Where pupil B's performance improved, participants explained the improvement as a success based on their abilities as teachers When pupil B failed to improve they attributed

	this to the pupil's lack of ability
Link to principle	The principle states we construct our own individual and social self. This research about self-serving bias demonstrates this as the way we attribute success and failure influences the ways we construct our sense of self and self- worth.

Sociocultural cognition

Syllabus Question: Describe the role of situational and dispositional factors in explaining behavior.

I. The attribution theory is the theory of how we attribute certain behaviors and what we attribute them to:
   a. Dispositional attribution is attribution the cause of people's behavior to their internal characteristics
   b. Situational attribution
      i. When a people's behavior is attributed to external factors

II. The Actor Observer Effect is where people attribute a behavior depending on whether they are performing an action or observing somebody else doing it
   a. The actor attributes behavior to situational factors
   b. The observer attributes behavior to dispositional factors

Research that demonstrates the Actor Observer Effect include:

Choi and Nisbet (1998) studied cultural differences in the AOE between Americans and Koreans. Participants read and essay after being told that the writer was biased on one side

Participants carried out 2 tasks

1. Rate the extent to which the writer expressed his/her genuine feelings
2. Wrote an essay un same situational pressure as original writer

Results showed that American participants showed the AOE, they thought that the writer expressed his/her true feelings more than themselves. The Korean participants felt that the writer was no more likely than themselves to be expressing his/her true feelings

Storms (1973) argued that we exaggerate the situation's importance in determining our own behavior because we can see the situation but no ourselves**.** In this study, conversations were videoed from the actor's POV and from the observer's POV**.** When actors viewed the video from observers POV, they generally attributed their own behavior to dispositional rather than situational factors.

<u>Syllabus Question:</u> Discuss two errors in attributions.

The Fundamental Attribution Error is when people overestimate the role of dispositional factors in a person's behavior and underestimate the situation factors, in other words they falsely blame the person and not the situation

I. Theories that aim to explain why people commit the FAE are:
    a. Predictability Theory
        i. The theory that we attribute an error just because it makes our life easier and making future behavior easier to predict.
            1. We meet a quiet person that was boring; we assume all future quiet people we meet will be boring.
    b. Terror management theory
        i. The theory that we assume a person's personality will be the same in all situations regardless of current situational factors
            1. An aggressive person is aggressive in one situation, we assume that person will be aggressive in all situations

Research that demonstrates the FAE include:

Lee et al. (1977) in this study, participants were randomly assigned one of three roles and know that everyone in this experiment is acting as either a game show host, a contestant or the audience.The hosts were instructed to make up their own questions, the audience watched the show through these questions**.** After the show was over, the audience were asked to rank who was the smartest.

Results showed that most people said the host, this shows FAE because they knew that it was all randomly assigned and that the host wrote his/her own questions. Participants attributed the hosts behavior to dispositional than situational

Choi and Nisbett (1988) asked American and Korean participants to read an essay supporting or opposing capital punishment.**.** They were informed the essay writer had been told which side of the issue to support

Results showed that American participants showed a much stronger FAE than Koreans and that there is a difference in FAE between individualistic and collectivistic cultures.

Jones and Harris (1967) asked their participants to read essays written by fellow students. Essays were about Castro's rule in Cuba and either supported or went against him.

Participants had to guess what attitude the writers of the essay really held towards Castro.

1. Half the participants were told the essayists were free to chose whether to take a positive or negative view
2. Other half were told the essayists had no choice

Participants in the choice condition assumed that the essays reflected the true feelings and the no choice condition also assumed they were writing their true feelings. Results shows FAE as they ignored the situation.

Research has shown that people make the fundamental attribution error even if the conditions are told beforehand. But in many of the research states above university students were used and they don't represent the general population and also university students are used to listening to authoritative figures. It is possible that these students have learnt that these figures are smarter and so therefore just simply listen to them and not ask questions. This suggests that it may not be the FAE.

Also, people, especially in Western cultures often exaggerate the importance of dispositions and minimize that of situations as causes of behavior. The fundamental attribution error is also much weaker in collectivistic cultures that in individualistic ones. Through general McEG questionable, the fundamental attribution error is less important in everyday life than in the laboratory. In everyday life, we realize that many people have hidden motives influencing behavior.

Fien et al. (1990) in his study asked US students read an essay about a character called Rob Taylor**.** In one condition, the participants were told that Rob had been told to write in favor or against some view and the FAE obtained. In another condition, participants were led to believe that Rob's essay was similar to the view of his professor and no FAE was obtained. Concluded that we won't demonstrate FAE if the actor has motives.

Self serving bias

1. Self serving bias is when we explain our successes to the basis of internal, dispositional factors and blame our failures to external, situational factors
    a. **Greenberg (1982**) say that SSB is to protect our self-esteem and is a form of self protection
        i. If we attribute successes to disposition our esteem will go up and by attributing failures to situational factors we protect ourselves

Research that shows evidence of the self serving bias include:

Johnson et al. (1964)	
Aim	Test self serving bias
Method	Participants were psychology students that taught two children how to multiply numbers by 10 and 20 Teaching was done in phases via a one-way intercom 3. First phase involved teaching children

	how to multiply by 10 4. Second phrase involved teaching children how to multiply by 20 After each phase, the children's worksheets were made available to the participants to assess the learning progress of the children The worksheets were actually marked in a way that in both conditions: 4. Pupil A gave right answers to all questions both worksheets 5. Depending on condition, pupil B either did badly on both tasks or did badly on the first worksheet but improved on the second 6. Participants had therefore either failed or successes in teaching pupil B the two tasks
Results	Where pupil B's performance improved, participants explained the improvement as a success based on their abilities as teachers When pupil B failed to improve they attributed this to the pupil's lack of ability
Link to principle	The principle states we construct our own individual and social self. This research about self-serving bias demonstrates this as the way we attribute success and failure influences the ways we construct our sense of self and self- worth.

Bernstein et al. (1979) considered students who had obtained a good or a poor grade on an exam. Those with good grades typically attributed it to their intelligence or hard work, dispositional factors**.** Those with bad grades typically attributed it to bad luck or an unreasonable lecturer, situational factors

Lau and Russel (1980) showed professional athletes and coaches attribute 80% of their wins to internal factors. Losses are far more likely to be attributed to external factors.

Although SSB is widespread, there are exceptions. We are more likely to rely on SSB attributions when we fail in a domain in which we cannot improve. **Duval and Silvia (2002)** demonstrated that we are more likely to attribute our failure to internal causes if we believe we can do something to improve the situation in the future. **Abramson et al. (1989)** demonstrated that depressed people often rely on an attribution style that attributes success to external and failure to internal causes.

Zuckerman (1979) has shown that the effect of SSB depends on a desire to maintain self- esteem. He reviewed a number of studies of SSB and evidence shows this as so. Therefore, this is one of the many

exceptions to SSB. **Heine et al. (1999)** found that members of collectivistic cultures are far less likely to strive for positive self esteem than individuals from individualistic cultures. Consequently, the Japanese were found to be less likely to make SSB attributions than Americans.

Kashima and Triandis (1986) found similar results where they asked American and Japanese students to remember detailed information about landscapes shown on slides. Both groups tended to explain their success in terms of situational factors and failure in terms of task difficulty. But Americans were more inclined to explain their successes in terms of high ability than their failures in terms of low ability, whereas the Japanese showed the opposite pattern.

<u>Syllabus Question:</u> Evaluate social identity theory, making reference to relevant studies.

I. Social identity theory assumes that individuals strive to improve their self image by trying to enhance their self esteem based on either personal identity or various social identities
    a. There are three stages to social identity theory by Tajfel and Turner (1979)
        i. Social categorization
            1. We divide our social environment into ingroups and outgroups, this allows:
                a. Reduced perceived variability within the ingroup
                b. Reduces perceived variability in the outgroup
                c. Increases perceived variability between the ingroup and outgroup
                    i. The exaggeration of group differences and intragroup similarities is called the category accentuation effect
        ii. Social identification
            1. We adopt the identity of the group we have categorized ourselves as belonging to
                a. Intergroup behaviors
        iii. Social comparison
            1. SIT states that we strive for a positive self-concept, we seek positive social identities to maintain and enhance our self-esteem
                a. We socially compare ourselves for positive distinctiveness
                    i. The motivation to show that our ingroup is preferable to an outgroup

Research that demonstrates the social identity theory include:

Tajfel et al. (1971)	
Aim	To see if being categorized into groups would cause ingroup and out group bias
Method	Divided a number of British schoolboys into two groups. They were divided randomly but were led to believe they were sorted according to their preferences for artwork The boys had to individually distribute points to ingroup and outgroup members and were not allowed to give points to themselves
Results	The boys showed a strong tendency to favor members of their ingroup over the outgroup, this shows ingroup favoritism. The boys would also sacrifice the amount of points they would give to their ingroup in order to maximize the difference from the outgroup. Giving more points to the ingroup would mean you have to give corresponding points to the

	outgroup, the more you give to ingroup the more you have to give to outgroup too. Boys chose to give 7 point to ingroup instead of giving 13 as giving 7 would result in 1 point to outgroup and 13 would result in 13 to outgroup also.
Conclusion	Simply being categorized into groups is enough to show an ingroup and outgroup bias. This demonstrates this principle.

Poppe and Linssen (1999)	
Aim	Aimed to see what stereotypes European adolescents held regarding the morality and competence of their own and other European nationalities
Method	1143 15-18 year old students from different European countries answered a questionnaire which examined beliefs about the characteristics of people from European countries including all those from which participants were taken from. Questionnaires required participants to rate each nationality according their competence and morality. Counterbalancing was used, questionnaires given to different participants listed the nationalities in different order. Ensured participants were not influenced by order in which nationalities were presented.
Results	Social identity affecting people's judgments about other nationalities Eastern Europeans tended to favor their own nationality over those of other Eastern Europeans, but not over Western Europeans National stereotypes were upheld and rated Germans as most competent but least moral and the English and most moral
Conclusion	Concluded that being in a particular nation would show in-group favoritism to that nation but not blindly as other factors were taken into account

Brown (1978) reported a study of factory workers who were highly motivated to maintain wage differentials between their department and others in the same factory even if this would lead to a reduction in their own earnings.

Research has suggested that people only show ingroup favoritism due to personal gain. They expect that by showing this favoritism towards the ingroup, the ingroup will give them something back in return.

Rabbie, Schot and Visser (1989) in their ingroup reciprocity hypothesis, they argued that ingroup bias is due to self-interest**. I**ndividuals reward ingroup members more than outgroup members because they expect to be benefited in return by other ingroup members. They reported a study in which some participants would receive only what outgroup members gave them, these participants could not be benefited by other ingroup members and so they showed outgroup favoritism rather than ingroup.

Gaertner and Insko (2000) using minimal groups, told participants they would not receive any bonus money in contrast to other ingroup members and most of the outgroup members. Under these conditions, participants showed no ingroup bias, presumably because other ingroup members could not benefit them in return

Using the theory of ingroup favoritism, people should be biased for their ingroup, even for pain. But **Mummendy et al. (1992)** has shown this to not be so. They instructed participants to distribute different durations of an unpleasant, high-pitched tone to members of the ingroup and the outgroup. They showed no evidence of ingroup favoritism, with many participants equalizing negative outcomes between two groups.

Evaluation of social identify theory

Strengths

1. SIT has been supported by many studies
2. Demonstrates the crucial role of social categorization in intergroup behavior
3. Drew the distinction between personal and social identity and explored ways our basic need to belong affects social interaction
4. Contributed very significantly to the explanation of lots of social psychology phenomena
5. The original SIT theory has been expanding and continues to generate a lot of research

Weakness

1. The self-esteem hypothesis is no longer viewed as central to SIT
2. Studies have shown that the increase in self esteem associated with outgroup discrimination is too short lived to have long term effects on how ingroup members view themselves (Rubin and Hewstone, 1999)
3. One of the aims of SIT was to favor situational over dispositional, there is evidence suggesting that individual differences do affect SIT processes **Platow et al. (1990) f**ound that competitive participants showed greater ingroup favoritism than cooperative participants.
4. Research suggests that SIT may have limited explanatory power. Also suggests that SIT may lack relevance when explaining prejudice and discrimination

<u>Syllabus Question:</u> Explain the formation of stereotypes and their effect on behavior.

I. According to **Aronson et al. (2007)**, stereotypes are widely held evaluative generalizations about a group of people
   a. Stereotypes assign similar characteristics to all members of a group, despite the fact that group members may vary widely from one another
      i. Fiske (1998)
         1. Notes that extensive research has shown that both men and women perceive women as nice but not competent and men as competent but not very nice
      ii. Williams and Best (1982)
         1. Regard stereotypes as having some cross-cultural generality as they have been detected throughout all over world

II. There are several theories on stereotype formation
   a. Social cognitive theories state that our social world is very complex and presents us with too much information. Since our capacity to process information is limited there is a need to simplify our social word. We avoid information overload by social categorization.
      1. Energy-saving devices
      2. Can be automatically activated
      3. Stable and resistant to change
      4. Affect behavior

Research that shows schematic nature of stereotypes include:

Bargh et al. (1996)	
Aim	To test the effects of stereotypes.
Method	Participants in this experiment were asked to complete a test involving 30 items. They were told it was a language proficiency task Each of the 30 items consisted of five unrelated words. For each item participants had to use four of the five words to form, as fast as possible, a grammatically correct sentence Two conditions: One task contained words related to and intending to activate the elderly stereotype and other were with words that were unrelated to elderly stereotype After the experiment participants were directed towards and elevator A confederate, sitting in the corridor, timed how long the participants took to walk from the

	experimental room to the elevator
Results	Participants who had their elderly stereotype activated walked significantly more slowly towards the elevator than the rest of the participants
Conclusion	Concluded that the stereotype activated unconsciously as there were no references to time and speed or elderly people in the experiment

Illusionary correlations is the phenomenon where observers conclude that two factors are associated despite the lack any real association between them.

Hamilton and Gifford (1976) asked participants to read descriptions about two made up groups (Group A and B)**.** Descriptions were based on a number of positive and negative behaviors

I. Group A was the majority group and has twice as many members as Group B, the minority group
    a. Group A performed 18 positive and 8 negative behaviors and B performed 9-4

Results showed that undesirable behaviors were attributed to the minor group. They concluded that: Group B had fewer members and were numerically distinct and so negative behaviors from Group B stood out compared to A. Shows an illusionary correlation. *This research shows us the effects of illusionary correlations and how it applies to stereotypes.*

Other explanations for stereotypes include the **Grain of Truth hypothesis** where an experience with an individual from a group will then be generalized into the whole group and **confirmation bias** where we believe that certain groups or people will act a certain way and when we finally see it we generalize it and ignore other factors.

Research on the stereotype threat effect have shown that stereotypes may have negative effects on behavior such as spotlight anxiety

Spencer et al. (1977) found that simply informing female participants, before they took a math test, that males usually do better in math led to deterioration of female performance in the test.

Steele and Aronson (1995) found that performance of African Americans in a difficult verbal task is impaired if they are asked to indicate their race before taking the test**.** This may be due to the concern that they may be judged in light of a negative stereotype that affected their performance.

Social norms

Syllabus Question: Explain social learning theory, making reference to two relevant studies.

I. Social learning theory or social cognitive theory (SCT) is the theory that we learn behaviors of models and behave like the models
   a. Based on the following cognitive processes:
      i. Motivation
         1. Our present behaviors are largely governed by internalized outcome expectancies
      ii. Attention
         1. The model's behavior and its consequences must be attended to by the learner
      iii. Coding and memory
         1. The behavior of the model needs to be properly encoded and stored in the learner's memory in ways that allow both for immediate imitation or deferred imitation (delayed)
   b. Vicarious learning
      i. Also called observational learning, we learn behaviors by observing and imitating models
   c. Vicarious reinforcement
      i. Pairing two stimuli behavior that result in favorable outcomes

Research that shows evidence for SIT include

Bandura (1965)	
Method	Showed young children a film of an adult behaving aggressively toward an inflatable Bobo doll Aggressive acts performed by the adult model included throwing the Bobo doll in the air, kicking it across the room, hitting it II. Three experimental conditions in which this was shown a. Control condition i. Children were shown the film with adult behaving aggressively towards the Bobo doll b. Model-rewarded condition i. Children saw the same film as control but after a second adult appears and rewards the aggressor c. Model-punished condition

	i. Same as model-rewarded but instead the second adult punishes the adult After watching the film, all the children were taken individually into a playroom with several toys which included a Bobo doll Children's behavior was observed for a period of 10 minutes for any acts of aggression similar to those performed by model
Results	Control and model-rewarded groups showed an equal level of aggressiveness towards the Bobo doll Model punished condition was associated with significantly fewer aggressive acts At a later stage when children were asked to reproduce the behavior of the model and were rewarded for each act of aggression they shown all the children regardless of the condition they were in showed the same number of aggressive acts

Bandura, Ross and Ross (1961)	
Aim	Demonstrated that learning can occur through mere observation of a model and that imitation can occur in the absence of that model
Method	Participants were children and there were three conditions A. Aggressive model shown B. Non-aggressive model shown C. Control- no model shown A. Participants were individually shown into a room containing toys played with some in a corner for 10 minutes while, depending on the condition,: i. The non-aggressive model played in a quiet and subdued manner for 10 minutes ii. The aggressive model distinctively aggressed against a 5 foot Bobo doll by attacking it and also uttering verbally aggressive statement and non-aggressive statements B. The children were then individually taken into a different location and subjected to mild aggression arousal by

	being stopped from playing some very attractive toys, in order to make sure everyone had a chance to show aggression and to allow non-aggressive group to demonstrate and inhibition against aggressive behavior A. All children were then shown into another room which contained aggressive toys and non-aggressive toys and were observed for 20 minutes
Results	1. Children in the aggressive model showed significantly more imitation the model's physical, aggressive and non-aggressive verbal responses than the other two groups 2. Children in the aggressive condition usually showed partial imitation and non-imitative physical and verbal aggression than the other two conditions, but not always to a significant degree 3. Children in non-aggressive model showed very little aggression, but not always significantly less than no model group 4. More likely to imitate same-sex models

<u>Syllabus Question:</u> Discuss the use of two compliance techniques.

Aronson et al. (2007) define compliance as a form of social influence involving direct requests from one person to another. Compliance techniques are tactics humans use to persuade others to comply with their appeals.

Cialdini (2009) outlined six factors that influence the likelihood that people will comply with a request.

1. **Authority**: People comply more often with those in positions of some authority.
2. **Commiment**: Once people have agreed to something, either by their behavior or by a statement of belief, they are likely to comply with similar requests.
3. **Liking**: People comply with requests from people they like.
4. **Reciprocity**: People often feel they need to return a favor.
5. **Scarcity**: Opportunities seem more valuable to people when they are less readily available.
6. **Social proof**: People view a behavior as correct if they see others performing it

The **foot-in-the-door technique (FITD)** aims at increasing compliance with a large request by first asking people to go along with a smaller request.

Freedman and Fraser (1966) arranged for researcher, posing as a volunteer worker, to ask a number of householders in California to allow a big ugly public service sign to be placed in their front gardens. Only 17% of householders complied with this request. A different set of homeowners were asked to big a smaller sign. Nearly all those who were asked agreed to the request.

Two weeks later those same homeowners were asked if they would display the bigger sign. 76% complied with this request compared to the much smaller 17%.

In a second study **Freedman and Fraser (1966)** asked a number of householders to sign a petition in favor of keeping California beautiful, nearly everybody agreed to do. After two weeks, they send a new "volunteer worker" who asked these homeowners whether they would allow the big and ugly sign from the previous study to be displayed in their front gardens.

The two requests relate to completely different topics but nearly half of the homeowners agreed with the second request.

Cialdini (2009) theorizes that this effect is due to consistency and commitment. **Freedman and Fraser (1996)** suggest that by signing the petition changed the view the homeowners had about themselves. As a result, they saw themselves as unselfish citizens with good civic principles. Agreeing, two weeks later reflected their need to comply with their newly-formed self image. *This links to other theories such as SIT and one of the principles of SLOA.*

Sherman (1980) called residents in Indiana (USA) and asked them if, hypothetically, they would volunteer to spend 3 hours collecting for the American Cancer Society. Three days later, a second experimenter called the same people and actually requested help for this organization. 31% agreed to

help, much higher than the 4% of a similar group of people who volunteered to help when approached directly.

Dolin and Booth-Butterfield (1995) found that an FITD manipulation during a health fair at a shopping mall increased compliance with a request to schedule a gynaeecological examination. **Lipsitz et al. (1989)** found that FITD helps increase blood donations and **Girandola (2002)** found that this increases the willingness to be an organ donor.

Mieneri and Gueguen (2008) used FITD to motivate people in France to take part in a demanding energy conservation project. For a randomly selected half of the participating households, the request was preceded by a telephone call asking them to answer a short questionnaire on environmental issues. A higher percentage of households receiving the telephone call before the request agreed to participate in the energy- saving project.

Lowballing

Lowballing is when an offer is changed to a less attractive offer to the target person after this person has agreed to it.

Burger and Cornelius (2003)	
Aim	To demonstrate low balling
Method	Students were contacted by phone by a female called and asked whether they would be prepared to donate five dollars to a scholarship fund of underprivileged students. There were three experimental conditions: 1) **Lowball condition:** Students were told they would receive a coupon for a free smoothie at a local juice bar. Students who agreed were then informed that the investigator realized she had run out of coupons. The students were asked they would still be willing contribute. 2) **Interrupt condition:** Caller made the same initial request in the lowball condition. However, before the participants had a chance to give their answer, the caller interrupted them to let them know there were no coupons left. 3) **Control**: Participants were simply asked to donate without coupon mention.
Results	Lowball- 77.6% agreed. Interrupt- 16% agreed Control- 42% made a donation

Conclusion	Results show that the lowball technique is based on the principle of commitment.

Palak et al. (1980) had investigators first asked Iowa householders to conserve energy by providing them with energy-conservation tips and encouraging them to try to save fuel. This achieved nothing. Following this, a different sample of householders was contacted by the interviewer. This time in addition to the requests as made to the first group, homeowners were told that those agreed to save energy would have their names published in the newspaper as good, fuel conserving citizens.

One month later, this manipulation results in an average saving of 12.2% of gas. At this stage, homeowners received a letter informing them that it would not be possible to publish their names in the local press after all. For the remaining winter months, these families saved 15.5% of gas.

Cialdini et al. (1974) asked a class of first year psychology students to volunteer to be part of a study on cognition that would meet at 7 am. Only 24% were willing to do this. In a second group they were asked the same favor but were not told the time. Under this condition, 56% agreed to take part. When they were then told they would have to meet at 7 am and that they could back out if they wished, no one backed out. On the day of the actual meeting 95% of the students who had promised to come showed up.

<u>Syllabus Question:</u> Discuss factors influencing conformity.

I. Conformity is a type of social influence in which individuals change their attitudes or behavior to adhere to existing social norms
   - **a. Private conformity**
     - i. The private acceptance of social norms
   - **b. Public conformity**
     - i. Overt behavior consistent with social norms that are not privately accepted

II. Three social influence processes have been proposed to explain conformity
   - **a. Informational influence or mastery**
     - i. When we accept the views and attitudes of others as valid evidence about how things are in a particular situation
       1. Based on the need that everyone has for certainty, when people are placed in ambiguous/uncertain conditions, they are more likely to refer to others to know how to react
          a. Social comparison
       2. Under these conditions people possess expert power and individuals may show internalization conformity
          a. When behavior and opinions coincide with the group's
   - **b. Normative influence**
     - i. When we conform to the expectation of others
       1. Based on our need for social acceptance and approval and we fear social disapproval and rejection and so we often behave in ways that conform to what others expect of us with little concern about the accuracy of the beliefs we express or the soundness of our actions
   - **c. Referent informational influence**
     - i. A SIT explanation of conformity, from an SIT perspective, conformity is adhering to a person's ingroup norms
       1. We conform to have a sense of belongingness and by doing so we form and maintain desired social identities , we are more likely to conform to the norms of groups we believe we belong and identify with
     - ii. People conform because they are group members, not to validate physical reality or avoid social disapproval as other theories suggest
     - iii. People conform not to other people but to a norm, they use other people as sources of information about what the appropriate ingroup norm is in a particular setting

III. Dual process models
   - a. Based on informational and normative types of social influence
     - i. According the model, people conform because they want to be right and they want to be liked

IV. Dispositional and situational explanations of conformity

a. **Hogg and Vaughan (2008)** suggest several dispositional characteristics associated with increased conformity
    i. Low self esteem
    ii. High need for social support and approval
    iii. High anxiety
    iv. Feelings of low status in the group
b. Situational explanations have been shown by research on conformity

V. Group polarization

a. Refers to the tendency for groups to make decisions that are more extreme than decisions members make on their own
    i. Risky shift
        1. Refers to the tendency for group discussions to produce riskier decisions than those reached by group members working on their own
b. The factors involved in group polarization include:
    i. A strong and often explicit need to reach consensus
    ii. A preference, within the group, for the same side of an argument
    iii. An ingroup social identity defined in relation to an outgroup
        1. Given these two preconditions, informational and normative influences will be intensified and if SIT factors then this further strengthens the chances and magnitude of group polarization
c. Therefore group polarization act as conformity magnifiers
d. Explanations for group polarization include:
    i. Social comparison theory
        1. Group discussions make public the prevailing social norms, including norms indicating whether the group favors risky or cautious decision
            a. As a result of normative influences, group members seek acceptance by the group, shift their initial views in the direction of the group social norms
                i. Group polarization is the result
                    1. Some individuals also attempt to satisfy their need to stand out
                ii. Support for the overall norm of the group ensures that such individuals are accepted by the group
                    1. These individuals show their individuality by exaggerating in the direction of the group norm and as time passes that group norm will more extreme than the average of the group members' initial positions
    ii. Social identity theory of polarization
        1. Treats polarization as regular conformity
            a. Using the ingroup/outgroup theory and social categorization, group norms are formed by the positions held by ingroup

members in relation to positions assumed to be held by outgroup members

i. According the category accentuation effect, the emerging group norms minimize variability in the ingroup and maximize the distinction between the ingroup and outgroups
    1. Norms are therefore polarized away from target outgroups

e. Groupthink

i. Refers to a thinking style in high cohesive groups where the desire to reach unanimous agreement is so strong that it overrides the motivation to use appropriate decision-making procedures
    1. Groupthink outcomes usually include
        a. A strong tendency to maintain group cohesion and force conformity by suppressing independent thinking and downplaying disagreements
        b. Exaggeration of prospects of success and downplaying if any talks of serious risks to the group
        c. A perception of the group as superior and invulnerable and perception of outgroups in negative and stereotypical ways

Research on conformity include

Asch (1951)	
Aim	To investigate the effects of the social environment on conformity
Method	Participants were told they were taking part in a study of visual perception and were asked to indicate which one of three comparison lines is equal in length to a standard line. This was repeated 18 times, the task was so easy that participants would almost always get it all correct if done by themselves. In the main control of the study participants had to state their answers aloud in the presence of people they think were six other participants. They were confederates and behaved in a way prearranged by the experimenter. The confederates gave the wrong answer on 12 of the 18 trials and the real participant was always the last to answer .These set of 18 trials was repeated many times, each time testing a genuine participant
Results	Participants conformed and went along with the

	wrong answer given by the majority on nearly 37% of critical trials 76% of participants conformed on at least one critical trial. Only 24% of participants remained independent throughout the experiment After the experiment, when asked why they conformed, participants said that they wanted to gain approval and avoid criticism and social disapproval

Abrams et al. (1990)	
Method	Replicated Asch's experiment with psychology students using three confederates Depending on the condition genuine participants were either led to believe that the confederates were psychology students from a neighboring university (ingroup condition) or ancient history students from the same neighboring university (outgroup) 18 trial sequence consisting of 9 correct and 9 incorrect response were presented by confederates in a random order In this part, all four group members responded publicly
Results	100% of participants conformed at least once when they thought the confederates belonged to their ingroup 50% for those participants who thought the confederates belonged to an outgroup

Sherif (1935)	
Method and Results	Study uses the autokinetic effect, an optical illusion that makes a stationary light appear to move when seen in complete darkness Participants were led to believe the experiment was investigating visual perception and told that the experimenter was going to move the light. Participants had to make 100 judgments as to how far the light seemed to have

	moved .Participants made their judgments alone first, their estimates varied until they settled to a personal norm (standard estimate). These norms varied considerably between participants In further sessions, participants were joined by other participants and they took turns in a random order to call out their estimates about the light's movement. Participants' estimates in this condition eventually reflected the estimates of others in group and eventually a social norm emerged, an average of the individual estimates. Participants denied their estimates were influenced by other group members During the third phase of the study, participants performed the task alone again and their estimates were still according to the social norm

Wallach et al. (1962) asked participants to complete the Choice Dilemmas Questionnaire**,** which involves a series of 12 stories in each of which the main character faces a dilemma with two options, one riskier than the other

During the first phase the experiment, participants worked individually and in the second phase worked a group and asked to arrive at an unanimous decision for each dilemma

Results showed that the options chosen in the group condition were riskier than those chosen by individuals working alone. *Research shows conformity as the results in the group condition were riskier than individual condition. This suggest that in order to reach a result quicker in the group condition, participants conformed to others.*

Syllabus Question: Evaluate research on conformity to group norms.

Asch (1951):

I. The experiment took place in the 1950s in American, at that time behaving individually or "doing your own thing" wasn't considered socially acceptable.
II. Participants were put in a difficult and embarrassing position which may have led to greater levels of conformity due to the particular culture prevailing at the time
III. Unethical because of the situation put caused stress and discomfort to participants
IV. Participants were deceived and did not provide fully informed consent
V. Participants were put in a situation with high social pressure and conflict so this increased conformity
VI. Artificial, may not reflect what would happen in real life

Sherif (1955)

VII. Used a very artificial situation, so therefore low ecological validity and mundane realism
VIII. There was no correct answer in Sherif's situation so it is not surprising that people relied on the judgments of others when they have no clear way of deciding what judgments to make
IX. The method was an ineffective way to study conformity, conformity effects can be assessed more directly by arranging for all but one of the participants to give the same judgments.
    a. Jacobs and Campbell (1961) obtained strong evidence of conformity using the autokinetic effect with the above method
X. Small sample size and so they don't represent the general population
XI. Doesn't address cultural differences as research as shown that there are cultural differences
XII. May be unethical as participants may have felt stressful or pressurized into making a decision our conforming to a group norm
XIII. Participants made 100 judgments, so there may have been demand characteristics or participants may have guessed the purpose of the experiment

Bond and Smith (1996) carried out a meta-analysis of 133 conformity studies all using the Asch paradigm. The studies were carried out in 17 countries. Results showed that more conformity was obtained in collectivistic countries than individualistic countries.

Members of collectivistic counties value conformity because it promotes supportive group relationships and reduce conflicts. Agreeing with others in collectivist societies is more likely to be viewed as a sign of sensitivity than submission as perceived in individualistic societies.

Earley (1993) found that the level of conformity depends on the exact nature of the grup. Thus, collectivists are more likely to conform to members of a group they are tied to than they are to groups they are not.

Williams and Sogon (1984) found significantly higher levels of conformity among Japanese groups who already knew one another than among groups lacking a pre-acquaintance.

Cultural norms

Syllabus Question: Define the terms "culture" and "cultural norms".

I. Culture is a set of attitudes, behaviors and symbols shared by a large group of people and usually communicated from one generation to the next
II. Cultural norms are the norms of an established group which are transmitted across generations and regulate behavior in accordance with the group's beliefs about acceptable and unacceptable ways of thinking, feeling and behaving.
III.

Syllabus Question: Using one or more examples, explain "emic" and "etic" concepts.

I. Emic approaches look at behaviors that are cultural specific
II. Etic approaches are taken within cross-cultural psychology where behavior is compared across specific cultures

III. Emic and etic approaches to study of depression

a. Emic
    i. **Manson et al (1985)** on the development of the American Indian Depression Scale
        1. Through interviews with native informants, authors derived five translated Hopi illness categories related to depression
            a. Worry sickness
            b. Unhappiness
            c. Heartbroken
            d. Drunken-like craziness
            e. Disappointment
        2. Most Hopi participants said they could not identify a Hopi word that was equivalent to the term depression
    ii. Some of the characteristics identified by Manson et al. were similar to Western ways of looking at depression, while others were entirely different

b. Etic
    i. **WHO (1993)** on the diagnosis and classification of depression in Switzerland, Canada, Japan and Iran
        1. Investigators used a standard diagnostic scheme to investigate symptoms of depression of 573 patients in these four countries

a. Found that most patients experienced several symptoms that were the same in all four countries
    i. 70% of patients reported sadness, joylessness, anxiety and a sense of insufficiency
    ii. 40% of patients in the WHO project displayed symptoms such as somatic complainants and obsessions that were not part of the symptoms measured by the diagnostic scheme used. Suggests cultural factors

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Syllabus Question: Examine the role of two cultural dimensions on behavior.

Individualism/collectivism- In individualistic cultures, identity is defined by personal characteristics. In collectivistic societies, identity is defined more by the characteristics of the collective groups to which one belongs.

Power distance- This refers to the extent to which different cultures promote and legitimize power and status differences between individuals. In high power distance cultures, less- powerful members learn to accept inequalities in the distribution of power as natural.

Uncertainty avoidance- Cultures high in this feel threatened and anxious by the unknown or ambiguous situations than those low.

Masculinity/femininity- High masculinity cultures are characterized by an emphasis on achievement, success and possessions. High femininity cultures emphasize interpersonal harmony, taking caring of others and quality of life. The dimension also refers to the extent to which cultures promote differences between the sexes.

Time orientation of Confucian dynamism- The extent to which a culture has a dynamic future-orientated mentality and refers to the degree to which a culture encouraged delayed gratification of material, social and emotional needs among its members.

Individualism and collectivism

In individualistic cultures (e.g. USA, UK, France) the personal is emphasized more than the social, persons are viewed as unique, individual autonomy and self-expression are valued and competitiveness and self- sufficiency are highly regarded.

In collectivist cultures (e.g. Japan, Hong Kong, Brazil) the social is emphasized more than the personal, the self is defined by long-standing relationships and obligations, individual autonomy and self-

expression are not encouraged and there is more of an emphasis on achieving group harmony than on individual achievement.

Heine and Lehman (1997) found that in collectivistic cultures, people are less likely than those in individualist cultures to behave consistently with their personal choices and earlier commitments.

Petrova et al. (2007) studied over 3000 students at a US university, Nearly half were native US students the rest were Asian students at the same university. An e-mail was sent to everyone asking them to participate in a survey and a month later, a second e-mail was sent asking them whether they would agree to take part in an online survey.

Results showed the proportion of students agreeing to the first request was higher among Asian students than US students. However, compliance with the first request had a stronger impact on compliance with the second request among the US students than among Asian students. The proportion of US students who agreed to the second request while having agreed to the first was twice as high as it was among the Asian students, the FITD effect is greater among US students (i.e. individualistic culture)

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Time orientation

Cultures high on this dimension show a dynamic, future orientated mentality. These are vultures that value long-standing traditions and values. Individuals in such cultures strive to fulfill their own long term social obligations and avoid “loss of face”. Cultures with a short term view are not as concerned with past traditions. They are rather impatient, are present-oriented and strive for immediate results.

Chen et al. (2005) investigated differences between Western and Eastern mentalities through 147 Singaporean “bicultural participants”. This assumes that both cultures can affect behavior depending on which is more actively represented in the mind.

Chen et al. selectively activated one or the other of the two cultures by presenting half of the participants with a collage of easily recognizable photos which were relevant to Singaporean culture and the other half relevant to US culture. Impatience was tested by having the participants perform an online shopping scenario in order to purchase a novel. The book could be delivered either within four working days for a standard fee or next day for an additional charge. The extra money participants were willing to pay for faster delivery was a measure of impatience.

Results showed that US-primed participants valued immediate consumption more than the Singaporean-primed participants.

Wang et al. surveyed over 5000 university students in 45 countries and compared them on time orientation and found that students from long term cultures were more likely to postpone immediate satisfaction and wait for bigger rewards later.

Ayoun and Moreo (2009) used a survey method to investigate the influence of time orientation on the strategic behavior of hotel managers. A questionnaire was posted to top-level managers in the USA and Thailand.

Results showed that compared to US managers. Thai managers were found to place a stronger emphasis on longer term strategic plans and a stronger reliance on long-term evaluation of strategy.

Levine and Norenzayan (1999) measured how fast people walked a 60-foot distance in downtown areas in major cities, the speed of a visit to a post office and the accuracy of clocks in 31 counties. Found that life was fastest in Switzerland, Ireland and Germany and slowest in Mexico, Indonesia, Brazil and Syria.

Research Methods and Ethics

Use relevant research from each level to answer the questions.

In the biological level of analysis three main research methods are generally used: laboratory experiments, case studies and co relational studies.

Laboratory experiments are commonly used to establish a cause-effect relationship between the variables studied. In the BLOA, animal experiments are used as well as human experiments. To test the effects of changes to physiology or to test the effectiveness of medication it is unethical to carry out the experiment with human participants if there is any possibility that the participant can get harmed. Even if participants give their informed consent, there will be a very limited number of people willing to do so.

Also, human participants are not used because there is a risk that receiving full information about the nature of the experiment might lead to changes in the participant's behavior (e.g. placebo effect). Research that aims to see the effect of specific parts of the brain when they are damage are impossible to carry out on human participants.

Animal participants are used because such research cannot be conducted on humans. It is also assumed that animals have a lesser experience of pain or have less conscious awareness of their suffering than humans would in the same situation. There are guidelines for the treatment of animals in laboratories and adherence to these is usually monitored closely.

But there is strong argument that animal experimentation is morally wrong. The difference between animal and human suffering is not large enough to justify what can seem like very cruel treatment. If animals are so different from people that we feel ethically excused from the treatment given to them then it must be asked whether it is still valid to do the experiments on them and generalize the results to humans.

Case studies is a way to deal with the ethical issues of carrying out research on human participants. Researchers can take advantage of naturally occurring irregularities by obtaining detailed information about the participant's condition. This approach is mostly descriptive and relatively little harm is done to participants. The most important ethical risk is that the depth of information and the possible uniqueness of the case makes it more likely there is a threat to participant's anonymity.

Correlational studies takes scores on two or more measures and works out the relationship between them. In the BLOA, this is often seen in twin studies and adoption studies. But although a relationship can be established we cannot say that that one variable causes the another variable.

Research at the cognitive level of analysis usually uses experimental methods and neurophysiological techniques such as brain imaging. *Use strengths and weakness of experimental methods for relevant research.*

Neuophysiological techniques include brain imaging and these technologies are very sophisticated but ethically, scanning procedures are time consuming and many individuals find them very unconformable. *Use evaluation of brain imaging techniques and use relevant research demonstrating it.*