ATARNotes

PSYCHOLOGY LECTURE
LEARNING, MEMORY AND RESEARCH METHODS

April 2017

Presented by:
TIM HOWE

Wi-Fi Details

Username:

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About Me

- Graduated in 2015
- ATAR of 98.65
- Scores of 48 in Psychology, 47 in P.E. and 45 in Physics
- Now studying Journalism at university

Schedule

The schedule for today:

Segment	Start	End
Content 1	9:30	10:15
Break 1	10:15	10:30
Content 2	10:30	11:15
Break 2	11:15	11:30
Content 3	11:30	12:15
End	12:15	

Today's Lecture

- Go through an area of content
- Throughout the content there will be VCAA exam questions. There will also be extra questions at the end of each content block. Please contribute!
- Tips for each section

Note: Lecture slides will be available on the ATAR Notes website after today (so don't stress if you don't get everything written down). Feel free to take photos of slides while I'm talking.

Feel free to come up and ask any questions during the breaks, or during the lecture

Important

The Psychology Study Design has changed this year!!

What does it mean?

- Resources may be outdated/contain old information (e.g. old exams, tests, notes, textbooks)
- Don’t worry – a lot of it is still the same – and they’ve taken out a lot more stuff than they have added

Today

- Content Block 1 – Learning
- Content Block 2 – Memory
- Content Block 3 - Research Methods

Neural Basis of Learning + Memory

Neural plasticity is the ability of the brain's neural structure or function to be changed throughout the lifespan, generally through experience.

Neural plasticity is the basis of learning and memory.

During learning and memory, changes occur at the synapse (the tiny gap between neurons). Synaptic plasticity refers to the ability of the synapse to change over time.

Existing connections between neurons can strengthen. New networks or pathways between neurons can also form and strengthen through use. This makes the communication across a neural connection easier the next time.

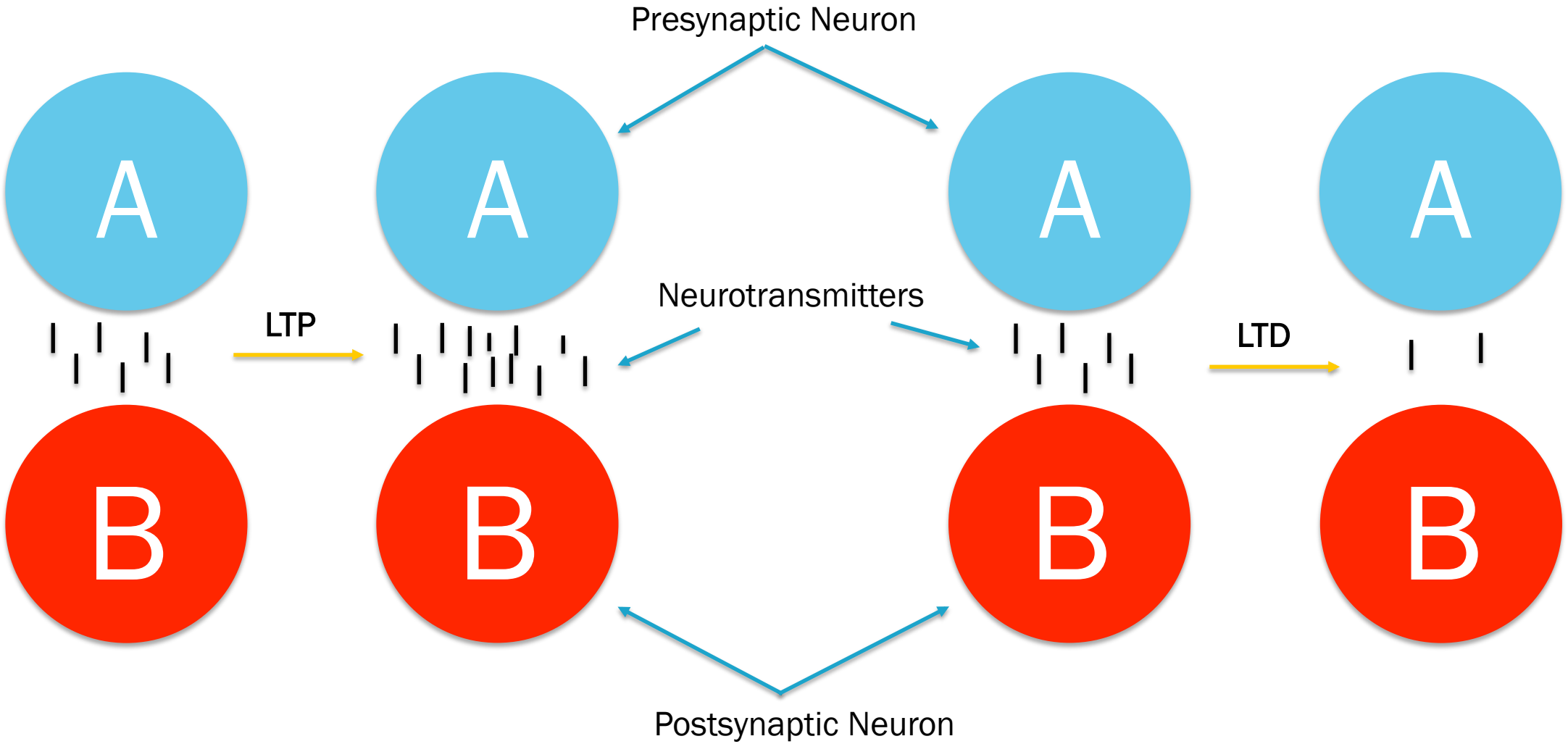
Neural Basis of Learning + Memory

Long-term potentiation (LTP) refers to the long-lasting strengthening of synaptic connections. This results in more effective synaptic transmission between the neurons. The effect of LTP is to improve the ability of two neurons to communicate with one another at the synapse. The postsynaptic neuron becomes more and more responsive to neurotransmitters released by the presynaptic neuron.

Long-term depression (LTD) is a long-lasting decrease in the strength of synaptic connections. It is the opposite of long-term potentiation. This results from a continued lack of stimulation between neurons. The postsynaptic neuron becomes less and less responsive to neurotransmitters released by the presynaptic neuron.

The process basically occurs to the rule ‘use it or lose it’.

Neural Basis of Learning + Memory



VCAA Question

VCAA 2013 Exam, MC Question 57

Question 57

During learning, the dendrites of some nerve cells will

A. release neurotransmitters into the synaptic gap.

B. receive neurotransmitters across the synaptic gap.

C. transmit impulses towards the synapses with other neurons.

D. integrate and process incoming information from other connecting neurons.

Only 51% got this

'The functioning of a single neuron does not involve higher mental processes' – Option D (VCAA Exam Report, 2013)

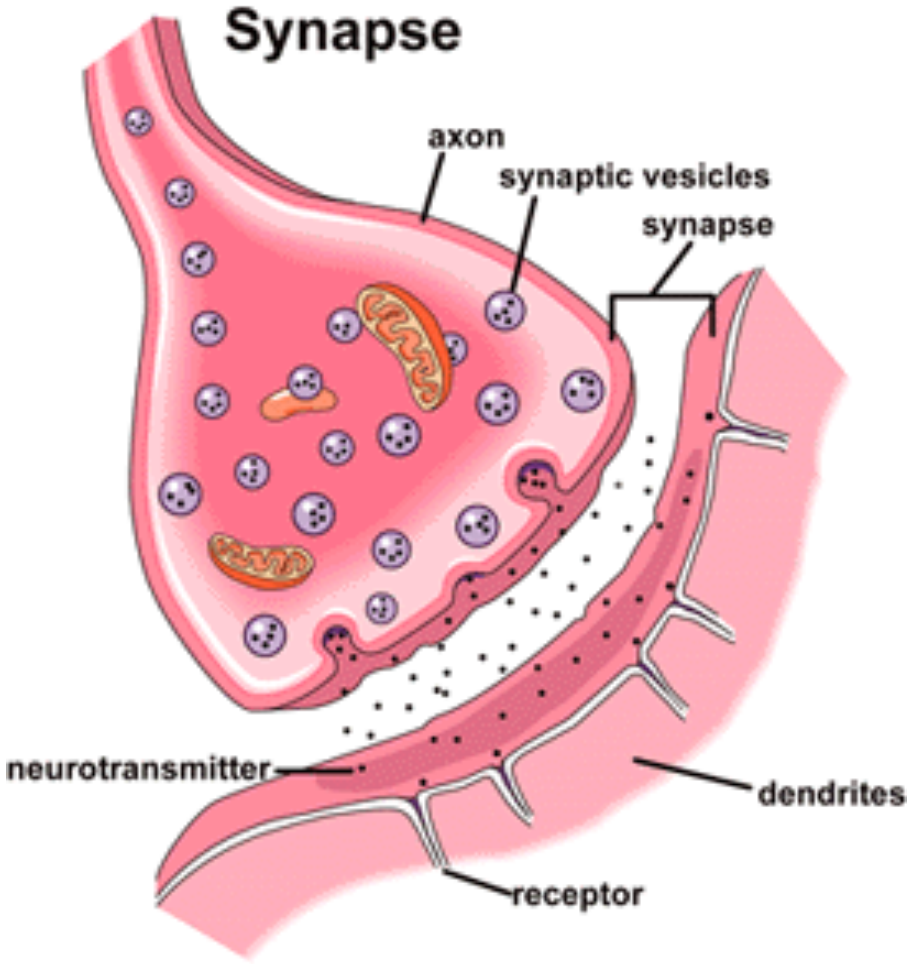
Neural Basis of Learning + Memory

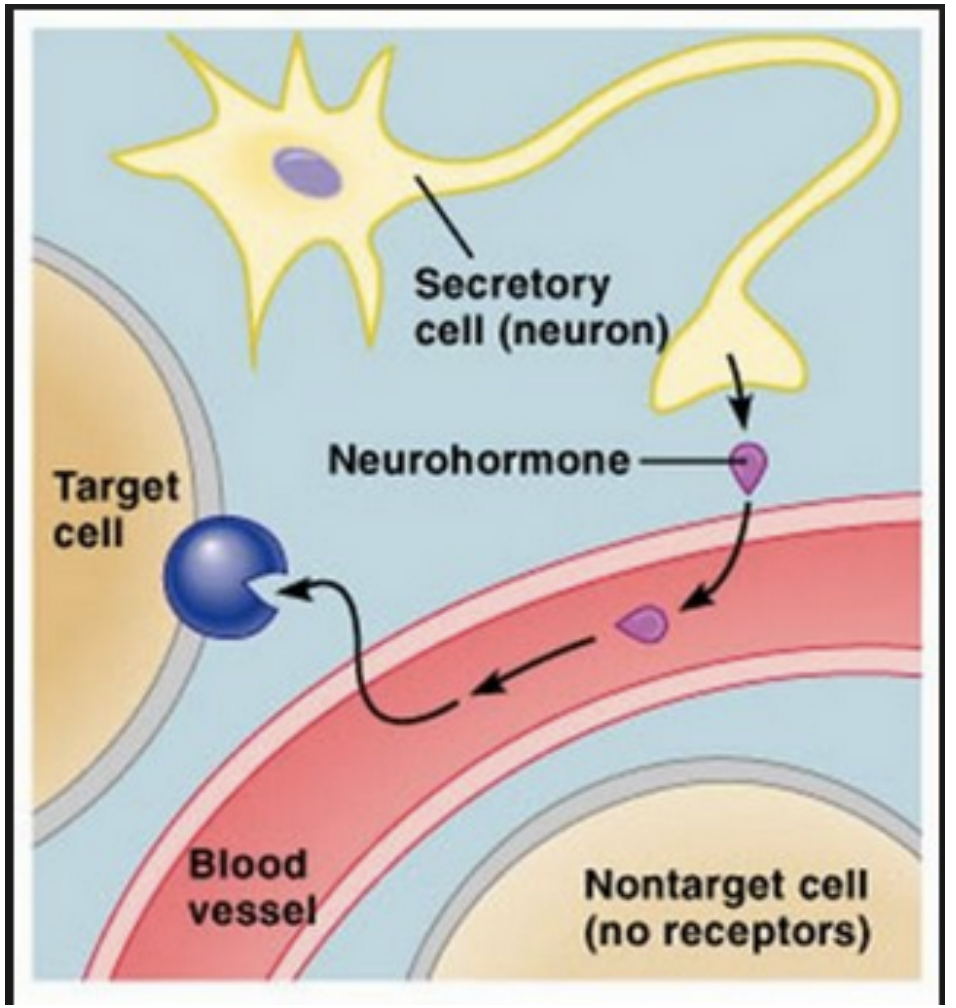
Neurotransmitters are chemical messengers produced by neurons and released into the synaptic gap.

Neurohormones are also chemical messengers produced by neurons. However, they are released into the bloodstream, and then carried to other neurons or cells.

Neurohormone communication is slower than neurotransmitter communication.

Neural Basis of Learning + Memory





Neural Basis of Learning + Memory

Glutamate is the main excitatory neurotransmitter throughout the brain. It enhances transmission by making postsynaptic neurons more likely to fire.

Glutamate plays a crucial role in synaptic plasticity, as it promotes the growth and strengthening of synaptic connections between neurons.

Neural Basis of Learning + Memory

Adrenaline is extremely important is consolidating memories which are emotional (good or bad).

Consolidation is the process of making a new memory stable after learning. Some time is required after learning takes place to enable the new information to consolidate as a long-term memory. It is believed that consolidation takes about 30 minutes.

Adrenaline can enhance the long-term consolidation of emotional memories. This means that these emotional memories are more likely to be strongly remembered.

Neural Basis of Learning + Memory

VCAA 2016 Exam, MC Question 58

Question 58

What functional change occurs in neurons when memories are formed?

A. a decrease in the release of the main inhibitory neurotransmitter glutamate

B. an increase in the formation of dendritic spines to allow for easier communication between neurons

C. more neurotransmitters being produced and released by post-synaptic neurons, which act on the receptor sites of pre-synaptic neurons

D. more neurotransmitters being produced and released by pre-synaptic neurons, which act on the receptor sites of post-synaptic neurons

Learning

Learning is generally defined as a relatively permanent change in behaviour that occurs as a result of experiences. Learning continues right throughout the lifespan, and allows people to adapt to new things in the world.

Conditioning is the process of learning an association between a particular stimuli in the environment and a behavioural response. For example, upon seeing your parents putting food on the table, you might know that it is time to go to the table to eat.

Learning

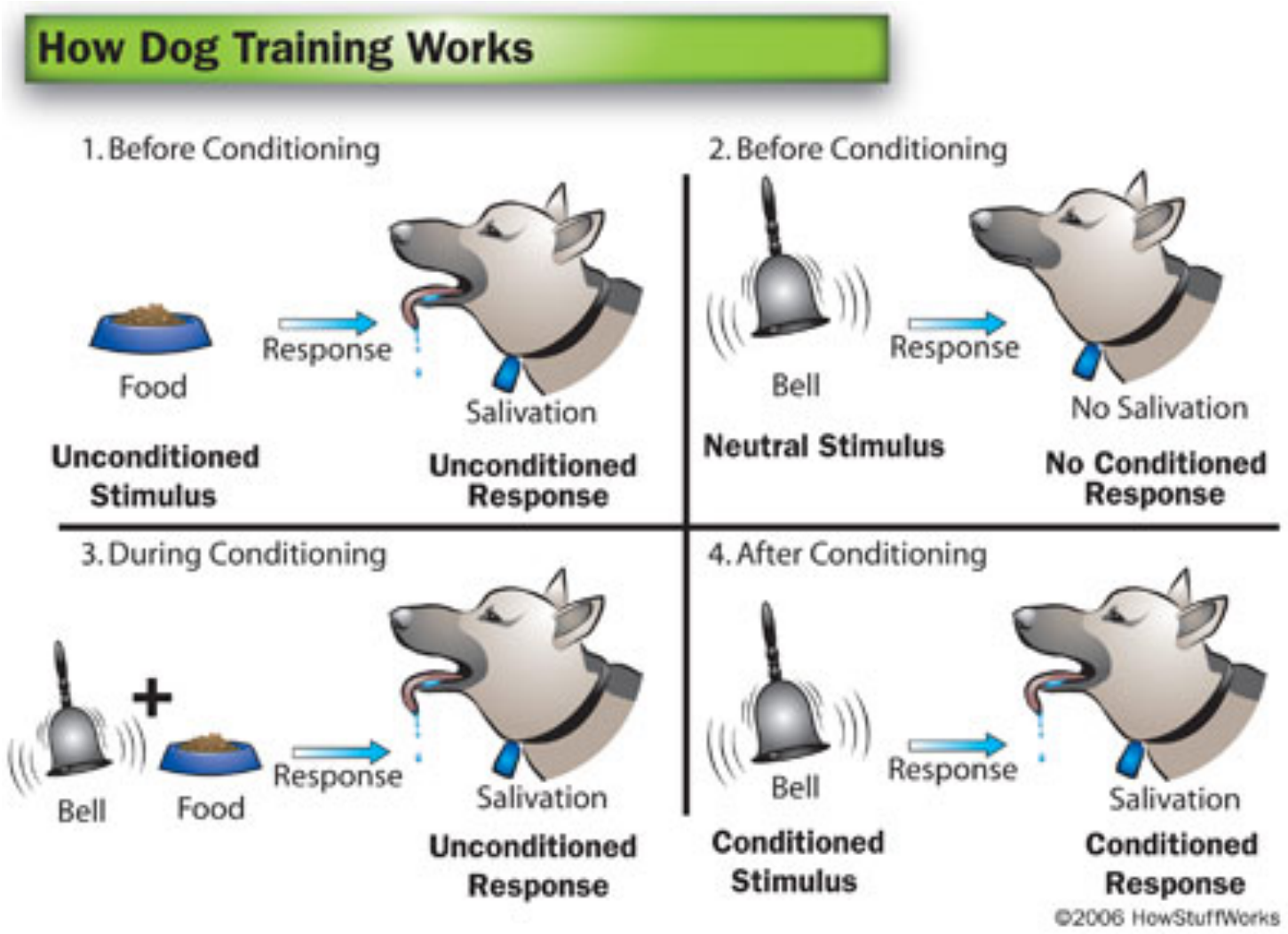
Classical Conditioning

Classical conditioning is a type of learning that occurs through the repeated association of two (or more) different stimuli.

It was first described by Ivan Pavlov in his famous 'Pavlov's Dog' experiment. In the experiment, Pavlov taught his dog to salivate at the sound of a bell.

Classical conditioning involves three phases – before conditioning, during conditioning and after conditioning.

Learning


How Dog Training Works
1. Before Conditioning
Food
Response
Salivation
Unconditioned Stimulus
Unconditioned Response
2. Before Conditioning
Bell
Response
No Salivation
Neutral Stimulus
No Conditioned Response
3. During Conditioning
Bell
Food
Response
Salivation
Unconditioned Response
4. After Conditioning
Bell
Response
Salivation
Conditioned Stimulus
Conditioned Response
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Learning

Classical Conditioning

The unconditioned stimulus (UCS) is a stimulus that consistently produces a particular, naturally occurring, automatic response.

The unconditioned response (UCR) is a reflexive, involuntary response that is predictably caused by the UCS.

The neutral stimulus (NS) is a stimuli that does not produce a predictable response.

The conditioned stimulus (CS) is the stimulus that was neutral but, after conditioning, produces a response similar to the UCS. *The CS is the same thing as the NS.*

Learning

Classical Conditioning

The conditioned response (CR) is the learned response that is produced by the CS. It is the same as the UCR, but it is produced by the CS alone.

Before:
UCS → UCR

During:
UCS + NS → UCR

After:
CS → CR

Remember that the NS and CS are the same object, and that the UCR and CR will be the same response.

VCAA Question

VCAA 2015 Exam, MC Questions 33, 34

Bobbi, a one-year-old child, is playing with red balloons when suddenly one bursts, making a loud noise. Bobbi is startled by the loud noise. She continues playing with the balloons and another one pops. Again, Bobbi demonstrates the startle reflex in response to the balloon bursting. After five balloons popping and Bobbi being startled at each pop, Bobbi now startles whenever she sees a balloon.

Question 33

In terms of classical conditioning of Bobbi's fear of a red balloon, the unconditioned stimulus and the conditioned stimulus were, respectively, the

A. red balloon, loud noise.
B. loud noise, red balloon.
C. startle reflex, red balloon.
D. red balloon, startle reflex.

Question 34

Prior to conditioning, the red balloon and the startle reflex were, respectively

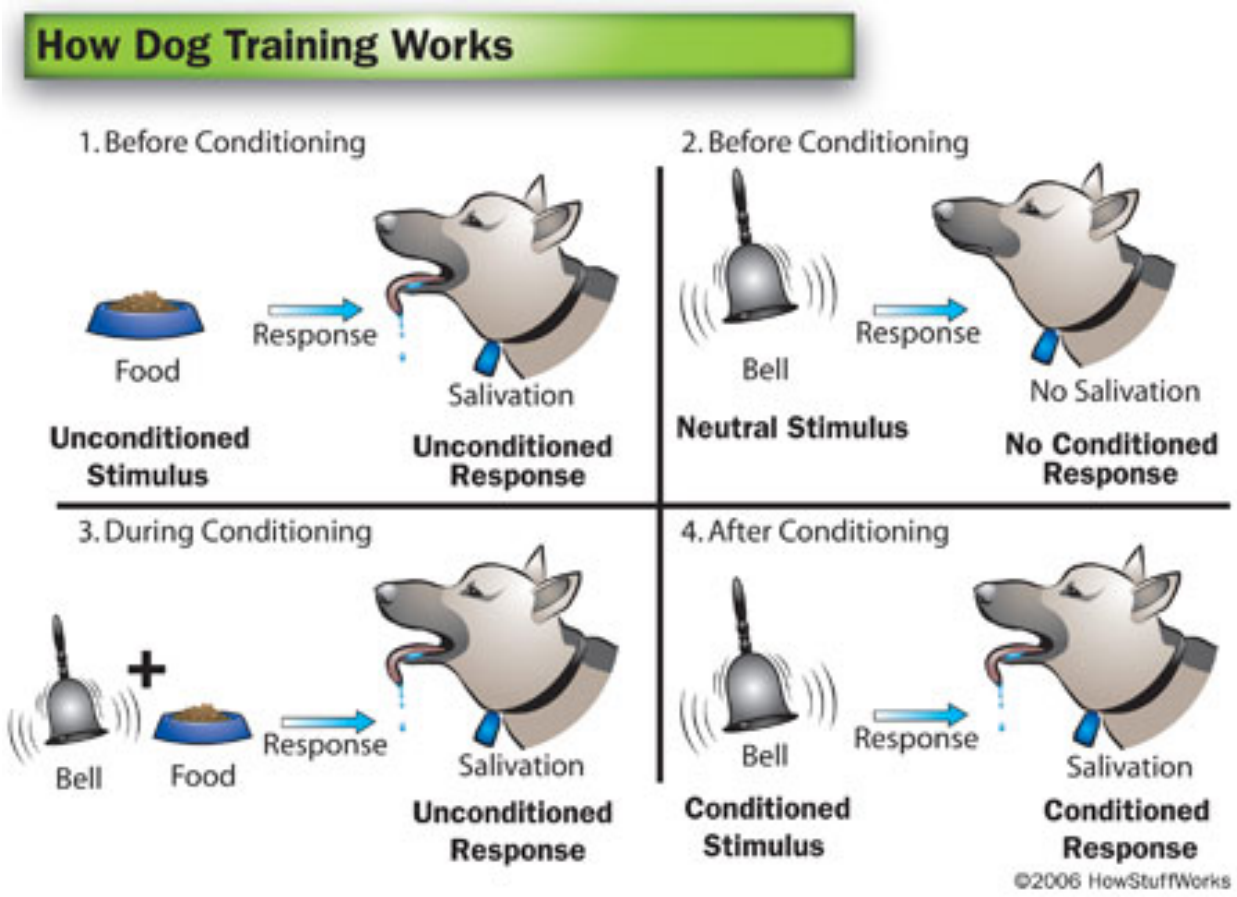
A. unconditioned stimulus, conditioned response.
B. conditioned stimulus, unconditioned response.
C. neutral stimulus, unconditioned response.
D. neutral stimulus, conditioned response.

Before:
UCS → UCR

During:
UCS + NS → UCR

After:
CS → CR

Learning



UCS – Food

UCR – Salivation (to the food)

NS – Bell

CS - Bell

CR – Salivation (to the bell)

Learning Question

Classical Conditioning

Bob is a six-year-old boy who is scared of dogs. Bob often plays on his front lawn, which is quite spacious. One day, Bob is playing on his front lawn when he gets chased by a dog, which causes him to get scared and cry. This happens four times in one week. Now, Bob is scared to go out onto his front lawn, even though the dog is not around.

Identify the UCS, UCR, NS, CS and CR in the scenario.

UCS – Dog (or dog chasing him)
UCR – Scared (of dog)
NS – Front Lawn
CS – Front Lawn
CR – Scared (of front lawn)

Before:
Dog → Scared

During:
Dog + Front Lawn → Scared

After:
Front Lawn → Scared

Learning

Classical Conditioning

There are a few other key terms associated with classical conditioning.

During classical conditioning, each presentation of the NS (e.g. bell) with the UCS (e.g. food) is referred to as a trial. Acquisition is used to describe the overall process during which a person or animal learns to associate the two events, until the NS alone produces the CR, and therefore become a CS.

Stimulus generalisation is the tendency for another stimulus that is similar to the original CS (e.g. bell) to produce a response that is similar to the CR (e.g. salivation). For example, Pavlov's dog may salivate at the sound of a doorbell.

Learning

Classical Conditioning

Stimulus discrimination is when a person or animal responds to the CS only, and not to any other stimulus that is similar. It is the opposite to stimulus generalisation. E.g. Pavlov's dog only salivates at the sound of a bell

Extinction is the slow decrease in the strength/rate of a CR. This happens because the UCS (e.g. food) is no longer presented alongside the CS (e.g. bell).

Spontaneous recovery occurs when the CR reappears when the CS is presented (after extinction), following a rest period. The CR tends to be weaker than it originally was. Only occurs after extinction.

Learning

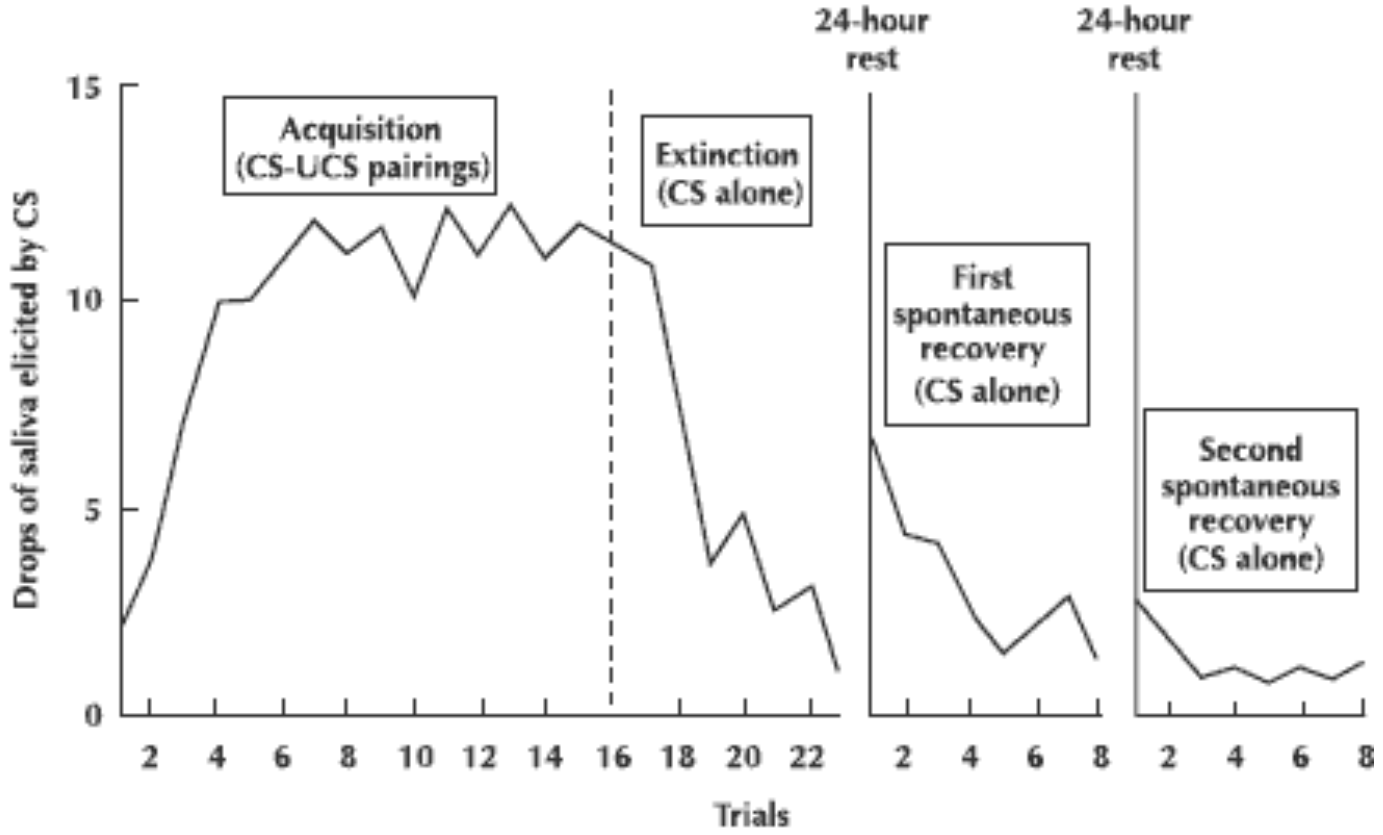


Figure 10.1 Classical conditioning learning curve.

VCAA Question

VCAA 2014 Exam, MC Q56,57

Miss Athorn set up a practical activity for her Psychology class. She gave each student a packet of sherbet powder with a small spoon.

First, Miss Athorn asked the students to put a spoonful of sherbet powder on their tongues and notice the salivation response produced by tasting the sherbet. Then, she told the students to continue with their work, but to be ready to quickly eat a spoonful of sherbet powder every time she blew a whistle.

Miss Athorn blew her whistle 10 times during the lesson and, each time, the students ate some sherbet powder. Towards the end of the class, Miss Athorn took the sherbet powder away. Then she blew the whistle again and asked the students if they noticed a salivation response.

Most of the class reported that they salivated.

Miss Athorn then blew the whistle five more times without the students having any sherbet powder. By the fifth time, all of the students said that salivation had stopped.

Question 56

Classical conditioning of the students' salivation response was most clearly demonstrated

A. when the students first tasted the sherbet powder.

B. during the 10 times that Miss Athorn blew the whistle, and the students tasted the sherbet powder and experienced salivation.

C. towards the end of the lesson, when Miss Athorn blew the whistle and the students experienced salivation for the first time without the sherbet powder.

D. at the end of the lesson, when Miss Athorn blew the whistle five times and, by the fifth time, no student experienced salivation without the sherbet powder.

VCAA Question

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Question 57

At the start of the next lesson, Miss Athorn blew the whistle and asked if any student had experienced salivation.

Two students said that they experienced salivation at the sound of the whistle.

The experience of these two students demonstrated

A. spontaneous recovery of the CR.

B. spontaneous recovery of the UCR.

C. that the CR had not been extinguished.

D. that the UCR had not been extinguished.

Learning

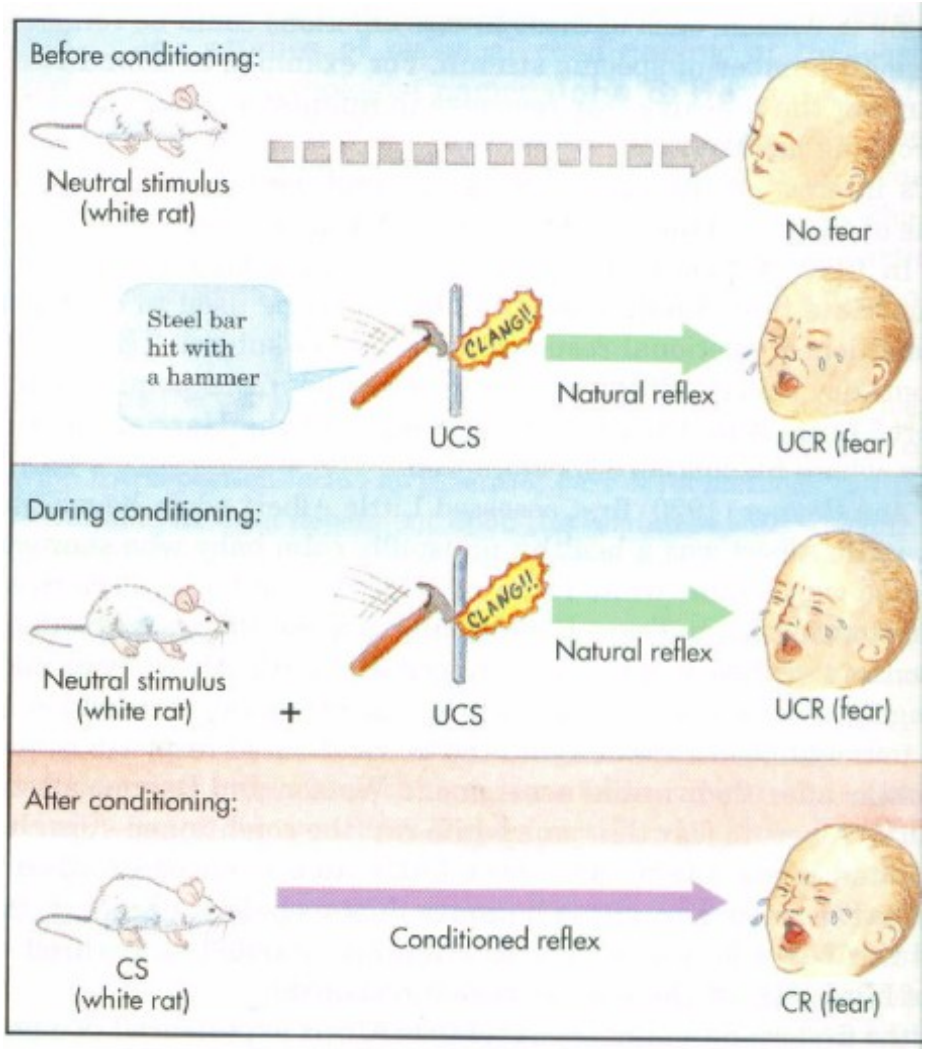
Little Albert

The ‘Little Albert’ experiment is a famous experiment performed by John Watson in 1920. Today, it would not be ethically allowed.

Little Albert was an 11-month-old baby boy. Watson presented Albert with a white rat, to which he showed no fear. After taking the rat away, Watson then struck a hammer on a steel bar behind Albert’s head, which produced a fear response (crying, whimpering etc.).

Albert then paired the rat with the noise, so that every time Albert went to touch the rat, the noise would sound behind his head. Eventually, due to classical conditioning, Little Albert learnt to associate the loud noise with the rat, until the rat alone (to which he had previously shown no fear), produced the fear response.

Learning


Before conditioning:
Neutral stimulus
(white rat)
No fear
Steel bar
hit with
a hammer
CLANG!!
UCS
Natural reflex
UCR (fear)
During conditioning:
Neutral stimulus
(white rat)
+
CLANG!!
UCS
Natural reflex
UCR (fear)
After conditioning:
CS
(white rat)
Conditioned reflex
CR (fear)

Learning

Little Albert

The ‘Little Albert’ experiment breached many ethical guidelines.

Informed Consent – Albert’s mother was a worker at the clinic where Watson worked. It is believed she volunteered Albert for the experiment, however, it is thought she didn’t know that Watson would be creating a fear response in her son. Therefore, there is no records of informed consent.

There are no records about participant withdrawal rights.

The fear response was never extinguished. Therefore, it can be assumed that Little Albert suffered lasting psychological harm as a result of the experiment.

Learning

Operant Conditioning

Operant conditioning is a type of learning where the consequences of a particular behaviour determine the likelihood that it will be performed again.

Operant conditioning theory proposes that a person/animal will tend to repeat a behaviour that has ‘good’ consequences, or that will enable it to avoid ‘bad’ consequences. Also, people will tend not to repeat a behaviour that has ‘bad’ consequences.

Learning

Operant Conditioning

1. Antecedent (A)
A stimulus that occurs before the behaviour. Also known as discriminative stimulus

2. Behaviour (B)
The voluntary behaviour by the individual that occurs due to the antecedent stimulus

3. Consequence (C)
The consequence of the behaviour. The consequence has an effect on whether the behaviour happens again.

A certain antecedent stimulus prompts a behaviour that is followed by a specific consequence

VCAA Question

VCAA 2015 Exam, MC Q2

Question 2

In the three-phase model of operant conditioning, the antecedent condition is also known as the

A. reward.

B. reinforcer.

C. behavioural outcome.

D. discriminative stimulus.

Learning

Operant Conditioning

Reinforcement occurs when a stimulus (consequence) increases the likelihood of a response that it follows happening again.

A positive reinforcer is a stimulus that strengthens the frequency of a desired response. Positive reinforcement involves giving a positive reinforcer after the desired response has been given. e.g. giving a dog a treat when it sits, giving a child pocket money for doing their jobs

A negative reinforcer is an unpleasant stimulus that, when removed, strengthens the frequency of a desired response. Negative reinforcement involves the removal of an unpleasant stimulus, in order to strengthen behaviour. E.g. taking a Panadol – removes the pain (unpleasant stimulus)

All reinforcement aims to strengthen the behaviour

Learning

Operant Conditioning

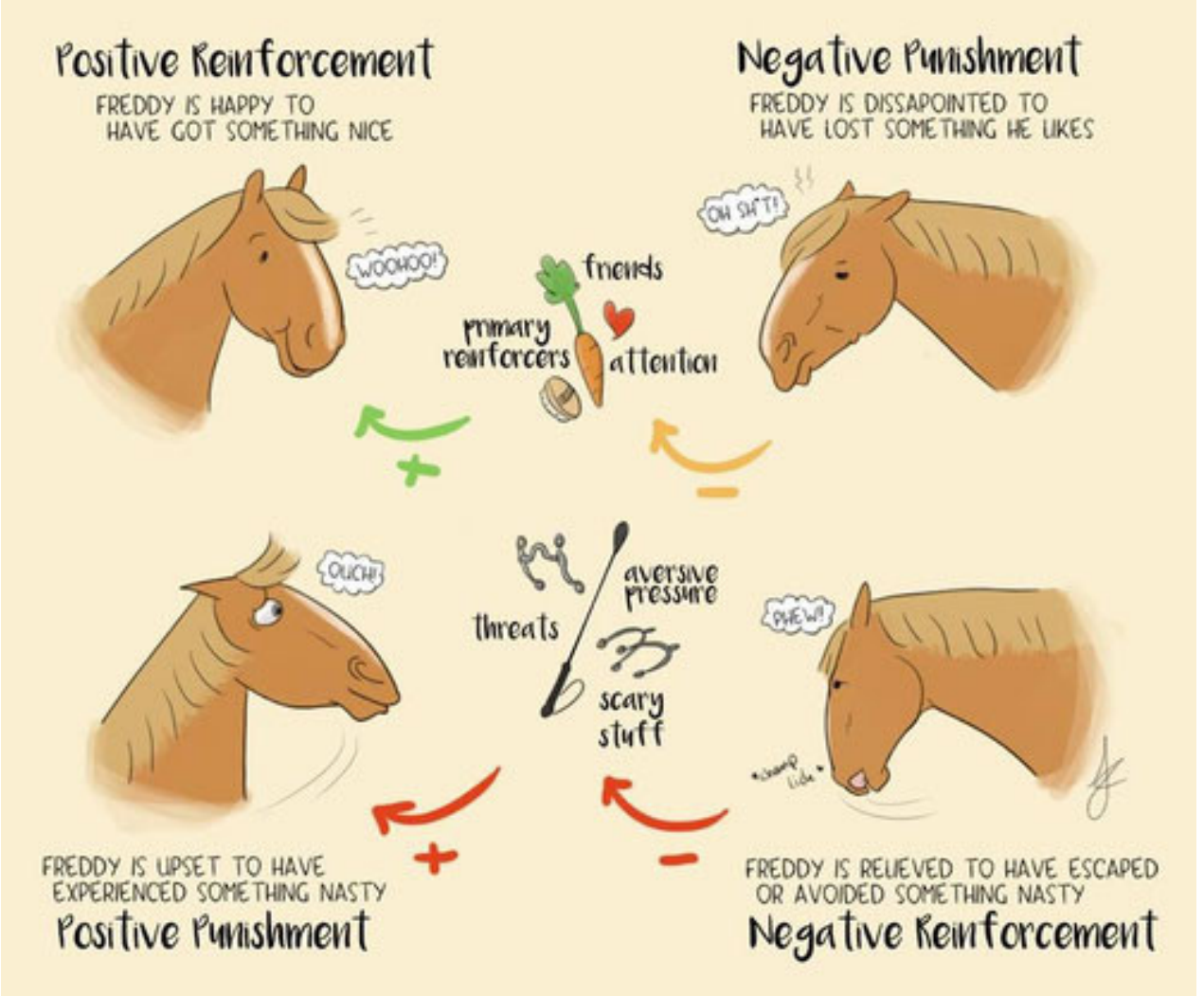
Punishment is the delivery of an unpleasant consequence following a behaviour, or the removal of a pleasant consequence following a behaviour.

Positive punishment involves the introduction of a stimulus, thereby weakening the likelihood of the behaviour occurring again. e.g. running extra laps due to being late to training, being given extra chores at home for back-chat

Negative punishment involves the removal or loss of a stimulus , which weakens the likelihood of a response occurring again. ‘Do something wrong, get something taken away’. e.g. losing your mobile phone as a punishment. The response cost is the thing that is lost (e.g. mobile phone).

All punishment aims to weaken the behaviour

Learning


Positive Reinforcement
FREDDY IS HAPPY TO HAVE GOT SOMETHING NICE
WOOHOO!
Negative Punishment
FREDDY IS DISSAPOINTED TO HAVE LOST SOMETHING HE LIKES
OH SHIT!
friends
primary reinforcers
attention
+
−
OUCH!
aversive pressure
threats
scary stuff
PHEW!
FREDDY IS UPSET TO HAVE EXPERIENCED SOMETHING NASTY
Positive Punishment
FREDDY IS RELIEVED TO HAVE ESCAPED OR AVOIDED SOMETHING NASTY
Negative Reinforcement

VCAA Question

VCAA 2016 Exam, MC Q26

Simran's three-year-old child, Ava, regularly throws tantrums when she is not given what she asks for, such as when she asks for chocolate just before dinnertime. Simran sought advice from Ava's kindergarten teacher, who suggested that Simran ignore the tantrums, and when Ava is calm and behaving well, Simran should praise Ava and give her a treat.

Question 26

If Simran were to give Ava chocolate when she throws a tantrum, Simran would be

A. positively reinforcing the tantrum and increasing the likelihood of them occurring in the future.

B. positively reinforcing the tantrum and decreasing the likelihood of them occurring in the future.

C. negatively reinforcing the tantrum and increasing the likelihood of them occurring in the future.

D. negatively reinforcing the tantrum and decreasing the likelihood of them occurring in the future.

Learning

Operant Conditioning

Similar to classical conditioning, operant conditioning has some key terms.

Stimulus generalisation occurs when the correct behaviour/response is made to another stimulus that is similar to the stimulus that was present when the conditioned response was reinforced.

Stimulus discrimination occurs when an organism makes the correct behaviour/response to a stimulus and is reinforced, but does not respond to any other stimulus.

Extinction is the slow decrease in the strength or rate of a conditioned response following ongoing non-reinforcement of the correct response.

Spontaneous recovery occurs after extinction, when the person/animal once again shows the desired response to the stimulus, despite no reinforcement.

Learning

Differences Between Classical and Operant Conditioning

Operant Conditioning:

- Is usually a voluntary response
- Learner is active
- Consequence determines whether behaviour is strengthened or weakened

Classical Conditioning:

- Involuntary reflex response
- Learner is passive

VCAA Question

VCAA 2015 Exam, MC Q3

Question 3

In classical conditioning, the learned response is

A. voluntary, whereas in operant conditioning the learned response is reflexive.

B. reflexive, whereas in operant conditioning the learned response is voluntary.

C. involuntary, whereas in operant conditioning the learned response is reflexive.

D. spontaneous, whereas in operant conditioning the learned response is involuntary.

Learning

Observational Learning

Observational learning occurs when someone uses observation of a model's behaviour, and the consequences of that behaviour, to guide their own future behaviour.

Vicarious conditioning is when an individual watches a model's behaviour being either reinforced or punished, and modifies their behaviour accordingly.

Vicarious reinforcement occurs when a model's behaviour is reinforced, and therefore increases the likelihood of the observer behaving in a similar way.

Vicarious punishment occurs when a model's behaviour is punished, and therefore decreases the likelihood of an observer behaving in a similar way.

Learning

Observational Learning

There are five processes involved in observational learning.

1. Attention

In order to learn through observation, an individual must pay close attention to a model's behaviour and the consequences of that behaviour. Attention can be influenced by interest levels, the situation and perceptual capabilities. People tend to pay closer attention to models that are similar to themselves, are well liked and have a high status.

2. Retention

An individual must be able to accurately remember the model's behaviour. The more meaningful an individual can make the memory of the observation, the more closely they will be able to replicate it when necessary.

Learning

Observational Learning

3. Reproduction
An individual must have the ability to put into practice what they observed.

4. Motivation
The individual must be motivated to perform the behaviour they observed. Generally, there needs to be an incentive for observing and performing the behaviour.

5. Reinforcement
The reinforcement of the behaviour influences the motivation of whether to reproduce that observed behaviour. Reinforcement (which always strengthens the behaviour) can be external, vicarious or from within oneself.

Learning

Observational Learning

Albert Bandura conducted a well-known experiment using four-year-old pre-schoolers.

The children were split into three groups. All three groups watched a movie of a man punching and hitting a large air-inflated doll.

Group 1 then saw the model rewarded for his behaviour with lollies, soft drink etc.
Group 2 saw the model get punished for his behaviour by being spanked and with verbal criticisms.
Group 3 saw the male get neither rewarded or punished.

Learning

Observational Learning

The children were then placed individually in a room with toys and a large inflatable doll.

It was found that the consequences of the model's actions made a difference to the behaviour of the children. Children in groups 1 and 3 were more likely to act aggressively than children in group 2. Boys were more aggressive than girls, and all children, even those in group 2, were more likely to act aggressively when given positive reinforcers to do so.

VCAA Question

VCAA 2016 Exam, MC Q53

Question 53

Phoebe is eight years old and loves playing cricket. She really admires the Australian female cricket captain, who has blonde hair, like Phoebe, and often hits balls over the fence for six runs. She tells her father, 'I'm going to be like her one day and play for Australia and be on TV like she is'.

The stage of observational learning that most applies to Phoebe choosing the female captain as the model for her behaviour is

A. attention.
B. retention.
C. motivation.
D. reproduction.

Only 33% got this – 56% said C, motivation.

Attention as people often attend to a model who has similar characteristics to them – Phoebe and the blond hair.

Learning - VCAA Questions

Question 10 (8 marks)

Every evening after school, Najida's father pestered her to do her homework. After a lot of pestering, Najida did her homework to make her father's pestering stop.

a. Name the learning principle associated with Najida eventually choosing to complete her homework and state how this learning principle encouraged Najida to do her homework. 3 marks

- Operant Conditioning
- Negative Reinforcement (removal of an unpleasant stimulus = pestering)

Question 10a.

Marks	0	1	2	3	Average
%	32	7	13	48	1.8

Question 10a. related to the effect on Najida's behaviour of her father's pestering her to do her homework. Najida eventually does her homework to make the pestering stop. Students were asked to name the learning principle and to state why it caused her to produce the desired behaviour. One mark was awarded for correctly identifying negative reinforcement as the learning principle. Two further marks could have been awarded if the student explained that the pestering is an unpleasant stimulus that will stop if the desired behaviour (homework) is produced – it is the cessation (i.e. negative) of the unpleasant stimulus that acts as a reward (i.e. reinforcment) to motivate performance of the desired behaviour.

Learning - VCAA Questions

Question 14 (5 marks)

Katrina eats toast for breakfast every day. Three days in a row, the toast got stuck in the toaster and burned, setting off the smoke alarm. The smoke alarm made a high-pitched noise that caused her dog Buster to startle and then run away. Now, whenever Katrina uses the toaster, Buster runs outside and hides in the garden.

Using the terminology of classical conditioning, explain how Buster has come to fear the toaster.

The toaster is the neutral stimulus. When paired with an unconditioned stimulus (the smoke alarm) that naturally produces Buster to run outside in fear (the unconditioned response), eventually Buster becomes conditioned to fear the toaster (conditioned stimulus) and becomes started just by the toaster alone (conditioned response).

Learning - Tips

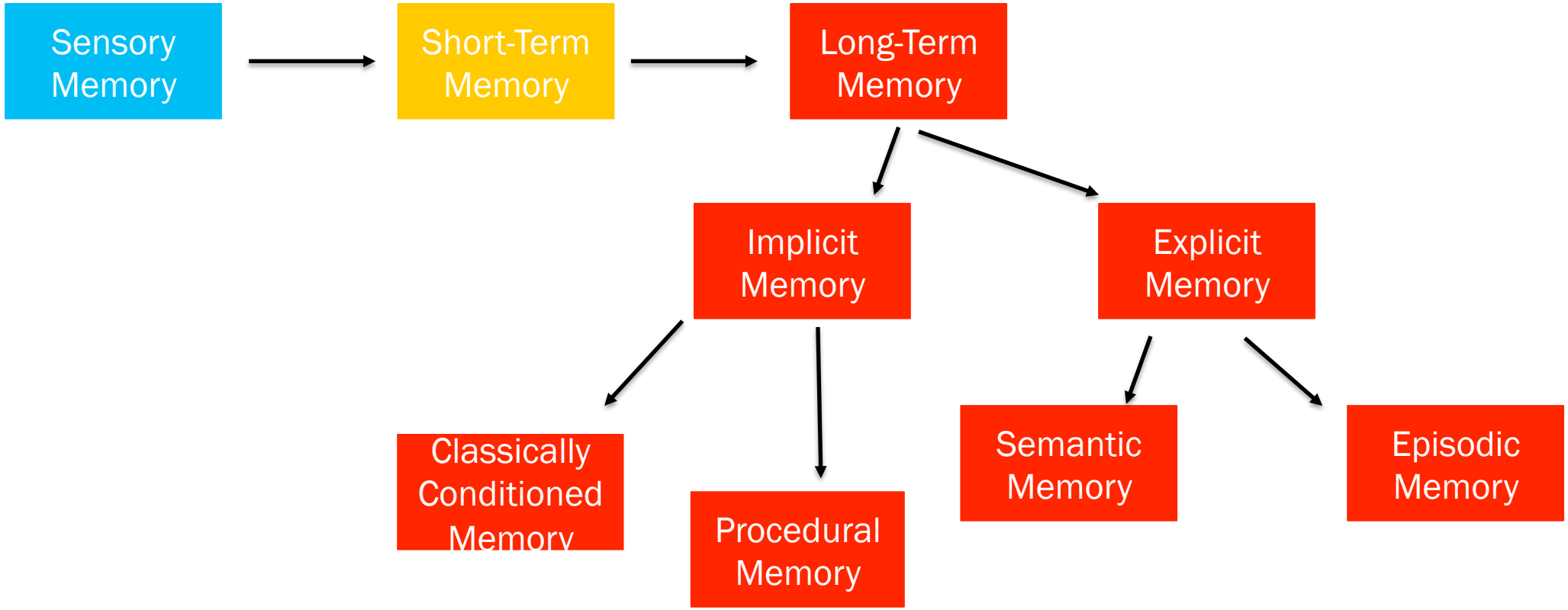
- Usually a heavily examined area, particularly in multiple-choice
- Practice using scenarios. Identify the type of learning (classical, operant, observational) and then the more specific details (e.g. UCR, UCS etc.)
- Learn the ‘map’, or ‘formula’ for classical conditioning, and then just fill in the gaps. It becomes easier the more that you do it.
- Remember that reinforcement always aims to strengthen a behaviour, whereas punishment always aims to weaken a behaviour. Know the difference between positive and negative. Often the best way to do this is through examples/scenarios.
- Don’t overcomplicate it. You would have used/seen all of these types of learning in your life

Memory

Memory can be defined as the processing, storage and retrieval of information gathered through learning.

We look at the Atkinson-Shiffrin multi-store model of memory, which has three main components – sensory memory, short-term memory and long-term memory.

Memory


Sensory Memory
Short-Term Memory
Long-Term Memory
Implicit Memory
Explicit Memory
Classically Conditioned Memory
Procedural Memory
Semantic Memory
Episodic Memory

Memory

Sensory memory is the entry point of memory, where new, incoming sensory information is stored for a brief period of time.

Sensory memory is divided into two different parts – iconic memory and echoic memory. Iconic memory refers to visual sensory information, which is stored for between 0.2-0.4 seconds. Echoic memory refers to auditory sensory memory, which is stored for 3-4 seconds – this is to allow us to make sense of speech.

We are not consciously aware of most of the sensory information in sensory memory. It is there just long enough for us to select what information to pay attention to. If we don't pay attention to information in sensory memory, it is lost. If we do pay attention to it, it is transferred to short-term memory (STM).

Memory

Short-term memory is a part of memory where information is stored for a short period of time. Short-term memory (STM) is the place where all conscious reasoning, thinking and planning takes place (it is also known as 'working memory').

Information is transferred into short-term memory from sensory memory, and can also be retrieved into STM from long-term memory (LTM).

The duration of STM is generally between 12-18 seconds, although it can be up to 30 in some cases.

STM has a very limited capacity. It can store 'seven plus or minus two items', depending on the individual/situation - it can store between 5-9 items. Information is lost from STM due to decay (not being used and lost due to limited duration) or displacement (being pushed out due to too many items – lost due to capacity).

Memory

Long-term memory (LTM) stores a potentially unlimited (capacity) amount of information for a very long time, perhaps forever (duration).

There are several different types of LTM.

Explicit memory involves memory that occurs when information can be consciously retrieved. It is also known as *declarative memory.*

There are two types of explicit memory – episodic memory and semantic memory.

Episodic memory is the memory of events that you personally experienced. Memories can includes details like time and place. E.g. a birthday party

Memory

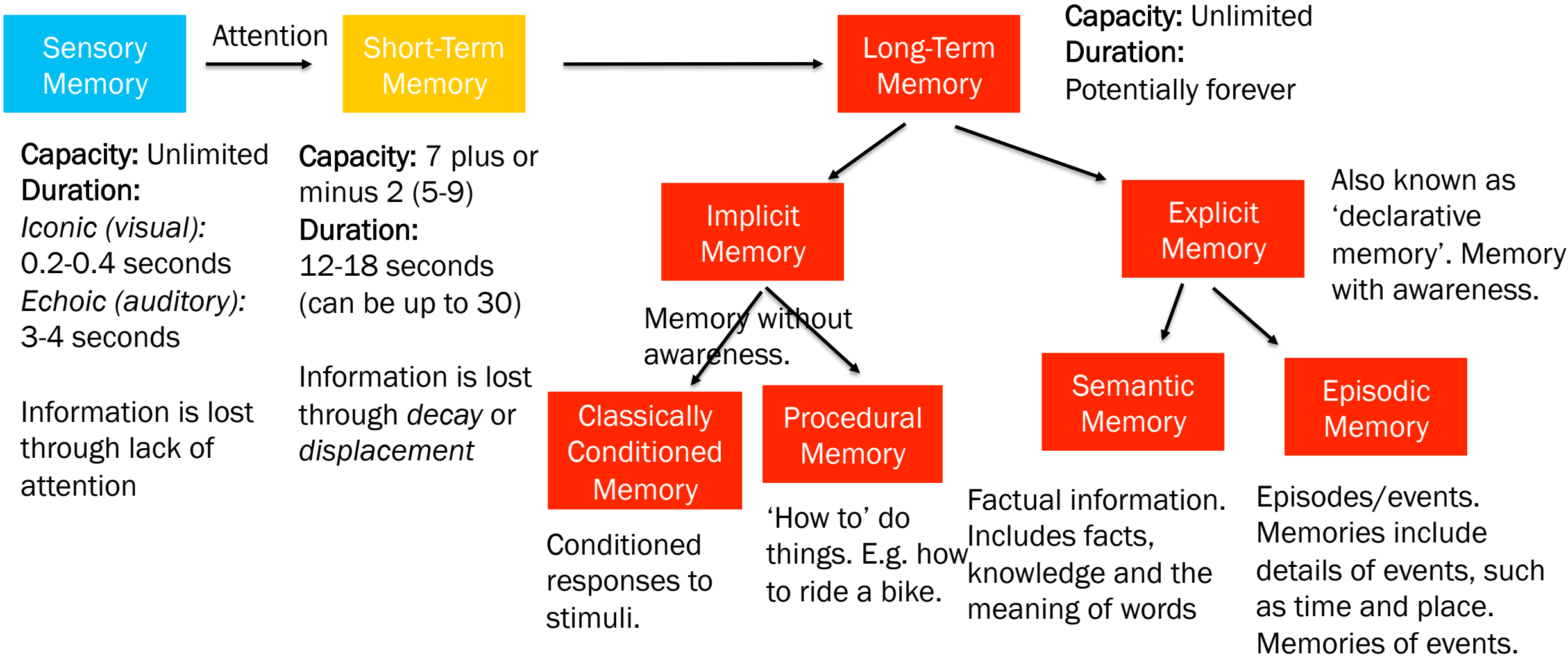
Semantic memory is the memory of facts and knowledge about the world, including general knowledge and the meaning of words. E.g. the names of all the continents

Implicit memory involves memory that doesn't require conscious retrieval. Individuals are not aware they are remembering something. There are two types of implicit memory:

Procedural memory is the memory of motor skills and actions that have previously been learnt. 'How to do something'. E.g. how to ride a bike, how to brush your teeth.

Classically conditioned memory involves conditioned responses to certain stimuli. E.g. fear at seeing a spider

Memory


Sensory Memory
Attention
Short-Term Memory
Long-Term Memory
Capacity: Unlimited
Duration:
Potentially forever
Capacity: Unlimited
Duration:
Iconic (visual):
0.2-0.4 seconds
Echoic (auditory):
3-4 seconds
Information is lost through lack of attention
Capacity: 7 plus or minus 2 (5-9)
Duration:
12-18 seconds
(can be up to 30)
Information is lost through decay or displacement
Implicit Memory
Explicit Memory
Also known as 'declarative memory'. Memory with awareness.
Memory without awareness.
Classically Conditioned Memory
Procedural Memory
Semantic Memory
Episodic Memory
Conditioned responses to stimuli.
'How to' do things. E.g. how to ride a bike.
Factual information. Includes facts, knowledge and the meaning of words
Episodes/events. Memories include details of events, such as time and place. Memories of events.

VCAA Question

VCAA 2016 Exam, MC Q21

Question 21

Which part of memory holds the knowledge that 'dogs bark', '6 + 4 = 10' and 'there are 365 days in a year except in a leap year'?

A. episodic memory

B. semantic memory

C. procedural memory

D. short-term memory

Memory

Storage of LTM

Long-term memories are not stored in any one brain location.

The cerebral cortex is the wrinkly outside layer of the brain, Long-term explicit (semantic and episodic) memories are distributed throughout the cerebral cortex. Different parts of the memory are located in different parts of the cerebral cortex.

For example, a memory of an AFL football match you attended might have the roar of the crowd (auditory info) stored in the auditory cortex in the temporal lobe, the sight of a goal being kicked (visual info) stored in the visual cortex in the occipital lobe and the names of the teams (language info) stored in the frontal lobe.

Memory

Storage of LTM

The hippocampus is located in the temporal lobe. Itis the part of the brain responsible for turning short-term memories into long-term memories. It is vital in the consolidation of new explicit (semantic and episodic) memories so that they are stable and long-lasting. It is not directly involved in the formation of implicit memories. The hippocampus is also important for spatial memory – which is the physical location of objects, and how to get places (e.g. our GPS).

The hippocampus doesn't actually store any long-term memories. After they have been consolidated, they are transferred to the cerebral cortex, where they are then stored.

Memory

Storage of LTM

The amygdala plays a crucial role in processing our emotional responses. It is involved in the formation of emotional memories. People or animals without an amygdala, or with a damaged amygdala, are generally unable to acquire a fear response.

People are more likely to remember events that produce strong emotional reactions. During high emotional arousal, noradrenaline is released at the amygdala. This is believed to stimulate the amygdala to signal to the hippocampus that stronger encoding is needed.

Although the amygdala is important is the formation of emotional memories, it doesn't store them.

Memory

Storage of LTM

The cerebellum is involved in the encoding and temporary storage of implicit procedural memories. It is vital for the learning and execution of motor skills, particularly complex motor skills like touch typing.

The cerebellum stores simple reflex reactions, such as associating a sound with an puff of air and therefore blinking in anticipation of the puff, but doesn't store more complex procedural memories.

VCAA Question

VCAA 2013 Exam, MC Q20

Question 20

Research indicates that the brain area that is involved in enabling intense, emotionally significant experiences to be well remembered is the

A. amygdala.
B. visual cortex.
C. corpus callosum.
D. somatosensory cortex.

Memory

Memory Retrieval

Retrieval of information from memory can be successful or unsuccessful, depending on the type of retrieval method that is used.

Recall involves reproducing information that is stored in memory. The information is brought into conscious awareness. E.g. A short-answer question on a test

Free recall involves reproducing as much information as possible without the use of any specific cue, and in no particular order.

Serial recall involves reproducing information in the order in which it was learnt, or the order in which it happened. E.g. Name Australian Prime Ministers in the order they were elected.

Cued recall involves the use of cues to assist with the retrieval of information.

Memory

Memory Retrieval

Recognition requires identification of the correct information from amongst alternatives that include incorrect information. E.g. A multiple-choice question on a test. Recognition is a more sensitive measure of retention than recall.

Relearning involves learning information again that was previously learned. If information is learned more quickly the second time, therefore some information must have been retained from the first learning experience. It is considered to be the most sensitive measure of retention.

$$T\downarrow 1 - T\downarrow 2 \,/T\downarrow 1 \quad \text{X} \quad 100$$

T_1 = Time taken for original learning
T_2 = Time taken for relearning

VCAA Question

VCAA 2016 Exam, MC Q13,14

Tricia took part in an experiment on memory. In Stage 1 of the experiment, she was shown 20 words presented at a rate of one word every two seconds. Immediately after the final word was presented, Tricia was given 30 seconds to write down as many words as she could in any order. In Stage 2 of the experiment, Tricia was shown 20 words, 10 of which she had seen in Stage 1 of the experiment. She was then asked to identify the words she had seen in Stage 1.

Question 13

What is the measure of retention used in Stage 1 of the experiment?

A. free recall
B. relearning
C. cued recall
D. recognition

Question 14

What is the measure of retention used in Stage 2 of the experiment?

A. free recall
B. relearning
C. cued recall
D. recognition

Memory

Memory Retrieval

Forgetting refers to the inability to access and recover information that has been previously stored in memory.

Context dependent cues are environmental cues in the situation where a memory was formed that act as retrieval cues to help access the memories that were formed in that context. These can include sights, sounds or smells at the specific environment.

State dependent cues are associated with an individual's physiological and/or psychological state at the time the memory was formed. You are more likely to remember information if you are in the same 'state' as when you learned it. If you learn information when drunk, you are more likely to remember it when you are drunk again.

VCAA Question

VCAA 2013 Exam, MC Q45

Question 45

When Peter was in high school, he spent every weekend working in a bakery. Thirty years later, whenever Peter feels hungry and thinks about freshly baked bread, he recalls his experience in the old shop.

What is prompting Peter's memory?

A. an acrostic

B. an acronym

C. state-dependent cues

D. context-dependent cues

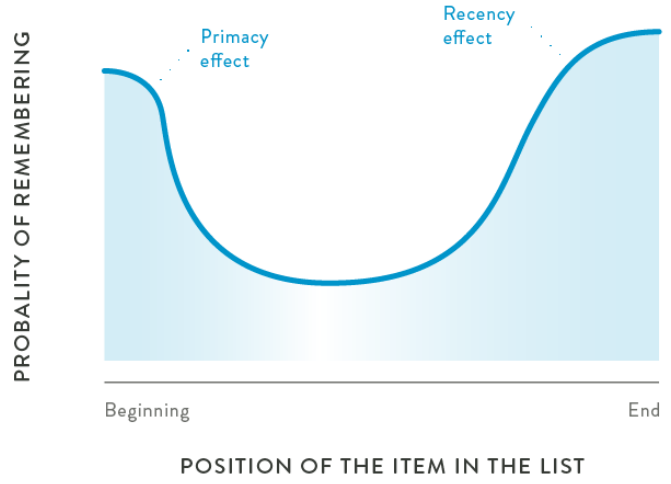
Hunger is a state/feeling, not part of the external environment

Memory

Memory Retrieval

Serial Position Effect

The serial position effect is a finding that free recall is better for items at the end and beginning of a list than for items in the middle of the list. The *primacy effect* describes superior recall at the beginning of a list. The *recency effect* describes superior recall at the end of a list.



VCAA Question

VCAA 2014 Exam, MC Q62

Question 62

The primacy effect of the serial position effect suggests that

A. long-term memory has a limited duration.

B. short-term memory has a limited duration.

C. material that is rehearsed can pass into long-term memory.

D. material that is rehearsed can stay in short-term memory indefinitely.

Memory

Memory Retrieval

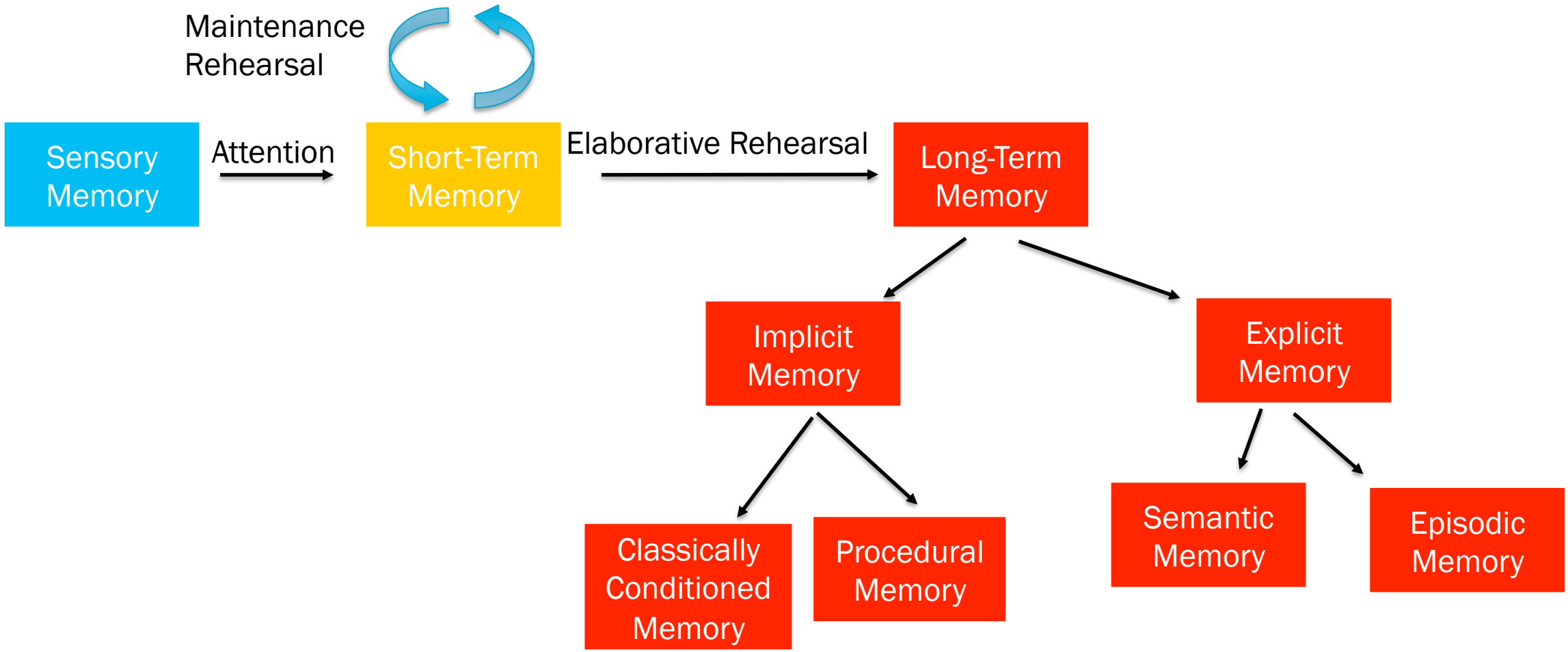
Rehearsal

There are two types of rehearsal:

Maintenance rehearsal involves repeating the information being remembered over and over again so that it can be successfully retained in STM. This can increase the duration of STM.

Elaborative rehearsal is the process of linking new information in a meaningful way with information already stored in LTM. This assists with its storage and future retrieval from LTM.

Memory


Maintenance Rehearsal
Sensory Memory
Attention
Short-Term Memory
Elaborative Rehearsal
Long-Term Memory
Implicit Memory
Explicit Memory
Classically Conditioned Memory
Procedural Memory
Semantic Memory
Episodic Memory

Memory

Memory Reconstruction

Memory reconstruction involves combining stored (memory) information with other available information to form a more complete or accurate memory. This can cause errors in the memory, if incorrect information is added to the memory.

The fact that memories can be reconstructed shows that memory can be fallible. This has been researched extensively by Elizabeth Loftus. Loftus found that eye-witness testimony is not always accurate as eye-witnesses can reconstruct their memories, and this reconstruction can be incorrect.

Their memories can also be manipulated by leading questions. A leading question is phrased in such a way as to suggest a desirable answer.

Memory

Study 1

45 uni students were each shown seven short videos of car accidents, ranging from 5 to 30 seconds long. After viewing each video, the participants were asked to write a description of the accident they had just seen, and answer some questions, including a leading question. There were five conditions in the experiment, with nine participants randomly assigned to each condition. In each condition, a different verb was used in the question. The question asked, 'About how fast were the cars going when they _____ each other?' It was completed with each of the following words: *smashed, collided, bumped, hit and contacted*. It was found that the verb influenced the speed estimate, smashed = 40.5mi/h, contacted = 31.8 mi/h.

Study 2

150 uni students were shown a one-minute video that included a four-second scene of a car crash. There were three different groups/conditions. Group 1 was asked 'About how fast were the cars going when they *smashed* into each other?' Group 2 was asked 'About how fast were the cars going when they *hit* each other?' Group 3 was not asked a question about the speed of the cars. Smashed = 10.46 mi/h, hit = 8 mi/h. A week later, they had to answer a number of questions about the crash. The critical question was 'did you see any broken glass?'. More participants who had been given the question with the word *smashed* (16) reported seeing broken glass than those who had the word *hit* (7). There was no broken glass at the scene.

VCAA Question

VCAA 2013 Exam, MC Q8

Question 8

Studies by Loftus on the effect of misleading questions on eyewitness testimonies have found that

A. exposure to misleading questions has no impact on an eyewitness's recollection of events.

B. it is unfair to expect eyewitness testimonies to be accurate, as people will remember only events that are positive.

C. eyewitness memories are reconstructions of events that can be manipulated by information that is given after the event.

D. eyewitness memories cannot be manipulated and therefore are highly reliable for use as evidence in court.

Memory

Brain trauma is a general term that refers to any brain injury that impairs the functioning of the brain.

Amnesia refers to a loss of memory, that is more substantial and not consistent with normal forgetting.

Anterograde amnesia occurs when an individual is unable to form memories after the trauma occurs. The individual loses the ability to form or store new long-term memories, although they can often form new implicit memories. They are generally able to retrieve memories from before the trauma. It is often found to be associated with damage to the medial temporal lobe area, particularly the hippocampus. (after away).

Memory

Case Study of H.M.

H.M. was a male who received brain surgery to treat his severe epilepsy in 1953. H.M. has most of his medial temporal lobe removed, including most of each hippocampus and amygdala.

After the surgery, he was unable to remember anything that happened in the two years before the surgery, and had partial memory loss dating back to 10 years before the surgery. He also suffered anterograde amnesia and was unable to form new explicit memories. His STM was basically normal, as long as he paid attention to a task, and he was able to learn and retain new motor skills (procedural memory).

Memory

Hippocampus

H.M.’s case showed that the removal of or damage to the hippocampus can substantially disrupt memory. It doesn’t affect procedural memories, but does affect explicit memories. It is believed that this is because new explicit memories ae unable to be consolidated.

Amygdala

Removal or damage to the amygdala leads to problems with emotional memories. An individual may be able to recall the memory, but not the emotional qualities of the event. Amygdala removal doesn’t seem to affect STM, procedural or explicit memory. The removal of one/both of the amygdala also leads to the inability to acquire a conditioned fear response.

Memory

Cerebral Cortex

If one or more cortical areas are removed, serious memory issues can result. As different areas of the cortex specialise in different functions, results can vary. For example, damage to the left hemisphere is often worse for recall of verbal material, while damage to the right hemisphere is worse for visual material, such as facial recognition. As H.M. could still retrieve old memories, and his cortex was mainly intact, it is believed the cortex plays an important role in the retrieval of memories. Damage to the frontal lobe seems to disrupt this retrieval process. Damage to the frontal or parietal lobe has a major impact on STM, as they are involved in regulating attention.

Cerebellum

Simple reflex classically conditioned motor responses are stored within the cerebellum. Damage to the cerebellum can therefore result in the loss of these conditioned motor responses, such as an eye blink in response to a puff of air. Damage to the cerebellum can also impair spatial learning and memory.

Memory

Alzheimer' Disease

Alzheimer's is a type of dementia. It is characterised by the widespread deterioration of brain neurons, which causes memory decline, gradual loss of cognitive and social skills and changes in personality.

Loss of STM is usually one of the first symptoms of Alzheimer's, as it causes the brain to shrink. Later on, long-term memories are also impaired, particularly explicit memories. Currently, an accurate diagnosis can only be made after death.
Sufferers also have a build-up of amyloid plaques, which are a hard protein that form around neurons, therefore reducing or stopping communication between them. Similarly, there is often a structure known as 'neurofibrillary tangles' that occurs within neurons, inhibiting transport of essential substances. Finally, people with Alzheimer's have a low level of the neurotransmitter acetycholine (Ach).

VCAA Question

VCAA 2016 Exam, MC Q46

Question 46

What is a typical change found in the brain of an Alzheimer's sufferer?

A. a decrease in the size of the ventricles

B. an abnormal increase in the levels of the neurotransmitter acetylcholine

C. a build-up of both amyloid plaques and neurofibrillary tangles surrounding the neurons

D. a decrease in amyloid plaques and an increase in neurofibrillary tangles surrounding the neurons

Memory - VCAA Questions

VCAA 2014 Exam, SA Q1

Question 1 (2 marks)

Describe a function of the following brain structures in relation to memory.

Amygdala _____

_____

_____

Hippocampus _____

_____

_____

Amygdala – consolidation of emotional information in memories

Hippocampus – the consolidation of explicit/declarative memories

Memory - VCAA Questions

VCAA 2016 Exam, SA Q5

Question 5 (6 marks)

Emilia can still remember an emotional event from her childhood. When Emilia was young, she became separated from her mother in a large shopping centre. When her mother found her 10 minutes later, Emilia was visibly upset and crying.

a. Identify the specific type of declarative memory that this event is for Emilia. Justify your response. 2 marks

Episodic Memory. It was a memory of an event that Emilia had experienced.

b. Identify the **two** specific areas of Emilia's temporal lobe that were involved in the formation of her memory of being lost. Explain the role of each area in memory formation. 4 marks

Hippocampus – would have been involved in consolidating the memory.
Amygdala – would have been involved in consolidating the emotional response to the memory.

Memory - Tips

- Generally a heavily examined area, particularly in the multiple-choice section
- Know the model of memory inside-out, it just makes everything easier once you understand this. Things like duration and capacity of different parts of memory are easily examinable
- Know well the role of the hippocampus, and what can happen if damaged. A lot of the detail surrounding storage of LTM is fairly new this year
- Understand Loftus' study, and how it shows the reconstruction of memory. This therefore proves that eyewitness accounts can be fallible

Research Methods

- May also be known as ‘key science skills’ or ‘cross-study specification’
- It is stuff that is needed from Unit 1 to Unit 4 (you may or may not have looked at it in Year 11)
- Essential knowledge for the VCAA exam
- Involves things such as hypotheses, experimental designs, variables, ethics and analysing data

Research Methods

Hypotheses

Should include IPOD:

- Independent Variable (variable being manipulated)
- Population (the group from which the sample is drawn)
- Operationalised (how variables will be measured)
- Dependent Variable (variable on which the IV will be measured)

Research Methods

Hypotheses

- Never say ‘I’ in a hypothesis

- Be objective

Australian adults who read are smarter than Australian adults who don’t read

e.g. Australian adults who read at least one book per week will score higher on a standard I.Q. test than Australian adults who don’t read books at all

Research Methods

Hypotheses

- Never say ‘I’ in a hypothesis

- Be objective

Australian adults who read are smarter than Australian adults who don’t read

e.g. Australian adults who read at least one book per week will score higher on a standard I.Q. test than Australian adults who don’t read books at all

Research Methods

Hypotheses

Students who complete practice exams will perform better on their exams than students who don't complete practice exams.

How can this be improved?

- Feel free to make up a specific school for your population, and make up information to operationalize the variables if you feel it is necessary

Research Methods

Hypotheses

Year 12 students at Traralgon High School who complete practice exams will perform better on their exams than Year 12 students at Traralgon High School who don't complete practice exams.

Year 12 students at Traralgon High School who complete at least five practice exams will receive a higher percentage mark on their end-of-year exams than Year 12 students at Traralgon High School who don't complete any practice exams.

- Stating exactly how the variables are going to be measured

Research Methods

Types of Investigation

In an experiment, we are measuring the effect of an independent variable (IV) on a dependent variable (DV).

The experimental group is exposed to the IV

The control group is not exposed to the IV (act as a baseline). The control group may receive a placebo.

Research Methods

Types of Investigation

A case study is an intensive and in-depth investigation of an individual or small group over a period of time. (Is usually a single person over a long period of time). They are often used for unusual circumstances that can't be investigated normally.

An observational study involves watching subjects in their natural environment, and recording their behaviour.

VCAA Question

VCAA 2016 Exam, MC Q61

Question 61

When investigating naturally occurring behaviour, an advantage of using observational studies as a data collection technique is that

A. compared with experiments, observational studies do not require controlled variables.

B. unlike self-report methods, standardised procedures are not required in observational studies.

C. similarly to experiments, it is possible to control confounding variables in observational studies.

D. compared with case studies, experimental and control groups are not needed in observational studies.

Experiments do have controlled variables, observational studies don't. The challenge with this question was the awkward wording.

Research Methods

Experimental Designs

Independent Groups – Participants are allocated to either the control or experimental group. Most common type. Low cost/time, can lead to individual participant differences.

Matched Participants – Uses pairs of participants with similar characteristics – one is allocated to the control group, the other the experimental group. Identical twins are best. Lower individual differences, increased time/money.

Repeated Measures – One participant is exposed to both the control and experimental conditions. No individual participants differences, order effects can be an issue.

Research Methods

Order Effects/Counterbalancing

Order effects refers to the results being skewed because all participants complete the two conditions in the same order (referring to repeated measures design only). This is overcome by using counterbalancing.

Counterbalancing refers to different participants experiencing the two conditions in a different order.

Half the participants should experience the experimental condition followed by the control condition, and half the participants should experience the control condition followed by the experimental condition.

Participant #	Experimental	Control
1	First	Second
2	Second	First
3	Second	First
4	First	Second
5	First	Second
6	Second	First

VCAA Question

VCAA 2013 Exam, MC Q10

Question 10

In a repeated-measures design

A. different participants are used in both the control and experimental conditions.

B. the same participants are used in both the control and experimental conditions.

C. the same participants are used in one trial of both the control and experimental conditions, and different participants are used in subsequent trials.

D. participants are put into pairs and one member of each pair is placed in the control condition and the other member is placed in the experimental condition.

Repeated Measures design – same participants for both conditions

Research Methods

Extraneous/Confounding Variables

An extraneous variable is a variable other than the IV that can cause a change in the DV, therefore affecting the experiment in an unwanted way.

A confounding variable is a variable other than the IV which has had an unwanted effect on the DV.

A confounding variable produces a measurable change in the DV. An extraneous variable is a variable that may affect the DV.

Common extraneous variables include individual participant differences (e.g. age, gender, SES) and the experimenter effect.

Research Methods

Single and Double Blind Procedures

Single-Blind Procedure – Participants are unaware of whether they are in the experimental or control group, and therefore unaware whether they have been exposed to the IV. This avoids the placebo effect.

Double-Blind Procedure – Both the participants and the experimenter are unaware of which is the experimental and which is the control group. This avoids both the placebo effect and experimenter bias/experimenter effect.

Research Methods

Placebo Effect

A placebo is a fake treatment that is given to the control group. This is to avoid the placebo effect, which is when there is a change in the responses of participants simply due to the belief they are receiving some form of treatment (experimental group). A placebo does not have any real effect (e.g. a fake pill).

VCAA Question

VCAA 2013 Exam, MC Q13

Question 13

The double-blind procedure aimed to control for

A. the placebo effect.

B. the experimenter effect.

C. all extraneous variables.

D. the placebo effect and the experimenter effect.

Double-blind procedure – removes both placebo effect and the experimenter effect

Research Methods

Sampling

Random Sampling – Every member of the population has an equal chance of being selected to be part of the sample. (Names out of a hat, lottery).

Stratified Sampling - Involves dividing the population to be sampled into distinct subgroups, then selecting a separate sample from each subgroup in the same proportions as they occur in the population.

E.g. There are 1000 students in a school, 200 in each year from 7-10, and 100 in years 11 and 12. A researcher wants a stratified sample of 20 students, so he would select four from each year from 7-10, two from year 11 and two from year 12. (Same proportion as population).

Research Methods

Sampling

Random-Stratified Sampling – Is the same as stratified sampling, except the sample is selected at random from each subgroup (still with the correct proportions).

E.g. There are 1000 students in a school, 200 in each year from 7-10, and 100 in years 11 and 12. A researcher wants a stratified sample of 20 students, so he would *randomly* select four from each year from 7-10, two from year 11 and two from year 12.

Convenience Sampling – Selecting participants who are readily available, and therefore not making the sample representative of the population. Weak method of sampling and means that results cannot be generalised.

Research Methods

Allocation

Allocation refers to how participants are assigned to either the experimental or control group. (In an independent groups design).

Random allocation is when participants are randomly allocated to either the experimental or control group. This is essential to reduce individual participant variables between the two groups. As long as the two groups are big enough and random allocation is used, the groups should be reasonably equivalent.

VCAA Question

VCAA 2013 Exam, MC Q54

Dr Tran conducted an independent-groups design experiment on a technique for remembering nonsense syllables. The experimental group used Dr Tran's learning technique and had a greater recall of nonsense syllables than the control group.

Question 54

To prevent a biased sample and to control for participant differences in her experiment, Dr Tran would respectively need to use

A. counterbalancing and random sampling.

B. random sampling and counterbalancing.

C. random allocation and random sampling.

D. random sampling and random allocation.

Biased Sample – Random sampling

Individual Participant Differences – Random allocation

*As it is an independent-groups design, counterbalancing was not an option

Research Methods

Data/Stats

Qualitative Data is information about qualities, or characteristics (words).

Quantitative Data is numerical data about what is being studied (numbers).

There are three measures of central tendency:

Mean – The average of all scores. Is best used when scores are clumped together.

Median – The middle number in the group of scores, when they are grouped in numerical order

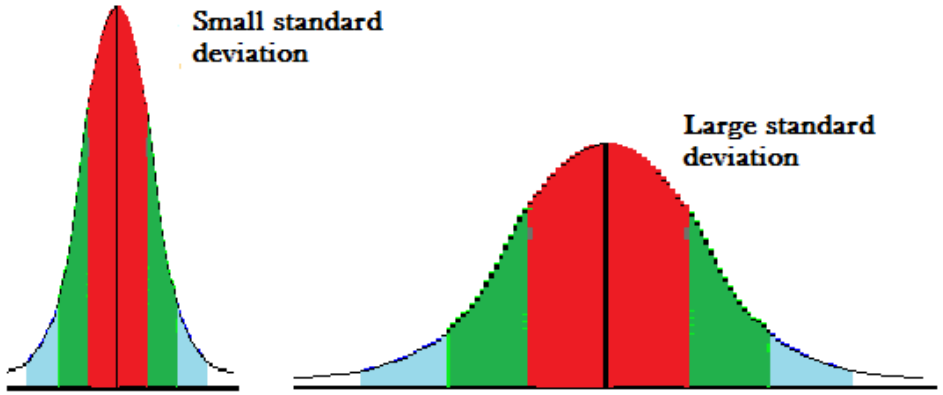
Mode – The most commonly occurring score in the set of scores

Research Methods

Data/Stats

The standard deviation shows how far scores within a set of scores spread out from the mean.

A high standard deviation means that there is a greater spread, or variance, in the scores. A low standard deviation means that there is a small spread, or variance, in the scores.



Research Methods

P-Value

The result of an experiment is said to be *statistically significant* if the likelihood of the results being due to chance (and not the IV) is less than 5%.

$p \leq 0.05$ = statistically significant.
$p \leq 0.06$ or $p > 0.05$ = not statistically significant.

If we do get a p-value of $p \leq 0.05$ (e.g. $p = 0.02$), then this means we can usually generalise the results to the wider population.
If we get a p-value of $p > 0.05$ (e.g. $p= 0.07$), this means we can't generalise the results to the wider population.

Note that the p-value isn't always set at 5%. This is the 'normal' p-value, but it may tell you in the question that it needs to be something different e.g. $p \leq 0.02$

VCAA Question

VCAA 2015 Exam, MC Q47

Question 47

The level of statistical significance of the results was set at $p = 0.02$

This means that the

A. probability of the results is 0.2%.

B. results are significant and can be generalised.

C. probability of the results being due to chance is set at 2%.

D. results are not statistically significant and cannot be generalised.

Research Methods

Generalisations

A generalisation is a decision about how widely the results of a study can be applied to other members of the population.

To make a generalisation:

- The p-value must be $p \leq 0.05$
- No ethical guidelines must have been breached
- There should be no major extraneous variables in the experiment
- Convenience sampling mustn't have been used (must be random or stratified)
- A very small sample size shouldn’t have been used

If the experiment is well-designed, has no major extraneous variables, has an appropriate p-value and uses random or stratified sampling, then usually a generalisation can be made to the wider population.

Research Methods

A common exam question is to ask how an experiment might be improved, or how to remove extraneous variables from an experiment, which would allow the results be generalised.

Problem	Solution
Small Sample Size	More Participants
Individual Participant Differences	Greater Sample Size or Repeated Measures Design
Order Effects (Repeated Measures Design)	Counterbalancing
Placebo Effect	Use a Placebo for the control group
Non-Standardised Instructions	Standardise Instructions
Experimenter Effect	Double-Blind Procedure
Placebo Effect	Single or Double-Blind Procedure
Convenience Sampling	Use Random or Stratified Sampling

Research Methods

Ethical Principles

Protection and Security of Participants' Information - The researcher must make sure that personal information about participants is not misused, disclosed or lost

Confidentiality - The researcher must ensure that participants, and their individual results, can't be identified in any way. Very important when publishing results

Voluntary Participation - Participants must voluntarily consent to be part of the study. They also can't be punished or disadvantaged for not being part of the study

Withdrawal Rights – Participants, and their data, must be free to withdraw from the study at any time

Research Methods

Ethical Principles

Informed Consent - Participants must be informed about the research study before it begins. This includes the nature and purpose of the study, and potential risks, general information about tasks and their withdrawal rights. Having been informed, they must then consent to participate in the study (signing a consent form).

Deception – Deception is acceptable (with ethical permission), however, the researcher must make sure that the participants are informed of the deception after the study has been completed, and that the deception doesn't cause significant harm or trauma.

Debriefing - Debriefing happens after the study. Participants are informed of the results and conclusion of the research. Any deception must be revealed.

Research Methods

Use of Animals in Research

Animals may be used in psychological research for various reasons, including:

- Certain studies can't be conducted with humans because of potential for serious psychological or physiological harm
- Bodily systems and many behaviours of animals are similar to humans, and therefore they can often be used as a 'beginning point' for research
- Animals can have biological advantages – for example it is difficult to research changes due to old age in a particular person (as we often live to 80+), whereas animal's lifespans are usually shorter
- Animals may not change their behaviour as much due to being in an experiment

Any potential harm to animals must be weighed against the potential benefit for humans. Harm to animals must always be minimised.

VCAA Question

VCAA 2016 Exam, MC Q32

Dr Williams wanted to perform a partial replication of JB Watson's 'Little Albert' experiment using a young monkey instead of a human infant. Similarly to Watson's experiment, an iron bar was struck behind the monkey's back each time a white rat was presented. Soon the monkey showed fear of the rat even when the bar was not struck.

Question 32

It is likely that Dr Williams used a young monkey instead of a human infant in the study because

A. using a monkey is less likely to get approval from an ethics board than using a human infant.

B. monkeys and humans have significantly different structures in their nervous systems.

C. he wanted to find out if young monkeys and young humans learn in the same way.

D. he wanted to explore other aspects of observational learning.

Process of elimination – A, C and D are all incorrect.

Research Methods - VCAA Questions

VCAA 2013 Exam, MC Q11 + 12

Experimental research was conducted to trial medication for the management of schizophrenia. This medication was in a tablet that was given to participants.

Participants drew an odd or even number from a hat. Participants who drew odd numbers formed the control group; participants who drew even numbers formed the experimental group. A double-blind procedure with a placebo was used.

Question 11

In this research, the placebo could be defined as

A. the effect of the medication.
B. the tablet containing no medication.
C. a participant's expectation of the effect of the medication.
D. the tablet containing the medication that was being trialled.

Question 12

A placebo was most likely used in this experiment to

A. control for an extraneous variable and assess the effect of the medication.
B. standardise the experimental procedure and assess the effect of the medication.
C. control for an extraneous variable and assess the effect of the dependent variable.
D. standardise the experimental procedure and assess the effect of the dependent variable.

Research Methods - VCAA Questions

VCAA 2015 Exam, MC Q64

Dr Nguyen is a psychologist interested in investigating the effect of age on the cycling ability of Victorians. He recruits 93 Victorian bike riders who responded to an advertisement that he placed in a newspaper. The bike riders are divided into two groups:

- Group 1 consists of riders aged 20–39 years old.
- Group 2 consists of riders aged 40–59 years old.

Question 64

In this study, the sampling method used was

A. random.

B. stratified.

C. convenience.

D. random-stratified.

Research Methods - VCAA Questions

VCAA 2013 Exam, MC Q16

Experimental research was conducted to trial medication for the management of schizophrenia. This medication was in a tablet that was given to participants.

Participants drew an odd or even number from a hat. Participants who drew odd numbers formed the control group; participants who drew even numbers formed the experimental group. A double-blind procedure with a placebo was used.

Question 16

In order to safely report that the effect of the medication was significant, it would be most desirable for the results to have a *p* value that is

A. < 0.05
B. > 0.05
C. < 0.01
D. > 0.01

'Most desirable'. Even though p<0.05 is the normal statistical significance range, p<0.01 is more desirable as it means that there is only a 1% probability that the results were due to chance. Only 24% of students got this – 62% said Option A.

Research Methods - Tips

- Practice using scenarios
- Create a flowchart/diagram
- Practice looking for extraneous variables. Common one is individual participants variables
- As soon as convenience sampling is used – no generalisation as ‘sample is not representative of the wider population’

Psych – Tips for the Year

- Psych is a subject with stacks of content, so you need to work out a way to trim it down
- Create your own resources, one way or another. Personally, I felt that chapter summaries were a great fit for Psychology, as they condensed the information into a manageable form
- A lot of the info in textbooks and other resources isn't actually examinable. Use the study design (and your teachers) to focus your energy on the important stuff
- Practice doing questions as much as possible, particularly as the year goes on
- Put effort into it. It's a subject that people can do really well at – results usually match effort levels
- Enjoy it!!

Thank you for coming!

Good luck for the year!