Neap

Trial Examination 2022

VCE Psychology Unit 3

Written Examination

Suggested Solutions

SECTION A – MULTIPLE-CHOICE QUESTIONS

1	A	B	**C**	D
2	A	B	**C**	D
3	A	B	C	**D**
4	**A**	B	C	D
5	A	B	**C**	D
6	A	B	C	**D**
7	A	**B**	C	D
8	A	B	**C**	D
9	**A**	B	C	D
10	A	B	C	**D**
11	A	B	**C**	D
12	**A**	B	C	D
13	A	B	C	**D**
14	A	B	**C**	D
15	A	B	C	**D**

16	**A**	B	C	D
17	A	**B**	C	D
18	A	B	C	**D**
19	A	B	**C**	D
20	**A**	B	C	D
21	A	B	**C**	D
22	A	B	**C**	D
23	**A**	B	C	D
24	A	**B**	C	D
25	A	**B**	C	D
26	A	B	C	**D**
27	A	**B**	C	D
28	A	B	**C**	D
29	A	**B**	C	D
30	**A**	B	C	D

31	A	B	**C**	D
32	A	**B**	C	D
33	A	B	C	**D**
34	A	**B**	C	D
35	A	B	**C**	D
36	A	B	**C**	D
37	A	B	C	**D**
38	A	**B**	C	D
39	A	B	**C**	D
40	A	**B**	C	D

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Question 1 C

C is correct, and **A** and **B** are incorrect. An unconscious response to sensory stimuli generally occurs more rapidly than a conscious response given there is no delay in consciously processing the sensory stimuli before initiating a conscious response.

D is incorrect. An unconscious response to sensory stimuli includes spinal reflex and other types of unconscious responses such as a pupil changing size in response to different light conditions.

Question 2 C

Saskia's peripheral nervous system detected the heat from the stove and then relayed an afferent signal to her central nervous system, in which her spinal cord integrated sensory and motor signals. This triggered an efferent signal, which was sent back to skeletal muscles in her arm, which are controlled by the peripheral nervous system. This resulted in the reflexive withdrawal of her hand from the stove.

Question 3 D

D is correct. In terms of Selye's General Adaptation Syndrome, when Spiro went into shock, his body would have acted as if it were physically injured, thus his blood pressure would have dropped.

A is incorrect. Spiro's parasympathetic nervous system would have been dominant.

B and **C** are incorrect. Spiro's adrenaline levels and heart rate would not have increased, until he entered the counter shock phase.

Question 4 A

A is correct. In terms of Selye's General Adaptation Syndrome, when Spiro had high levels of tension, irritability and headaches, he was experiencing the first signs of a minor illness, which is indicative of the resistance stage.

B is incorrect. Exhaustion is characterised by experiencing a major illness such as influenza.

C and **D** are incorrect. The alarm stage is relatively brief; the source of the stress in this scenario has not been quickly resolved and thus Spiro's body has had to adapt to cope with the stressor.

Question 5 C

C is correct. Cortisol was initially released into Spiro's bloodstream when his body went into the counter shock phase of the alarm stage to provide the initial energy required to respond to the stressor.

A and **B** are incorrect. Cortisol is released into the body prior to entering the stages of resistance and exhaustion.

D is incorrect. The body acts injured during this phase and has yet to respond to the stressor.

Question 6 D

D is correct. In terms of Lazarus and Folkman's Transactional Model of Stress and Coping, Spiro has demonstrated that his initial appraisal of the stressor would be a significant threat to his future career as a surgeon, and thus require a large amount of energy to deal with.

A and **B** are incorrect. Spiro's appraisal is significant as a more sustained level of energy is required to deal with the stressor than a short-term response of irrelevance or a benign response.

C is incorrect. There is no evidence in the scenario that Spiro tried to evaluate any potential gains from the accusation.

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Question 7 B

B is correct. Spiro initially experienced an avoidant coping strategy as he directed his energy away from the source of the stressor by staying at home, then he experienced an approach coping strategy as he directed his energy towards the source of the stressor by contacting a union representative for assistance.

A is incorrect. There is no evidence in the scenario that Spiro experienced either acculturative stress, which occurs when stress is experienced from a shift in cultures, or a catastrophe, which occurs when an event has a widespread effect on a community.

C is incorrect. There is no evidence in the scenario that Spiro used exercise as a coping strategy.

D is incorrect. As Spiro has not experienced a major illness, there is no evidence that he reached a state of exhaustion.

Question 8 C

C is correct. When gamma-amino butyric acid (GABA) is released from a pre-synaptic cell and binds with a post-synaptic cell, it reduces the excitability of the post-synaptic cell (due to the inhibitory effects of GABA). Thus, the post-synaptic cell is less likely to fire.

A is incorrect. Unlike drugs and various forms of medication, neurotransmitters do not tend to block receptors.

B is incorrect. The inhibitory effects of GABA will affect the relative excitability of the post-synaptic cell.

D is incorrect. Once released into the synapse, GABA will either bind with the post-synaptic receptors or be reabsorbed back into the presynaptic cell.

Question 9 A

A is correct. A cross-sectional study was used as the participants were non-randomly allocated into separate groups based on their predetermined levels of weekly exercise.

B is incorrect. An independent groups design would require a random allocation of participants to different groups.

C is incorrect. There was no pre-testing of the participants prior to a matching process.

D is incorrect. A repeated measures design was not used and would not have been practical in this case given the allocation to separate groups based on predetermined levels of weekly exercise.

Question 10 D

D is correct. The use of the single-blind procedure would have eliminated the placebo effect by ensuring that the participants were not aware of the groups in which they were classified. This would have removed the potential for their expectations to affect the results. The use of the cross-sectional study would have ensured that an order effect did not affect the results as the participants were not involved in a repeated-measures design.

A and **C** are incorrect. A cross-sectional study would have no control over participant-related variables such as resting heart rate.

B is incorrect. A double-blind procedure would be required to control a potential experimenter effect.

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Question 11 C

C is correct. The discovery of an alternative variable to the independent variable that systematically affected the dependent variable is an example of a confounding variable. This would have caused the researchers to be unclear as to whether the independent variable or the relative fitness of participants affected the dependent variable.

A is incorrect. The dependent variable is the average heart rate of the participants.

B is incorrect. The independent variable is how regularly the participants exercise.

D is incorrect. An extraneous variable would have had the potential to affect the dependent variable at a random point of the investigation and thus could have been anticipated prior to the completion of the investigation.

Question 12 A

A is correct. The data obtained by the researchers was primary because it was directly accessed by the researchers and quantitative as it was concerned with the mean heart rate, which is numerical data.

B and **D** are incorrect. The data was not qualitative in the form of written statements.

C is incorrect. The data was not sourced from a third party as is the case with secondary data.

Question 13 D

D is correct. Exercise can divert attention away from a stressor as the exerciser can focus on the activity, which reduces the effects of stress on their body following recovery from the exercise.

A is incorrect. The sympathetic nervous system plays a key role in arousing the body to cope with the demands of exercise.

B is incorrect. High levels of cortisol have an arousing effect on the mind.

C is incorrect. Exercise results in the release of additional endorphins into the bloodstream, which can enhance wellbeing.

Question 14 C

C is correct. Guadalupe has experienced a negative psychological response to the news of her gout diagnosis, which is a source of distress.

A is incorrect. Acculturative stress refers to stress experienced when trying to adapt to a new culture, which is not relevant in Guadalupe's case.

B is incorrect. Guadalupe's ongoing concern means that her response would be deemed significant.

D is incorrect. Eustress is a positive stress response, which Guadalupe has not experienced.

Question 15 D

D is correct. Guadalupe is most likely to adopt an approach coping strategy to manage the news of her condition following an evaluation of her coping resources, which occurs following the secondary appraisal.

A is incorrect. This option relates to the General Adaptation Syndrome, an alternative model of response to stress, thus resistance is not applicable to Lazarus and Folkman's Transactional Model of Stress and Coping.

B and **C** are incorrect. Guadalupe would first need to evaluate the significance of the stress, which occurs during the primary appraisal.

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Question 16 A

A is correct. The release of cortisol is a source of energy via the release of additional glucose from the liver, which will help Guadalupe deal with her stress.

B is incorrect. An effect of increased levels of cortisol in the bloodstream is the suppression of the immune system.

C is incorrect. The increased level of cortisol will energise Guadalupe.

D is incorrect. Cortisol speeds up metabolic rate, which is related to the high level of energy required to help Guadalupe deal with the stress.

Question 17 B

B is correct. Standard deviation is a measure of spread of how far a set of data deviates from the mean.

A is incorrect. Mean is a measure of the central tendency of data.

C and **D** are incorrect. A bar graph and a table are methods used to present data, not to provide a measure of spread.

Question 18 D

D is correct. The proposition that the results of a research investigation are replicable relates most specifically to reliability, as this would be determined by replicating the research investigation to determine the level of consistency of the results.

A and **B** are incorrect. The conclusion and generalisation relate to the findings of a research investigation in relation to the sample tested (conclusion) and the broader population (generalisation).

C is incorrect. Validity refers to the extent to which a research investigation measured what it intended to measure.

Question 19 C

C is correct. The reception of neural information occurs at the receptor sites, which are located on the dendrites of a post-synaptic cell.

A is incorrect. The axon conducts a neural impulse from the cell body to the axon terminal.

B is incorrect. The axon terminal releases a stored neurotransmitter into the synapse.

D is incorrect. The myelin sheath surrounds the axon and enhances the transmission of the neural impulse.

Question 20 A

A is correct. The transmission of a neurotransmitter can best be described as occurring across the synapse between a pre-synaptic cell and a post-synaptic cell.

B, **C** and **D** are incorrect. A neurotransmitter does not travel through a neuron itself (neither the dendrite nor the axon), it is stored in the axon terminal and then released as a result of a neural impulse that travels along an axon. After the neurotransmitter binds with a receptor located on the dendrite of a post-synaptic cell, the cell body fires a neural impulse if the cell reaches its action potential threshold.

Question 21 C

Repeated activation of the neural connection between a pre-synaptic neuron and a post-synaptic neuron will strengthen through high-frequency activation of the synapse. Through repeated low-frequency activation of the pre-synaptic and post-synaptic cells, the strength of the neural connection will weaken over time through long-term depression.

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Question 22 C

C is correct. In terms of neural plasticity, the strengthening of neural connections is caused by the repeated co-activation of the pre-synaptic and post-synaptic cells, which become wired together through the long-term potentiation process.

A, **B** and **D** are incorrect. The size, age and number of the neurons that are connected are not relevant to the long-term potentiation process.

Question 23 A

A is correct. In terms of a lock-and-key process of neural transmission across a synapse, the neurotransmitters ('keys') are stored in the axon terminals.

B is incorrect. The myelin sheath surrounds the axon and enhances the electrical impulse that travels along an axon towards the axon terminal.

C is incorrect. The neurotransmitter travels across a synapse after its release from an axon terminal.

D is incorrect. The neurotransmitter binds with a matching receptor ('lock') on a dendrite of a post-synaptic cell.

Question 24 B

B is correct. Both long-term potentiation and long-term depression involve glutamate. In long-term potentiation, the repeated release and uptake of glutamate strengthens the synaptic connections that are responsible for a memory trace. In long-term depression, weakened input from pre-synaptic neurons results in a reduced amount of glutamate being repeatedly released, which, over time, reduces the strength of the synaptic connections responsible for a memory trace.

A is incorrect. Both long-term potentiation and long-term depression have long-lasting effects.

C and **D** are incorrect. Long-term depression would be more likely to accompany the pruning of dendrites and a reduction in the number of neurotransmitters released from a pre-synaptic cell.

Question 25 B

B is correct. In terms of the reproduction stage of observational learning, reproduction occurs when the observer has the physical or mental ability to copy the modelled behaviour.

A is incorrect. This option refers to the earlier retention stage of observational learning.

C is incorrect. Observational learning occurs prior to the replication of behaviour.

D is incorrect. This option refers to the earlier attention stage of observational learning.

Question 26 D

D is correct. Adrenaline plays a key role in the formation of a conditioned emotional response by triggering the release of noradrenaline, which activates the amygdala (the fear centre of the brain).

A and **C** are incorrect. Glutamate plays a key role in the formation of sensory memory and procedural memory.

B is incorrect. Acetylcholine plays a key role the formation of short-term memory.

Question 27 B

B is correct and **A** is incorrect. The participants were allocated to group 1 or group 2 non-randomly as they did not have an equal chance of being allocated to either group given the use of family names as a selector.

C and **D** are incorrect. These options are both sampling methods used to select participants, which takes place prior to the allocation of participants.

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Question 28 C

C is correct. Group 2 would have been more likely to use elaborative rehearsal by linking the words to their existing memory of the alphabet, which would have more effectively organised them in long-term memory than group 1, who were exposed to the words in unrelated pairs.

A and **B** are incorrect. Group 1 would have been more likely to use maintenance rehearsal, but they were not forced to do so by the experimental conditions imposed by the experimenters.

D is incorrect. While the 12 words that the participants were exposed to did exceed the capacity of short-term memory, this would not have prevented rehearsal of some of the words from either the start or the end of the list.

Question 29 B

B is correct. In terms of the serial position effect, group 1 would be expected to demonstrate a primacy effect due to the additional attention and rehearsal of the earlier words compared to the middle or later words. Thus, the first four words would be more likely to be stored in long-term memory. The use of serial recall would weaken a recency effect because the participants were required to recall the words in order, which would have eliminated the rehearsal of words later in the list that had remained in short-term memory during the 20 seconds of rehearsal time.

A is incorrect. The middle words would have received less attention and rehearsal and thus would not have been likely to be stored in long-term memory for subsequent retrieval.

C and **D** are incorrect. The recency effect would have been weakened due to the use of serial recall.

Question 30 A

A is correct. The participants recalled the words from memory as they had no cues to assist in the retrieval process.

B is incorrect. No alternatives were provided during the retrieval process.

C is incorrect. Reconstruction involves the retrieval of stored memories in long-term memory that then need to be reconstructed back into short-term memory from potentially multiple sources.

D is incorrect. The participants were not exposed to previously learned information during the testing process.

Question 31 C

C is correct. The variable manipulated by the experimenters was whether or not the words were presented in alphabetical pairs that ended with the same letter in order to determine a cause-and-effect relationship between the number of words that were recalled from memory.

A is incorrect. This option gives the dependent variable.

B is incorrect. The serial position effect is a phenomenon that can be measured and was not manipulated by the experimenters in the study.

D is incorrect. The use of family names was the method used to allocate the participants to the two groups.

Question 32 B

B is correct. The rehearsal of the words during the 20 seconds of rehearsal time would have been actively processed in short-term memory.

A and **D** are incorrect. The words would have first been registered in echoic memory (a sensory store) and then once attended to would have been passed on to short-term memory for processing.

C is incorrect. Some of the words may have been encoded into long-term memory if adequately rehearsed in short-term memory.

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Question 33 D

D is correct. The research investigation was an experiment as evidenced by the manipulation of an independent variable (the use of alphabetical word pairs with the same last letter versus unrelated word pairs) to test the effect on a dependent variable (the capacity of memory).

A is incorrect. Self-reports are statements that a participant provides in response to questions from a researcher.

B is incorrect. A case study is an in-depth study of an individual or group; the research was not in-depth for this experiment.

C is incorrect. An observational study occurs when the behaviour of participants is observed in a naturalistic setting; the context of this experiment would not be deemed naturalistic.

Question 34 B

B is correct and **A** is incorrect. The reconstruction of memory involves retrieving material from various sources in long-term memory and the reconstruction of the memory back into the active short-term memory.

C and **D** are incorrect. Sensory memory is not involved in the reconstruction of memory.

Question 35 C

C is correct. According to Loftus, a leading question can impact the fallibility of a memory by creating source confusion when the memory of an event is reconstructed from potentially multiple sources during the retrieval process. If one of these sources contains misinformation from a leading question, then this can result in the reconstruction of a false memory.

A and **D** are incorrect. A leading question would be asked following the initial rehearsal of an event that would occur in short-term memory.

B is incorrect. Source confusion occurs during the retrieval process.

Question 36 C

C is correct. During the conditioning phase of the 'Little Albert' experiment, a loud sound was produced repeatedly just as Little Albert's hand touched the white rat. This was done so that an association was made between the neutral stimulus of touching the white rat with the unconditioned stimulus of the loud sound.

A, **B** and **D** are incorrect. The key principles of classical conditioning require the neutral stimulus to be presented first and shortly followed by the unconditioned stimulus in order to develop a clear association between the two stimuli.

Question 37 D

D is correct. The students would be more likely to pay attention to an instructor who demonstrate poses that they are capable of in terms of their strength and flexibility.

A, **B** and **C** are incorrect. The opposite is generally true for all these options.

Question 38 B

B is correct. The cerebellum plays a key role in the consolidation of procedural memories, in this case, muscle memory of various Pilates poses.

A is incorrect. The amygdala is involved in the formation of fear-based or emotional memories, which is not the case in this scenario.

C and **D** are incorrect. These structures are involved in explicit memory, not an implicit procedural memory as is the case in this scenario.

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Question 39 C

C is correct. The inability of some of the students to replicate the Pilates poses can be best attributed to failure to observe the demonstration, which would have prevented retention and consequential storage of the details of the demonstration in long-term memory.

A is incorrect. The context-dependent cues of the class would still have been present 10 minutes after the demonstration.

B is incorrect. The capacity of short-term memory would not have affected a student's ability to store abstract details of the class.

D is incorrect. Anterograde amnesia relates to memory impairment due to damage to the hippocampus, which is not applicable in this case.

Question 40 B

B is correct. The retrieval of details of the Pilates class is an example of autobiographical memory that relates to time and place, which is an episodic memory.

A is incorrect. A procedural memory is implicit, which is not the case here as the student is consciously retrieving the memory.

C is incorrect. A semantic memory is shared knowledge of facts as opposed to an autobiographical memory.

D is incorrect. A flashbulb memory relates to a traumatic event, which is not the case in this scenario.

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SECTION B

Question 1 (8 marks)

a. Selye's General Adaptation Syndrome is a biological model that explores the manner in which the body adapts to the demands of sustained stress 1 mark
and the consequential relationship between stress and illness. 1 mark

b. The research team could contact individuals who have experienced a stress-related illness and then explore the indicators of the body's response to a life event, catastrophe or other form of stress 1 mark
to gain in-depth knowledge of how their bodies have adapted over time
by determining when the individuals reached the respective stages of Selye's General Adaptation Syndrome. 1 mark

c. *For example, any one of:*

- No-harm principle: The research team would need to expose the participants to a series of stressors to determine how their bodies would adapt to the demands of stress. This would involve a form of harm, which is potentially in breach of this principle.
- Beneficence: The research team may have difficulty convincing an ethics committee that the risk of causing lasting harm to participants by exposing them to a series of stressors (in a laboratory setting) would outweigh the benefits of the experiment findings.

2 marks
1 mark for identifying an appropriate ethical consideration.
1 mark for a congruent explanation that relates to human participants.

d. If an individual is in the resistance stage, characterised by a high level of cortisol that mobilises the body to sustain a high level of resistance to a stressor, and the stressor is not resolved during this stage, 1 mark
the individual may move to the exhaustion stage. The exhaustion stage is characterised by the depletion of the immune system and makes the individual vulnerable to developing major illness. 1 mark

Question 2 (6 marks)

a. Mahmut experienced a positive psychological response to the news of being voted school captain. 1 mark
This activated his sympathetic nervous system, 1 mark
which has an arousing effect on the body. 1 mark

b. The school captaincy is a major source of stress 1 mark
and Mahmut will be required to adapt his lifestyle in order to best cope with the stressor. 1 mark

For example, Mahmut may need to regularly liaise with a school mentor to discuss how he is managing both the school captain role and his school and personal life balance. 1 mark

Note: Responses may refer to other appropriate examples.

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Question 3 (6 marks)

a. The sensory function conveys afferent signals towards Cheng Lin's brain in terms of the tension of her stretched muscles for various yoga poses. 1 mark

The motor function receives efferent signals sent from Cheng Lin's brain to her skeletal muscles, enabling her to hold difficult yoga poses. 1 mark

b. The sympathetic nervous system will become dominant during the spin class 1 mark
and will increase arousal levels to enable Cheng Lin's muscles, organs and glands to increase their activity in order for her body to adapt to the demands of the exercise. 1 mark

The parasympathetic nervous system will become the dominant division of the autonomic nervous system after the spin class 1 mark
in order to counteract the effects of the sympathetic nervous system activity when Cheng Lin exercised and to help restore her body back to a state of calm. 1 mark

Question 4 (10 marks)

a. Alphonso has formed a highly vivid autobiographical memory that relates to the time and place in which the collision occurred. 1 mark
The memory is consciously retrieved from long-term memory back into short-term memory via a context cue, 1 mark
such as viewing his neighbour's brick fence where the collision occurred, which was an environmental cue that was present during the encoding of the incident. 1 mark

When given the same cue of exposure to the brick fence, a highly vivid recall of details of the incident will be triggered back into Alphonso's conscious awareness. 1 mark

Note: Responses may refer to other appropriate context cues.

b. Alphonso may have been exposed to misinformation from leading questions when first interviewed at the scene of the incident. 1 mark

He may have been asked about observing the loss of control of the car just prior to the car colliding with the wall, which was not part of the original source of the memory but may have become an alternative source that featured in the reconstruction. 1 mark

This may have created source confusion when reconstructing his memory back into his short-term memory one week later. 1 mark

c. The driver may have experienced temporary damage to the hippocampus due to trauma to the brain caused by the incident. 1 mark

Thus, they may have difficulty encoding explicit details of the incident, 1 mark
such as being removed from the wreckage by emergency services. 1 mark

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Question 5 (10 marks)

a. **Phase one**

Before conditioning: The neutral stimulus of approaching a penguin toy triggered no response. 1 mark
The unconditioned stimulus of the high-pitched alarm caused Tara to become frightened (unconditioned response). 1 mark

During conditioning: Whenever Tara approached a penguin toy (neutral stimulus), she was repeatedly exposed to a high-pitched alarm (unconditioned stimulus), 1 mark
which sounded immediately following the sighting of the penguin toy. This caused Tara to become frightened (unconditioned response). 1 mark

After conditioning: The sight of a penguin toy (conditioned stimulus) and, by extension, a real penguin, would cause Tara to retreat to her kennel (conditioned response). 1 mark

Phase two

When Tara saw a penguin toy (antecedent), 1 mark
this triggered her moving away from the penguin toy (behaviour) 1 mark
to obtain positive reinforcement from Jorja in the form of a dog treat (consequence), which will result in the repetition of this type of avoidant behaviour. 1 mark

b. *For example:*

Using a negative or fear-evoking stimuli will result in a more rapid form of conditioning, compared to operant conditioning as it requires fewer trials. 1 mark

Using a negative or fear-evoking stimuli will result in a more powerful form of conditioning that it is less resistant to extinction than operantly conditioned avoidance due to the activation of the amygdala, which creates a primal, fear-evoking response. 1 mark

Note: Responses may refer to other appropriate advantages.

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Question 6 (10 marks)

Effects of damage to the myelin sheath in the interneurons in the spinal cord of people living with multiple sclerosis (MS)

The myelin sheath surrounds, insulates and protects the axon, enhancing transmission of action potentials from the cell body (soma) to the axon terminals. Thus, damage to the myelin shealth will increase the vulnerability of interneurons in the spinal cord and interfere with their ability to conduct both afferent and efferent signals to and from the peripheral nervous system and the brain. Damage to the myelin sheath could diminish the ability of people living with multiple sclerosis to consciously process sensory information externally (via the somatic nervous system) in the form of diminished signals consisting of light, tactile information, sound, taste and smell. Damage to the myelin sheath could also diminish the ability to process internal stimuli in the form of feedback from the endocrine, respiratory, circulatory, digestive and immune systems (via the autonomic nervous system). Furthermore, damage to the myelin sheath could diminish and impair signalling conveyed to effectors such as skeletal muscles regulated by the somatic nervous system, which will affect voluntary movement and motor functioning as well as efferent signals sent to vital organ such as the heart, lungs and liver. This would have significant detrimental, and potentially fatal, effects on physical health.

Research hypothesis

For patients who have been diagnosed with spinal effects of MS, the regular use of the drug will cause an increased density of the myelin shealth in the interneurons of the spinal cord when compared to the density of the myelin sheath prior to the treatment.

Evaluation of methodology

The use of a convenience sample via the recruitment of volunteers is the most practical and efficient method to access participants given the nature of the research investigation, particularly given that MS remains a largely unexplained condition. The limitation of using a convenience sample, particularly given that there are only 20 participants, is that the sample will not be an accurate representation of those living with MS. This is due to participants most likely living in Melbourne only, where Emu University is located.

The use of the repeated-measures design is most applicable to this research investigation given it is impractical to have a parallel control group. There is no placebo testing in this investigation, thus the effects of the drugs can instead be compared in a pre-treatment versus post-treatment comparison. Due to the 12-month duration of the investigation, there is potential for order effects to have a confounding effect (specifically, a history effect) on the results. This is because a participant's condition may naturally decline over this period due to the effects of ageing, thus somewhat negating the effects of the drug.

The method of data collection is an objective measure of the change affected by the drug and thus provides both a valid and reliable means of determining how effectively the drug can address a decline in myelin sheath. The only weakness of this approach is that it does not provide any additional insight into other factors that may affect the myelin sheath such as diet and levels of physical activity.

10 marks

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Marking guide

Very high (9–10 marks)

The student has provided a highly detailed response, and includes:

- an accurate and detailed explanation of the effects of damage to the myelin sheath and the consequential effect on the spinal cord and motor functioning
- a suitable research hypothesis
- a thorough evaluation of the researcher's methodology, in terms of sampling, research design and method of data collection
- demonstration of higher order thinking skills in their approach and effective addressing of relevant methodology that is part of the course research skills.

High (7–8 marks)

The student has provided a detailed response, and includes:

- an accurate explanation of the effects of damage to the myelin sheath and the consequential effect on the spinal cords and motor functioning
- a suitable research hypothesis
- an evaluation of the researcher's methodology, in terms of sampling, research design and method of data collection
- demonstration of higher order thinking skills in their approach and effective addressing of relevant methodology that is part of the course research skills.

Medium (5–6 marks)

The student has provided a limited response, and includes:

- an explanation of the effects of damage to the myelin sheath and the consequential effect on the spinal cords and motor functioning
- a suitable research hypothesis
- an evaluation of the researcher's methodology, in terms of sampling, research design and method of data collection
- discussion of relevant methodology that is part of the course research skills.

Low (3–4 marks)

The student has provided a limited response, and includes:

- a limited explanation of the effects of damage to the myelin sheath and the consequential effect on the spinal cords and motor functioning
- a research hypothesis
- an evaluation of the researcher's methodology, in terms of either sampling, research design or method of data collection
- limited discussion of relevant methodology that is part of the course research skills.

Very low (0–2 marks)

The student has provided a limited response, and includes only one or none of:

- a limited explanation of the effects of damage to the myelin sheath and the consequential effect on the spinal cords and motor functioning
- a research hypothesis
- some evaluation of the researcher's methodology
- limited discussion of relevant methodology that is part of the course research skills.

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