

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

Question 1 B

B is correct. The peripheral and central nervous systems are the major divisions of the nervous system. The peripheral nervous system is responsible for detecting and conveying sensory information to the central nervous system, which coordinates a response to sensory stimuli.

A is incorrect. The brain and spinal cord are involved in a response to sensory stimuli; however, they are the components of the central nervous system, not major divisions.

C is incorrect. The somatic and autonomic nervous systems are subdivisions of the peripheral nervous system, which is a major division of the nervous system.

D is incorrect. The sympathetic and parasympathetic nervous systems are subdivisions of the autonomic nervous system.

Question 2 B

B is correct and **D** is incorrect. The sensory receptors in Vijay's skin detect the thorn. His peripheral nervous system then sends a sensory message to his spinal cord in his central nervous system, which triggers the reflexive movement. A sensory message is then conveyed to his brain via the spinal cord, which triggers his awareness of the pain from the thorn.

A is incorrect. Awareness comes after the initial detection of the thorn (via the peripheral nervous system).

C is incorrect. Awareness occurs once the brain, which is part of the central nervous system, has processed sensory stimuli from the thorn.

Question 3 B

B is correct. Mauve's digestive processes would have been suppressed, as the resources that break down food would have been diverted elsewhere to maximise her body's survival prospects.

A is incorrect. Mauve's breathing rate would have increased to enable more oxygen to be inhaled and transferred to her body's cells during her heightened response.

C is incorrect. Mauve's adrenal gland would have increased the release of adrenalin to help fuel Mauve's body's response to the threat of the bees.

D is incorrect. Mauve's liver would have increased the production of glucose to provide essential energy to key cells involved in Mauve's body's response to the threat of the bees.

Question 4 A

A is correct. An inhibitory neurotransmitter released from a pre-synaptic axon terminal travels across a synapse and binds with a receptor that has a complementary shape. This makes the post-synaptic neuron less likely to fire.

B is incorrect. An inhibitory neurotransmitter is equally likely to bind with a receptor on a post-synaptic neuron as an excitatory neurotransmitter. The inhibitory effects of the neurotransmitter will have a consequential effect on the excitability of the post-synaptic neuron.

C and **D** are incorrect. The inhibitory effect of a neurotransmitter affects a post-synaptic neuron; it does not affect the release of the neurotransmitter from the pre-synaptic axon terminal.

Question 5 B

B is correct. The scores for the two conditions (silent versus background music) were calculated to enable a within subjects comparison.

A is incorrect. A mixed design involves a mixture of the within subjects and between subjects designs; there was no application of a between subjects form of testing in this study.

C is incorrect. A between subjects design is employed when separate groups are exposed to the same experimental conditions, which did not occur in this study.

D is incorrect. A correlational study measures the strength of the relationship between two variables, which did not occur in this study.

Question 6 A

A is correct. The mean is a calculation of the average of all the scores from each condition and thus provides the most useful measure of central tendency.

B is incorrect. The mode is the most frequently occurring score in the sample, so it only represents some of the scores.

C is incorrect. The median is a measure of the middle value of all the scores in the sample, so it only represents one score.

D is incorrect. The standard deviation is a measure of variability, not central tendency.

Question 7 B

B is correct. The standardising of the time period used for encoding was a controlled variable; it was kept the same for both conditions to ensure the validity of the results.

A is incorrect. The dependent variable was the mean number of words recalled.

C is incorrect. The independent variable was the silent versus background music conditions.

D is incorrect. A confounding variable is a variable other than the independent variable that systematically affects the dependent variable.

Question 8 C

C is correct. Due to a lack of continued rehearsal and thus an absence of long-term potentiation, the words would have rapidly faded from the students' short-term memories following the initial tests.

A is incorrect. Long-term depression applies to material that has firstly been encoded via long-term potentiation and then is gradually forgotten over time, which is not the case in this scenario.

B is incorrect. Reinforcement is the strengthening of behaviour, not the encoding and storage of material.

D is incorrect. Long-term memory has an unlimited duration.

Question 9 D

D is correct. The criticism relates to external validity because the same experiment may generate different results if a different sample were tested, such as a sample of students from metropolitan areas.

A is incorrect. Accuracy refers to how closely the true values are to the values that are generated in a study.

B is incorrect. True value refers to the value or range of values that would be generated if perfect measuring tools were used in an experiment.

C is incorrect. Internal validity refers to whether an investigation accurately measures what it intends to measure for a sample.

Question 10 B

B is correct. Serotonin can act as a neuromodulator that enables a person to delay their need for instant gratification and thus evaluate the potential outcomes of an impulsive thought, thereby inhibiting impulsive and aggressive behaviour.

A and **C** are incorrect. Gamma-amino butyric acid (GABA) and glutamate are neurotransmitters that have more specific and rapid effects on targeted neurons, compared to the more lingering and widespread effects of neuromodulators such as serotonin.

D is incorrect. Dopamine is a neuromodulator but can also act as a neurotransmitter that plays a key role in the reward pathway; however, it is serotonin that enables the brain to exercise restraint when exposed to a potential reward.

Question 11 C

C is correct. Val's response was a short-term (acute) response that was triggered by her parasympathetic nervous system, as her body briefly acted as if it were injured.

A is incorrect. The sympathetic nervous system is activated when a fight or flight response is triggered, which rapidly increases arousal in response to a threat. An example of this would be leaping out of the way of a vehicle.

B and **D** are incorrect. A chronic response is a long-term response that triggers a sustained level of arousal in response to an ongoing stressor.

Question 12 B

B is correct and **C** is incorrect. In response to a stressor, high levels of cortisol are triggered by the brain, which stimulates changes to the microbiota in the gut. This can then trigger sustained feelings of stress in the brain.

A and **D** are incorrect. Sustained feelings of stress are triggered by the biological changes that precede them.

Question 13 D

D is correct. Once Vindu successfully resolved the stressor during the resistance stage, his parasympathetic nervous system would have returned his physiological systems back to a normal optimum level.

A is incorrect. Counter shock occurs when first responding to a threat.

B is incorrect. Vindu sustained a high level of resistance throughout the entirety of his examination period and thus did not enter the exhaustion stage.

C is incorrect. A freeze-like response occurs during the shock phase of the alarm reaction stage, just prior to first gaining awareness of a stressor.

Question 14 C

C is correct. Merna has appraised her promotion as a significant challenge, which could be in the form of professional growth and the development of leadership skills. This is shown by her acknowledgement of the sustained level of energy required to cope and grow from the stressor.

A is incorrect. In her appraisal of the promotion, Merna has not identified any future harm, such as the potential negative impact on her health due to the effects of the stress of the additional responsibility that comes with a promotion.

B and **D** are incorrect. Irrelevant appraisals or benign-positive appraisals are short-term responses that do not require a sustained level of energy to cope with a stressor.

Question 15 D

D is correct. Merna has evaluated that she has the resources to cope with the news of the promotion, which occurs after the secondary appraisal, and she is directing her energy towards resolving her concerns regarding public speaking.

A and **B** are incorrect. The coping strategy used is determined after the evaluation of coping resources, which occurs during the secondary appraisal.

C is incorrect. An avoidant coping strategy would be evident if Merna was directing her energy away from resolving the stressor of her concerns regarding public speaking.

Question 16 B

B is correct. The sight of the porridge was initially a neutral stimulus and after the four pairings with the coconut-flavoured yoghurt, it became a conditioned stimulus.

A, **C** and **D** are incorrect. The ingredients in the coconut-flavoured yoghurt was the unconditioned stimulus, which naturally triggered the nausea (unconditioned response).

Question 17 D

D is correct and **C** is incorrect. The nausea (unconditioned response) was naturally triggered by the ingredients in the coconut-flavoured yoghurt (unconditioned stimulus).

A and **B** are incorrect. The sight of the porridge is both the neutral and conditioned stimulus.

Question 18 B

B is correct. Lizzie's behaviour of not eating breakfast was weakened (punished) due to the removal or loss of energy (negative).

A is incorrect. No undesirable stimulus, such as pain, was added.

C and **D** are incorrect. Reinforcement occurs when behaviour is strengthened; in this scenario, the behaviour of not eating breakfast was weakened.

Question 19 D

D is correct. Since Mavis did not observe the consequence of not eating breakfast (reinforcement), she failed to learn about the negative effect of not eating breakfast.

A is incorrect. Mavis attended to (observed) Lizzie's behaviour of not eating breakfast.

B incorrect. Lizzie's behaviour of not eating breakfast is relatively simple; thus, it can be assumed that Mavis would have had little difficulty remembering her sister's behaviour.

C is incorrect. Mavis was capable of eating breakfast; this did not affect her failure to learn the importance of eating breakfast.

Question 20 C

C is correct. Niko's investigation is an example of a case study, as he is able to conduct an in-depth analysis of the origin of Lizzie's conditioned dislike of porridge without the manipulation of variables.

A is incorrect. In modelling, a physical or conceptual model is constructed.

B is incorrect. A simulation uses a model to study behaviour under controlled conditions; no such control was undertaken in this scenario.

D is incorrect. A controlled experiment involves the manipulation and measurement of a variable under controlled conditions; Lizzie's conditioning occurred under natural circumstances.

Question 21 D

D is correct. Explicit memories are stored in long-term memory and retrieved into short-term memory for use via a cue.

A is incorrect. Explicit memory is not one of the memory stores; it is a type of memory that needs to be consciously recalled.

B is incorrect. Sensory memory is the entry point for new information; information is only briefly held there without conscious awareness.

C is incorrect. Long-term memory is a passive memory store. If information is required for conscious awareness, a cue enables the memory trace to be activated in long-term memory for retrieval back into short-term memory for use.

Question 22 A

A is correct. Yavi's proposed research is an example of fieldwork. In this case, the research involves the observation of patients to determine a correlation between the level of memory decline in patients diagnosed with Alzheimer's disease and duration since the patients' diagnosis, without any manipulation or control of variables.

B is incorrect. In modelling, a physical or conceptual model is constructed; for example, modelling could involve a conceptual model that represents the pattern of brain shrinkage resulting from Alzheimer's disease.

C is incorrect. A simulation uses a model to study behaviour under controlled conditions; no such control was included in Yavi's proposed research in this scenario.

D is incorrect. A controlled experiment involves the manipulation of a variable (independent) to test its effect on another variable (dependent); there is no independent variable in this scenario.

Question 23 D

D is correct. Due to the cognitive impairment of an individual with Alzheimer's disease, it is uncertain whether they would have the capacity to understand the nature of the research proposal along with their rights and thus provide informed consent.

A is incorrect. Yavi could easily alter any specific details, such as names or addresses, about the subjects in her research to protect their identity and thus maintain confidentiality.

B is incorrect. Yavi does not require the use of deception in her research as she is not conducting an experiment in which any variables are being manipulated.

C is incorrect. Yavi could easily satisfy the concept of non-maleficence due to the nature of the research methods (interviews and brain-imaging techniques), which present a relatively low risk of harm to the participants.

Question 24 C

C is correct. The hippocampus is the part of the brain that is responsible for the consolidation of explicit (autobiographical) memories and is the first area of the brain affected by Alzheimer's disease.

A is incorrect. The amygdala is responsible for mediating the effects of fear and emotion. This part of the brain is affected later in the course of the disease.

B and **D** are incorrect. The cerebellum and basal ganglia are involved in implicit memory. These parts of the brain are affected later in the course of the disease.

Question 25 C

C is correct. Episodic memories are autobiographical in nature. People living with Alzheimer's disease typically have difficulty encoding and consequently storing events that are episodic in nature, such as a meeting with a researcher.

A is incorrect. Implicit memories are memories that are not consciously recalled, for example, memorising how to hold a pen. These memories remain relatively unaffected during the early stages of Alzheimer's disease.

B is incorrect. Sensory memory is the entry point for material registered by sensory stores. This type of memory is relatively unaffected by Alzheimer's disease.

D is incorrect. A conditioned response is behavioural response to a conditioned stimulus and is largely unaffected during the early stages of Alzheimer's disease.

Question 26 D

D is correct. Method of loci requires an individual to use visualisation to encode an item with an imagined location and then, during the retrieval process, going through a mental journey of the location to cue the item back into the memory.

A and **B** are incorrect. Acrostics and acronyms use the first letters in words to represent items that are to be remembered. These letters then represent cues to assist the retrieval process. Thus, visualisation is not required during these processes.

C is incorrect. Songlines are sung narratives used by Australia's First Nations peoples and are part of oral tradition.

Question 27 B

B is correct. The cerebellum plays a key role in posture and balance; it would have enabled Gabrielle to implicitly hold her body position on the road bike.

A is incorrect. The amygdala plays a key role in mediating the effects of fear and emotion, such as that experienced during a near-collision with a car.

C is incorrect. The hippocampus plays a key role in the consolidation of explicit material, such as the dimensions of the bike.

D is incorrect. The basal ganglia plays a key role in the consolidation of habitual movements, such as the mechanics of the pedalling action when riding a bike.

Question 28 D

D is correct. Due to the limited capacity and duration of Max's short-term memory, he would have failed to adequately rehearse some of the information and thus would not have been able to strengthen some of the abstract details of the extension plans.

A is incorrect. Glutamate is the key neurotransmitter involved in memory; however, Max's inability to remember the details of the extension plans would not be attributed to limitations of glutamate, but rather the failure to adequately rehearse information.

B is incorrect. Sensory memory has an unlimited capacity. Some of the details of the extension would have rapidly faded from sensory memory if not attended to.

C is incorrect. Long-term memory has an unlimited capacity. Due to limitations of short-term memory and a lack of rehearsal, not all the information that entered Max's short-term memory would have been successfully encoded in his long-term memory.

Question 29 D

D is correct. Max would have retrieved details of facts and figures – such as dimensions of the extension, which are semantic memories – as well autobiographical details pertaining to the time and place of the conversation, which are episodic memories. The details of the semantic memories and episodic memories were retrieved back into short-term memory to provide a coherent account of the conversation about the extension plans.

A is incorrect. Implicit memories are not consciously retrieved; examples include procedural memory and habits.

B and **C** are incorrect. Max needed to combine both semantic and episodic memories to provide an autobiographical retrieval of the conversation.

Question 30 C

C is correct. A person with aphantasia is unable to visualise a planned future event. If Max was suffering from aphantasia, he would be unable to visualise what the backyard would look like with the extension of the house.

A, **B** and **D** are incorrect. Aphantasia does not affect the ability to process, encode or store new information into memory.

SECTION B**Question 1** (9 marks)

- a.** dopamine 1 mark
- Dopamine was acting as a neuromodulator by increasing the responsiveness of neurons to neurotransmitters in the reward pathways of Kip's brain. 1 mark
- Consequently, when Kip woke up and was exposed to either the smell, sight or thought of coffee, more dopamine was released, which modulated the activity of the decision-making parts of his brain, prompting his behaviour to consume coffee. 1 mark
- b.** operant conditioning 1 mark
- Kip's behaviour is acting on the environment, which can be explained through the three-phase process of: antecedent, behaviour and consequence. 1 mark
- In this case, the antecedent was waking up in the morning, the behaviour was drinking coffee, and the consequence was the enjoyment of taste/energised feeling. 1 mark
- c.** observational learning 1 mark
- By observing the behaviour of his family and noting the consequences, before mimicking the behaviour years later, Kip learned that coffee is a drink that is consumed in the morning. In this case, Kip observed his family drinking coffee and noted that this may have made them happy/energised; he then replicated this behaviour once he started high school.

2 marks

*1 mark for demonstrating an understanding of observational learning.**1 mark for linking to the scenario.*

Question 2 (9 marks)

- a.** As a result of the repetition of the changes to her lead foot on the hop and step phases, long-term depression occurred over time, which weakened the neural connections responsible for the feet sequencing. 1 mark
- The dendritic spines and synaptic connections were consequently pruned for Judy's left-foot hop and right-foot step technique due to synaptic plasticity. 1 mark
- The rerouting of neural pathways in the motor cortex enabled an implicit memory to be formed for a right-foot hop and a left-foot step technique. 1 mark
- Thus, through the repeated high-frequency stimulation of the neural pathways responsible for the right-foot hop and left-foot step technique, the pathways strengthened over time. 1 mark
- Note: Responses must refer to the scenario to obtain full marks. Award a maximum of 2 marks to responses that do not refer to the scenario.*
- b.** cerebellum 1 mark
- The cerebellum played a key role in implicitly remembering posture and balance during the hop/step/jump sequence. This allowed Judy to perform the skill without conscious awareness. 1 mark
- basal ganglia 1 mark
- The basal ganglia was involved in memorising the necessary adjustments to the hop/step/jump sequence that enabled Judy to achieve a new personal best. 1 mark

Question 3 (7 marks)

- a.** **Narrative:** uses verbal processes to pass on information or customs to people. 1 mark
- For example:* Examples include songlines or yarning. 1 mark
- Visualisation:** uses mental imagery to represent information. 1 mark
- For example:* Examples include learning maps, which can be used to map out a learning process; symbols, images and art. 1 mark
- Note: Accept other appropriate examples. Responses must include at least one example of each of narrative and visualisation to obtain full marks.*
- b.** Australia's First Nations peoples would associate animals, plants and goods with landmarks along a route and incorporate these into a songline. 1 mark
- Along the route, song, dance or ceremony is performed, which results in a deeper encoding of the material to be remembered. 1 mark
- The items that are incorporated in the songlines act as retrieval cues to help bring the memory of the route back into conscious awareness. 1 mark

Question 4 (10 marks)

- a.** A correlational study investigates the direction and strength of the relationship between two variables in a natural setting; these variables are not controlled or manipulated. 1 mark
- In this scenario, the relationship between changes in gut microbiota levels and stress levels **OR** the relationship between gut microbiota levels and the incidence of stress-related illnesses were investigated. 1 mark

- b.** When exposed to chronic stress, the brain triggers an increase in cortisol levels. 1 mark
 This could have caused changes in gut microbiota that affect the production of neurotransmitters, 1 mark
 which, in turn, could have altered the concentration of some neurotransmitters in the brains of the participants, thus negatively impacting their wellbeing. 1 mark
- c.** An anecdote is a statement based on observation that cannot be scientifically verified. 1 mark
 For example, even though no data was gathered regarding sleep duration or habits, the researchers may have observed that the participants were less inclined to maintain consistent sleep rituals, which may have contributed to their stress-related illnesses. 1 mark
 An opinion is a judgement that is not based on proof. For example, the researchers may have formed an opinion that work-related stress is more likely than personal stress to trigger a stress-related illness. 1 mark
 The difference between the two is that an anecdote is based on some evidence, but an opinion is not. 1 mark
Note: Accept other appropriate examples. Responses must include at least one example of each of anecdote and opinion to obtain full marks.
- d.** If similar research is conducted that follows a similar methodology using different participants 1 mark
 and the results obtained are consistent with the results from this study, then the results from this study will be more robust. 1 mark

Question 5 (11 marks)

- a.** A primary appraisal is an evaluation of the significance of a threat as irrelevant, benign-positive or stressful. 1 mark
 Whereas a secondary appraisal is an evaluation of coping resources, in which an individual determines whether they have the energy and resources to cope with a stressor. 1 mark
- b.** When an organism is first exposed to a stressor, they enter the alarm reaction stage, where they briefly go into shock as the body acts as if it is injured. They then go into counter shock, where adrenaline is released along with the activation of a flight-or-fight-or-freeze response, which results in a high level of resistance to a stressor. 1 mark
 If the organism fails to resolve the stressor during the alarm reaction stage, they enter a stage of resistance where the body tries to adapt to the demands of the stressor through the release of additional cortisol, which enables the body to sustain a high level of resistance to the stressor. 1 mark
 If the organism fails to resolve the stressor during the resistance stage, they enter the exhaustion stage. Their immune system becomes depleted, which lowers their resistance to the stressor, making them highly vulnerable to developing major illness. 1 mark

c. *For example, any three of:*

- Selye's General Adaptation Syndrome is a biological model, whereas Lazarus and Folkman's Transactional Model of Stress and Coping is a psychological model.
- Selye's model fails to cater for individual differences as it merely explores the physical changes in response to a stressor, whereas Lazarus and Folkman's model caters for individual differences in terms of the potential for subjective and varied appraisals of the significance of stressors and coping resources.
- Selye's model can be more easily tested using animals such as rats, whereas Lazarus and Folkman's model is difficult to test due to the subjective nature of the appraisals.
- The stages of Selye's model are experienced in a singular manner, whereas in Lazarus and Folkman's model, both the primary and secondary appraisals can be concurrently experienced during a reappraisal.

3 marks

d. A random error is unpredictable in terms of how it affects the precision of data; if a random error were introduced, measurements may vary unpredictably and not closely agree with one another.

1 mark

A systematic error affects the accuracy of data, which results in a consistent level of difference between the data generated and the true value.

1 mark

In Selye's experiments, a random error could be attributed to slight variations in how the rats were exposed to stressors, which could have affected the precision of the measurements of cortisol levels in their bloodstreams as a measure of resistance to the stressors. Whereas a systematic error could be due to errors with the instruments used to measure the cortisol levels.

1 mark

Note: Responses must refer to Selye's experiments with rats to obtain full marks.

Question 6 (4 marks)

When Vesna first viewed the acrostic, it entered her sensory memory, which briefly held the text in its raw form, attending to it in order to transfer it to short-term memory.

1 mark

In her short-term memory, Vesna actively processed the acrostic and repeatedly associated it with the planets through rehearsal until it was encoded into long-term memory.

1 mark

In her long-term memory, the acrostic was passively stored for future retrieval back into short-term memory via a cue in which the first letter of each of the words in the acrostic acted as additional cues to help retrieve the names of each of the planets from long-term memory.

1 mark

Question 7 (10 marks)**Cortisol in the stress response and variations in the effectiveness of approach versus avoidant coping strategies in coping with the demands of stress**

The brain triggers the release of cortisol when a person is exposed to chronic stress, enabling the body to sustain a high level of resistance to the stressor. An approach coping strategy directs an individual's energy towards the source of a stressor by defining the problem, then identifying and evaluating various strategies before implementing the strategy that will be more effective in resolving the stressor and, theoretically, reducing the levels of cortisol in the body. On the other hand, an avoidant coping strategy directs an individual's energy away from a stressor by distancing themselves from the stressor, denying the existence of a stressor or venting anger at an alternative source. This may provide a short-term benefit, but an avoidant coping strategy does not resolve a stressor and thus it is expected that the body will sustain a high level of cortisol to maintain its defence against a chronic stressor.

Evaluation of the investigation methodology

The benefits of a controlled experiment that generates primary data are that the researchers can control the sampling technique and choice of investigation design as well the method used to measure the dependent variable (that is, the cortisol levels in the hair sample, which is an objective measure used to measure the effects of stress on the body). The limitation of this methodology is that there is no control over the types of stressors that the participants were exposed to, the subjective severity of the stressors, and the duration of the stressors. Variations in these factors could have resulted in individual differences, which could have acted as a confounding variable in the study.

The use of a between subjects design provided a simple way to compare the participants who were categorised into the approach coping category and the avoidant coping category. This process was non-random as it was based on a somewhat subjective evaluation by the psychologists in terms of the coping strategies. This may have impacted the internal validity of the data generated from the two categories because the categorisation may not have been a successful means of enabling a measurement of what was supposed to be measured, that is, the effectiveness of each type of coping strategy. The external validity of the results may have been impacted as the participants were solely gathered from a social media advertisement; this means the findings may not be applicable to members of the broader community. The generation of primary quantitative data by measuring the cortisol levels in the hair follicles enhances the repeatability of the study as this type of controlled experiment could be replicated with a larger and more diverse group of participants to generate more robust results.

The researchers' anecdote represents a brief personal account of the findings of the study and is therefore not based on scientific evidence. The relatively high incidence of outliers (8 out of 43) suggests that the broader community of psychologists must be wary of such anecdotes when teaching people about the use of approach coping strategies for dealing with stress.

Marking guide*Very high (9–10 marks)*

The student has provided a highly detailed response that includes:

- a detailed and accurate explanation of the role of cortisol in the stress response and of the effectiveness of approach versus avoidant coping strategies
- demonstration of higher order thinking skills in their evaluation of the investigation methodology in terms of the use of a controlled experiment and a between subjects design, the primary quantitative data generated and the limitations of the anecdote.

High (7–8 marks)

The student has provided a detailed response that includes:

- an accurate explanation of the role of cortisol in the stress response and of the effectiveness of approach versus avoidant coping strategies
- an accurate evaluation of the investigation methodology in terms of the use of a controlled experiment and a between subjects design, the primary quantitative data generated and the limitations of the anecdote.

Medium (5–6 marks)

The student has provided an adequate response that includes:

- a basic explanation of the role of cortisol in the stress response and of the effectiveness of approach versus avoidant coping strategies
- a limited evaluation of the investigation methodology in terms of the use of a controlled experiment and a between subjects design, the primary quantitative data generated and the limitations of the anecdote.

Low (3–4 marks)

The student has provided a limited response that includes:

- a limited explanation of the role of cortisol in the stress response and of the effectiveness of approach versus avoidant coping strategies that may contain inaccuracies
- a limited evaluation of the investigation methodology that addresses only some of:
 - the use of a controlled experiment
 - the use of a between subjects design
 - the primary quantitative data generated
 - the limitations of the anecdote.

Very Low (0–2 marks)

The student has provided a limited response that:

- provides a limited explanation of the role of cortisol in the stress response OR a limited explanation of the effectiveness of approach versus avoidant coping strategies that contains inaccuracies
- fails to accurately address the majority of:
 - the use of a controlled experiment
 - the use of a between subjects design
 - the primary quantitative data generated
 - the limitations of the anecdote.