

2024 VCE Psychology external assessment report

General comments

The multiple-choice questions in Section A of the examination were generally handled well by students, particularly those questions that relied on students' understanding of the key knowledge. In preparation for the examination, students are encouraged to focus on analysing and applying information from scenarios and research contexts to respond to questions.

In Section B, students demonstrated their knowledge across questions of varying difficulty levels. Roughly 90% of students attempted the extended-response question.

Some common strengths found in this year's Section B responses included:

- understanding the roles of the vagus nerve in the gut–brain axis
- outlining the role of brain regions in long-term implicit and explicit memory
- discussing the role of episodic and semantic memory when constructing a possible imagined future
- comparing the use of bright light therapy for Delayed Sleep Phase Syndrome and Advanced Sleep Phase Disorder.

Areas for improvement included:

- accurately describing long-term potentiation and the 'retention' stage of observational learning
- identifying the independent variable of an experiment
- applying key science skills, in particular understanding the difference between systematic and random measurement errors
- understanding the [command terms](#) 'evaluate' and 'explain'.

Students are reminded that they need to directly address the specific question being asked – in most cases, a simple definition of the key term(s) from the question will not be sufficient.

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Section A

Question	Correct answer	% A	% B	% C	% D	Comment
1	C	3	27	61	9	
2	B	24	27	38	11	Option B was correct as the human nervous system relies on both cellular (the neuron) and chemical (neurotransmitters, neuromodulators, hormones etc.) components. Option A was incorrect as neurotransmitters are not released from specifically shaped receptor sites. Option C was incorrect as synaptic vesicles are found in the axon terminals of a neuron, not the dendrite.
3	B	7	87	3	3	
4	A	71	8	10	10	The brain coordinates the responses of the autonomic nervous system. The improvement in deception prediction rates achieved by analysing a limited number of facial areas suggests the brain is specific and deliberate with where it coordinates an increase in blood flow; hence Option A was correct.
5	D	6	11	14	69	This question required students to use their knowledge of both Selye's General Adaptation Syndrome (GAS) and the flight-or-fight-or-freeze response. Option D was correct as the counter shock aspect of the alarm reaction stage is the first time the level of resistance is above normal, and this energises the individual to be able to fight or flee the stressor. Option C is incorrect as resistance levels drop below normal in the shock aspect of the alarm reaction stage, and hence the individual is not provided with additional resources.
6	A	65	22	3	10	Option B is incorrect as moving into the 'exhaustion' phase sees a depletion of cortisol rather than adrenaline. While Option D is a valid statement, it does not explain the onset of burnout according to the GAS model, as this model focuses on the biological aspects of stress.
7	D	23	11	16	50	Students needed to look for a reason why the summary of the research articles found common trends. Option D presented the best reason for this, as the biological response to stress is not specific to the type of stressor or the individual, hence the common results found across different studies.
8	B	2	88	5	5	
9	B	9	75	4	12	All four ethical guidelines could be related to the use of this questionnaire; however, only Option B correctly described the guidelines that were listed. Students should be careful not to confuse

Question	Correct answer	% A	% B	% C	% D	Comment
						voluntary participation and withdrawal rights. The data collected from the questionnaire would be primary data if the researchers who collected the data were also the researchers who analysed the data.
10	A	54	13	10	22	Given the description of this specific study, only conclusions 1 and 2 could be drawn at the end of the experiment. The difference between Groups A and B allows for conclusion 1, and the repeated completion of the questionnaire after six months would allow for conclusion 2. The researchers did not categorise the type of goal and separately track its effectiveness. Therefore conclusion 3 cannot be drawn. All participants in Group A received the same duration of coaching session, so conclusion 4 was not possible.
11	C	13	2	84	2	Cognitive behavioural strategies involve identifying and replacing both unhelpful cognition and behaviours. Option A is incorrect as mindfulness meditation would not enhance a person's ability to identify stressors.
12	A	71	4	7	18	
13	C	4	7	55	34	Statement 1 is incorrect as context-specific effectiveness looks at whether there is a match between the stressor and coping strategy, and this does not impact whether the strategy is something that approaches or avoids the stressor. Some avoidance strategies are effective. Statement 2 is correct as the inability to change strategies to better cope and deal with a stressor could prolong the stress response and therefore the release of cortisol. Statement 3 is correct as regardless of the type of stressor, a physiological stress response will be experienced.
14	D	1	2	2	95	
15	C	11	7	55	27	The delay between the unwanted behaviour (not remaining focused during class time) and the after-school detention time (consequence) explains the consequence's ineffectiveness. Option C is correct as the role of a consequence is to weaken the antecedent and behaviour relationship, but if the consequence is presented much later than the behaviour, it will not serve its purpose. Option B is incorrect as it uses classical conditioning language. Option D is incorrect as there is no link between the timing of the antecedent and consequence.
16	C	4	7	81	8	
17	D	62	1	19	19	Option A is incorrect as sleep hygiene influences but does not control quality and quantity of sleep. Option B is incorrect as there is a correlation between shift work and mental wellbeing, with sleep often acting as the mediating factor. Option C is incorrect as it misinterprets what 'sleep hygiene' means. Option D is correct as shift work, especially night shift, increases the presence of zeitgebers (external cues such as darkness) that enhance sleepiness.
18	D	20	1	3	76	

Question	Correct answer	% A	% B	% C	% D	Comment
19	B	23	59	8	9	Option B is correct as visual information is attended to and encoded as sensory memory. The other options do not correctly represent the Atkinson-Shiffrin multi-store model.
20	C	8	6	81	5	
21	B	35	47	14	3	This question focused on the dog owner's (human) memory of the event, which is what was reported in Case Study A. Option B correctly attributed a brain region to its role in memory.
22	A	55	21	5	19	By changing the questions to include greater clarity, a change to the condition has been made. When the results are compared between Study 1 and 2, the reproducibility of the study is being tested. By increasing the number of dog owners, a larger and more representative sample has been used, which improves the validity. Therefore, Option A is correct.
23	D	8	35	14	42	Option B is incorrect due to the use of the word 'proven' and because one case study does not provide enough evidence to support the accuracy of a model. Option D is correct as the context states that the model was devised as a way of summarising past research on the topic.
24	A	85	3	2	10	
25	A	51	9	5	35	Group A would experience the most significant sleep deprivation and therefore the most significant impact on their driving ability in the simulator. Option A is correct due to the affective, behavioural and cognitive effects of sleep deprivation impacting their driving ability. Option D is incorrect as the mothers in Group A, who are sleep deprived, should not be paired with Group B mothers in terms of similarity of results.
26	B	2	72	10	16	Seventeen hours of sustained wakefulness is equivalent to 0.05 blood alcohol level, which is the legal concentration. Twenty hours of sustained wakefulness is therefore equivalent to a higher and illegal blood alcohol concentration. The question required students to focus on 'cognitive' functioning; hence Option B was correct.
27	D	4	21	12	62	The standard deviation is related to the spread of data. Condition B for N3 has little spread of data, while those in Condition A had a greater variation in their time spent (in minutes). Therefore, Option D was correct.
28	C	8	11	54	27	NREM Stage 2 is considered light sleep, and if using the median value for each data set, the median in Condition B of 14 minutes (N2) and 23 minutes (TST) represents a greater proportion than those in Condition A of 12 minutes (N2) and 29 minutes (TST).
29	A	87	5	3	5	
30	B	9	69	14	8	The study has included tests on cognition and self-reports to measure mood. Therefore, the inclusion of behavioural effects would supply a more complete understanding of the impact of snoozing on functioning.

Question	Correct answer	% A	% B	% C	% D	Comment
31	C	2	4	92	4	
32	C	13	51	31	4	Given the trend supplied, the lower temperatures lead to a greater average reduction in sleepiness levels. Therefore, the 20 °C condition – being within the range of temperatures commonly associated with optimal sleep quality – would be expected to result in a higher quality sleep, as seen in Option C. Option B is incorrect as it represents a misunderstanding of the data being collected in this research. A smaller average reduction, as stated in Option B, would not result in greater sleep.
33	C	13	14	44	29	Option C is correct as the constant desire to remove the phobic stimulus is an avoidance behaviour that perpetuates the phobia. Option A is incorrect as negative reinforcement works to perpetuate the phobia through avoidance. Option B is incorrect as avoidance perpetuates the conditioned response of fear. Option D is incorrect as repeated associations between the neutral stimulus and unconditioned stimulus results in the formation of the conditioned response, not its perpetuation.
34	D	11	5	25	59	The conditioned stimulus is the phobic stimulus that is also an antecedent in the operant conditioning model that would trigger the behaviour of avoidance; hence Option D is correct.
35	D	16	16	23	45	The relaxation technique aims to provide calmer responses that can then be linked with the phobic stimulus. The aim of systematic desensitisation is to ensure that the phobic stimulus, as the conditioned stimulus, now elicits a different conditioned response – calmness instead of fear. Therefore, Option D is correct.
36	B	2	88	5	5	
37	C	13	14	61	11	A correlational study involves the planned observation and recording of events and behaviours without manipulation or control, aiming to understand the relationship between variables. Option C is correct as the researchers are not manipulating any variables but looking at how the factors of perceived stress and loneliness relate to mental wellbeing.
38	D	12	7	6	74	
39						As a result of psychometric analysis and review, all four options were accepted as correct.
40	A	72	11	7	11	Option A correctly describes how those with a phobia experience unregulated neural activity in the amygdala due to GABA dysfunction, and how those without a phobia do not experience GABA dysfunction.

Section B

Question 1a.

Marks	0	1	2	3	Average
%	30	17	28	25	1.5

To be awarded full marks, students were required to:

- outline the role of the basal ganglia as it related to the provided scenario – students needed to discuss its role in the procedural (implicit) long-term memory of the teeth brushing action, or its role in habit formation
- outline the role of the neocortex as it related to the provided scenario – students could have discussed its role in storing the procedural long-term memory, its role in coordinating motor movements, or its role in the storage of a semantic (explicit) long-term memory, such as how much toothpaste to use
- discuss the interaction between the two brain regions – students needed to discuss one of the following concepts:
 - neural pathways between the two regions that allow for the storage of the long-term memory of the motor skill
 - how communication between the two regions works to initiate/refine the series of skills involved
 - a specific one-way communication (either neocortex to basal ganglia or basal ganglia to neocortex).

The following is an example of a high-scoring response:

Basal ganglia involves formation and consolidation of implicit memories, including procedural memories. Teeth brushing is a procedural memory as it involves knowing how to carry out a task that involves a motor skill. The basal ganglia creates the memory of how to brush your teeth where it is then stored in the neocortex, which stores both implicit and explicit memories through its connection to the basal ganglia.

Question 1b.

Marks	0	1	2	Average
%	38	44	19	0.8

To be awarded full marks, students needed to provide two valid links between an aspect of the poster and a memory store in the Atkinson-Shiffrin multi-store model. A simple description of the model alone was not sufficient, despite being a common form of answer provided by students.

Possible responses included the following:

- The letters in 'TEETH' act as a retrieval cue to move memory into short-term memory (or from long-term memory).
- Chunking the information with each letter increases the capacity of short-term memory.
- Adding meaning (through elaborative rehearsal) enhances the encoding to long-term memory.
- Seeing the poster on the wall every day acts as constant input for sensory memory.
- As it is a mnemonic, it can be encoded from short-term memory to long-term memory.

Question 1c.

Marks	0	1	2	3	Average
%	21	17	30	31	1.7

Students did well to demonstrate their knowledge of constructing possible imagined futures. To be awarded full marks, students were required to demonstrate knowledge of episodic memory and semantic memory, and discuss one of the following points:

- Active construction is required, using long-term memories to create a future event that is imagined.
- Both types of long-term memory work together / interact to create the imagined future.
- There is a role for autobiographical memory in constructing an imagined future.

High-scoring responses identified relevant parts of the scenario and explained how these related to episodic and semantic memory.

The following is an example of a high-scoring response:

Episodic memory allows the father to recall the enjoyable experience of brushing his teeth as a kid. The semantic memory aspects allow him to picture teaching his son the same brushing technique. By combining the two, he is able to construct a possible imagined future in which he will teach his son how to brush his teeth.

Question 1d.

Marks	0	1	2	Average
%	46	35	19	0.8

Students were required to demonstrate an understanding that long-term potentiation (LTP) is the (long-lasting) strengthening of a synapse due to repeated stimulation. To be awarded full marks, students were also required to demonstrate knowledge of the 'retention' stage of observational learning by explaining that LTP would occur in the neural pathways storing the mental representation or the long-term memory of the teeth brushing action observed.

In discussing the retention stage, the phrases 'mental image' or 'visual representation' cannot be used in place of 'mental representation'. Students are reminded that repeated stimulation of the neural pathway is necessary for LTP to occur.

Question 2a.

Marks	0	1	2	3	4	Average
%	19	23	32	20	6	1.7

To be awarded full marks, students were required to:

- provide two roles of the vagus nerve
- demonstrate a clear understanding of what a case study is
- suggest how a case study could be used to understand the role of the vagus nerve.

Accepted roles of the vagus nerve included:

- afferent (sensory) role – transmits sensory information from the gut to the brain
- efferent (motor) role – transmits motor information from the brain to the gut
- bidirectional communication – enables two-way communication between the brain and the gut
- transmits signals influenced by serotonin in the gut to the brain, indirectly influencing mood, stress responses and cognition (students should note that serotonin does not directly cross the blood–brain barrier, and transmission of messages along the vagus nerve is an electrochemical process).

Common errors included providing a general description of the gut–brain axis (GBA) without specifying a role of the vagus nerve, or offering a case study example related generally to the GBA instead of one focused specifically on the vagus nerve, such as research involving stimulation of, or damage to, the vagus nerve.

Students should refer to page 14 of the study design, which provides an overview of the scientific investigation methodologies relevant for VCE Psychology.

The following is an example of a high-scoring response:

The vagus nerve connects the central nervous system (CNS) to the enteric nervous system (ENS), linking the gut and the brain. It also enables the transmission of neural information from the gut to the brain (80–90% of nerve fibres are responsible for this) and from the brain to the gut (10–20% of nerve fibres are responsible for this).

Case studies enable an in-depth and detailed study of particular concepts which would allow the vagus nerve's role in establishing the bidirectional connection in the gut–brain axis to be understood, possibly by investigating the impact of a damaged vagus nerve on the gut–brain axis functioning.

Question 2b.

Marks	0	1	2	3	Average
%	33	31	22	13	1.2

To be awarded full marks, responses needed to include the following points:

- Adequate nutritional intake supports a balanced microbiota or gut symbiosis.
- There is a biological link between healthy microbiota and brain functioning.
- Improved brain functioning is linked to enhanced/increased mood/wellbeing.

Students needed to explain how adequate nutritional intake acts as a biological protective factor. They were not required to explain how poor nutritional intake can act as a risk factor.

The following is an example of what a high-scoring response may have included:

By having an adequate nutritional intake, individuals obtain the necessary nutrients to support gut health. This support helps increase the diversity of the gut microbiota. Subsequently, the microbiota release chemical agents that stimulate the production of neurotransmitters and neuromodulators, such as GABA and serotonin. These chemicals influence brain function, helping to reduce anxiety, improve mood and enhance overall mental wellbeing.

Question 3

Marks	0	1	2	3	4	5	Average
%	12	12	17	21	25	12	2.7

This question was generally answered well.

To be awarded full marks, students needed to identify both a similarity and a difference in the use of bright light therapy for Delayed Sleep Phase Syndrome (DSPS) and Advanced Sleep Phase Disorder (ASPD), and explain the biological mechanism behind how bright light therapy works.

Possible similarities between the use of bright light therapy for DSPS and ASPD included the following:

- Both are used to reset or regulate the circadian rhythm.
- Both are used to realign or adjust the sleep–wake cycle.
- Both involve similar durations of exposure to bright light therapy.
- Both may involve similar methods of application, such as the distance from the face.

The key difference between the use of bright light therapy for DSPS and ASPD was that DSPS requires morning exposure, while ASPD requires afternoon or evening exposure.

The explanation of the biological mechanism behind how bright light therapy works needed to include the following points:

- Bright light is registered by the suprachiasmatic nucleus (SCN).
- This leads to a delay in melatonin release.
- The overall effect is a sleep delay or the promotion of wakefulness.

Students are reminded to respond directly to the specific question being asked. Some students described the sleep disorders themselves rather than specifically addressing the use of bright light therapy for each disorder, and some provided a basic definition of bright light therapy rather than explaining the biological mechanism behind it.

The following is an example of a high-scoring response:

Bright light therapy (BLT) refers to the timed exposure to intense, bright but safe levels of (usually artificial) light. It's an effective treatment as the biological mechanism, the suprachiasmatic nucleus (SCN), detects the light and transmits a message to the pineal glands to inhibit the release of melatonin. For people with DSPS, this would be most effective in the morning, as it would inhibit the release of melatonin for the day, making a person feel alert. For people with ASPD, it would be used in the afternoon/evening. This would again inhibit the release of melatonin, allowing a person to have increased feelings of wakefulness and decreased feelings of sleepiness. This essentially aims to reset a person's sleep–wake cycle through the SCN.

Question 4a.

Marks	0	1	Average
%	19	81	0.8

The main excitatory neurotransmitter in the human nervous system is glutamate.

Question 4b.

Marks	0	1	2	Average
%	64	30	6	0.5

To be awarded full marks, students were required to:

- outline one role of the somatic nervous system as it related to the experiment in the scenario
- outline one role of the spinal cord as it related to the experiment in the scenario.

Accepted roles of the somatic nervous system included:

- sensory receptors on the lower leg detect the electrical signals / stimulating electrode
- sends sensory/afferent messages from the leg to the spinal cord
- sends motor/efferent messages from the spinal cord to the soleus muscle.

Accepted roles of the spinal cord included:

- receives and processes sensory information from the lower leg
- relays information between sensory and motor neurons about the electrode and the leg, via interneurons
- coordinates a motor response of leg movement, independently of the brain
- initiates a motor response to the electrical signal / electrode.

A maximum of one mark was awarded if a student provided two correct roles but did not link these to the experiment described in the scenario. Many students provided only one correct role and did not link it to the experiment; these responses were not awarded any marks. Responses that referred to voluntary movement, or that mistakenly stated that neurons 'move', were not considered relevant to the question.

Question 4c.

Marks	0	1	2	Average
%	29	49	22	0.9

To be awarded full marks, students were required to:

- describe the results of the experiment, comparing the two conditions in terms of the H-index score
- interpret the results in terms of the effect that ankle injuries have on spinal reflex response times.

Students could include data in their description, but this was not required to be awarded full marks.

Common errors included incorrectly suggesting that an ankle injury decreases spinal reflex response times.

The following is an example of what a high-scoring response may have included:

The average H-index was higher for uninjured ankles (87) than for injured ankles (78). This highlights that ankle injuries negatively impact spinal reflex response time.

Question 4d.

Marks	0	1	2	3	Average
%	61	28	10	1	0.5

To be awarded full marks, students were required to:

- identify the population as people with recent ankle sprains
- demonstrate an understanding of random sampling involving each member of the population having an equal chance of being selected for the sample
- suggest that representativeness could be achieved by using a sufficient sample size.

Common errors included identifying the population as both people with ankle sprains *and* those without an injury (incorrectly interpreting the research as a between-subjects design), and referring to participants or members of the sample (rather than members of the population) as having an equal chance of selection in random sampling.

Students should be familiar with the specifics of the sampling techniques listed in the study design. It is important that students are provided with opportunities throughout the year to apply their knowledge to different scenarios and scientific investigations that require them to apply the key science skills to unfamiliar contexts.

Question 4e.

Marks	0	1	2	Average
%	56	43	2	0.5

To be awarded full marks, students were required to identify that the H-index eliminates a systematic error and then provide an explanation of the benefit. Possible explanations included the following:

- The H-index takes into account different participant heights, which would otherwise negatively affect the accuracy of the data.
- Considering participant height will improve the internal validity of the experiment.
- Considering participant height will improve the accuracy of the data.

Question 5a.

Marks	0	1	Average
%	10	90	0.9

Students were required to distinguish between internal and external stressors. They could do so in terms of where the stressor originates or in relation to the biopsychosocial approach.

Possible responses included the following:

- An internal stressor originates within an individual, whereas an external stressor originates outside the individual.
- Internal stressors are biological or psychological, whereas external stressors are social (or environmental).

Question 5b.i.

Marks	0	1	Average
%	17	83	0.9

Students were awarded a mark for any question that demonstrated understanding of primary appraisal involving an evaluation of the situation or the nature of the stressor.

For example:

- Is this stressful?
- What is the significance of the event in your life?
- Does this encounter matter to you?
- Do you perceive the stressor as a challenge or a threat, or has it already caused you harm?

Question 5b.ii.

Marks	0	1	Average
%	25	75	0.8

Students were awarded a mark for any question that demonstrated understanding of secondary appraisal involving an evaluation of the resources for coping, such as ‘Do you have the resources to cope with this stressor?’

Question 5c.

Marks	0	1	2	3	Average
%	43	37	19	1	0.8

Students were required to explain why coping flexibility does not account for the change in mood experienced by participants. To be awarded full marks, students could either:

- conclude that coping flexibility and mindfulness meditation are incompatible, since mindfulness meditation focuses on acceptance, which prevents changes in coping strategies
- suggest that coping flexibility is not relevant, as participants in the study only used one coping strategy.

In their response, students were required to demonstrate an understanding of:

- coping flexibility, specifically in terms of changing or modifying coping strategies
- mindfulness meditation, focusing on the acceptance and non-judgmental aspects of this technique.

The following is an example of what a high-scoring response may have included:

Mindfulness meditation involves being present in the moment and free from judgement, and coping flexibility refers to changing one’s coping strategies based on the changing demands of a stressor. By providing only one coping strategy, researchers limited participants’ ability to adapt their approach to the stressor. As a result, coping flexibility cannot explain the change in mood, since participants were unable to switch to a different strategy.

Question 5d.

Marks	0	1	2	Average
%	28	25	46	1.2

Students needed to demonstrate an understanding of the application of the ethical guideline of debriefing by referring to two aspects of debriefing.

Accepted responses included:

- ensuring that participants understand the results and conclusions
- addressing participant questions and clarifying misunderstandings
- providing participants with support
- conducting the process at the end of the experiment.

Common errors included:

- confusing debriefing with informed consent and incorrectly stating that debriefing should occur before the study begins
- misunderstanding that debriefing ensures that participants understand the nature and purpose of the experiment.

Question 5e.

Marks	0	1	2	Average
%	16	60	25	1.1

Students were required to explain how sleep deprivation may impact the results of the study and recommend one improvement to the study to overcome this concern.

Explanations of how sleep deprivation may affect the study results included the following:

- An effect of sleep deprivation is a decrease in mood / change in affective functioning, which will therefore change the results in an unwanted way as mood is the dependent variable in this experiment.
- Changes in mood associated with sleep deprivation could act as an extraneous variable and thus may affect the results of the study in an unwanted way.

Possible improvements to the study included the following:

- Include a question about sleep duration on the questionnaire.
- Exclude data of sleep-deprived participants.
- Provide participants with education on sleep hygiene.

While many students were able to suggest a possible improvement to the study, their explanation of how sleep deprivation could affect the study results lacked detail. To be awarded full marks, it was important that students clearly linked the effects of sleep deprivation to the results.

Question 6a.

Marks	0	1	2	Average
%	37	12	52	1.2

Students were required to identify the two independent variables used in this experiment: the order of presentation and the time delay between two stimuli, as seen in the table provided in the question. Students should know that the independent variable is the variable for which quantities are manipulated (selected or changed) by the researcher, and the variable that is assumed to have a direct effect on the dependent variable.

The most common error involved listing the two types of stimuli used (torch light and electronic bell) as the two independent variables.

Question 6b.

Marks	0	1	2	Average
%	15	64	21	1.1

Students were required to identify the sound of the electronic bell as the neutral stimulus, with reference to the sensation of hearing or sound, and identify the unconditioned response as blinking (in response to the torch light).

The most common errors included omitting the 'sound' for the neutral stimulus, or suggesting that the unconditioned response was blinking due to the electronic bell.

Question 6c.

Marks	0	1	Average
%	70	30	0.3

Students were required to describe what Pip would observe during the experiment. Specifically, they needed to indicate that Pip would observe when participants blinked in response to the electronic bell only (or words to that effect). While the response may have included classical conditioning terms such as 'conditioned stimulus' and 'conditioned response', these terms alone were not sufficient to be awarded full marks.

Question 6d.

Marks	0	1	2	3	Average
%	42	19	7	32	1.3

Students were required to identify Condition E as the condition that would result in the quickest learning, justify the need for the neutral stimulus to be presented before the unconditioned stimulus, and identify that the shortest time delay (0.50 seconds) was the most ideal.

Students could be awarded a maximum of one mark if they incorrectly selected Conditions A, F or G but still included a congruent justification about either the order of presentation or the time delay.

Question 6e.

Marks	0	1	2	Average
%	35	50	15	0.8

The [VCE Psychology Study Design 2023–2027](#) defines ‘reproducibility’ as ‘the closeness of the agreement between the results of measurements of the same quantity being measured, carried out under changed conditions of measurement’.

To be awarded full marks, students needed to directly link their response to Pip’s experiment and describe changes the experimenter could make before comparing the similarity of results. It was important that students suggested a specific alteration to the experiment, such as:

- video recording the blink response
- replacing Pip with a new student to use the torch or observe the blink response
- changing the stimuli, such as adjusting the torch brightness or the tone of the bell sound.

Students were also required to make clear in their response that the results between both experiments (original and changed conditions) would need to be compared to verify reproducibility.

Question 7a.

Marks	0	1	2	3	4	Average
%	20	22	34	14	9	1.7

Students needed to identify two differences between newborns and older adults. The following could be identified as differences from either Extracts 1 or 2 between newborns and older adults:

- duration of sleep episode
- frequency or occurrence of naps
- proportion of light or deep sleep stages.

Students also needed to provide a reason for the difference they identified. This is in line with the wording of the key knowledge dot point ‘differences in, and explanations for, the demands for sleep across the life span’. Possible reasons included:

- duration – the higher amount of sleep is explained by the restorative/growth benefits of sleep for newborns
- frequency of naps – newborns have not developed regular sleep–wake cycles yet, whereas older adults have a better sense of day and night.

Question 7b.i.

Marks	0	1	2	Average
%	52	28	20	0.7

Students were required to use information from Extract 1 to provide two critical evaluations of the given statement.

Many different evaluations were accepted, including the following:

- supported, as older adults experience changes to the quality/quantity of their sleep
- supported, as older adults spend more time in the earlier, lighter stages of sleep
- supported, as there is worse sleep quality as people age
- not supported, as all stages of adulthood can experience sleep disturbances
- not supported, as the changes are not considered 'substantial' because 'some older adults have no significant disruptions'.

Common errors included students using information that was not found in Extract 1 to critique the statement.

In higher-scoring responses it was clear to the assessors whether the answer agreed or disagreed with the statement presented.

The following is an example of a high-scoring response:

To an extent: as adults age, they go from average 7 hours to averaging 5–7 hours. This change only requires a decrease of roughly 2 hours. In Extract 1, it's said that older adults complain of less sleep and worse quality than younger adults.

Question 7b.ii.

Marks	0	1	2	Average
%	55	35	10	0.6

Students were required to use information from Extract 2 to provide two critical evaluations of the given statement. Many different evaluations were accepted, including the following:

- supported, as newborns spend most of their days sleeping
- supported, as newborns sleep 16–18 hours, which means they sleep while there is light
- not supported, as caregivers are able to develop a more regular sleep schedule
- not supported, as caregivers can influence the sleep–wake cycle by regulating feeding times
- not supported, as caregivers can influence the sleep–wake cycle by regulating night-time sleep segments.

Common errors included using information that was not found in Extract 2 to critique the statement.

Higher-scoring responses made it clear to the assessors whether their answer agreed or disagreed with the statement presented.

The following is an example of a high-scoring response:

Yes: In the first stages of newborns, they tend to sleep for extended periods of time without waking often. In Extract 2, there's a reference to feeding times for roughly four months old. So, for newborns they rely on more internal factors than older infants relying on the zeitgeber of feeding, and eating and drinking patterns.

Question 7c.

Marks	0	1	2	3	Average
%	80	10	3	7	0.4

This question was generally not well answered. Students should be provided with opportunities throughout the year to organise and present data in a range of ways linked to research as part of their learning.

Students were required to draw a graph that clearly depicted the difference between the age brackets, using data to produce a two-bar graph. The percentage difference between 6 and 12 months for those able to sleep 5+ hours consecutively was 10%; for those able to sleep 8+ hours consecutively, it was 15%.

The x-axis needed to be labelled as 'numbers of hours of consecutive sleep', with labels for the 5+ and 8+ hour bars. The y-axis needed to be labelled as 'percentage difference between 6 and 12 months' and have an appropriate numerical scale. The two bars representing the 10% difference (for 5+ hours) and the 15% difference (for 8+ hours) needed to be plotted correctly and should not have been touching.

Common errors included:

- plotting four bars on the graph
- placing the 6 and 12 months on the x-axis, and including two bars each for 5+ and 8+ hours
- plotting a line graph instead of a bar graph, which was not appropriate as the data was categorical rather than continuous.

Question 8a.

Marks	0	1	2	Average
%	61	33	6	0.5

Students were required to demonstrate an understanding of Aboriginal and Torres Islander ways of knowing, and to describe the role of kinship in relation to ways of knowing.

Examples of Aboriginal and Torres Strait Islander ways of knowing included the following:

- Knowledge is embedded within the kinship system / relationships.
- Ways of knowing and learning are holistic and relational (to Country).
- The learner is part of a multimodal system of knowledge (patterned on Country).
- Ways of knowing are multimodal / a unique/complex/sophisticated system.

Examples of the role of kinship in relation to ways of knowing included the following:

- The kinship structure determines who holds / has access to knowledge.
- Passing on knowledge is part of 'a person's responsibilities towards other people'.
- The sharing of knowledge through kinship creates 'a cohesive and harmonious community'.
- In oral cultures, knowledge is held and shared through relationships between people/generations.

While it was appropriate to quote from the provided statement, as per the examples above, students needed to do more than simply repeat the information and/or describe kinship without addressing ways of knowing.

Question 8b.

Marks	0	1	2	3	Average
%	30	31	25	14	1.3

Students were required to identify cultural continuity as the cultural determinant, outline why the sharing of songlines is considered an aspect of cultural continuity for Aboriginal peoples, and explain how this cultural determinant acts as a protective factor for social and emotional wellbeing.

Examples of why sharing songlines is considered a cultural determinant included the following:

- Songlines enable the transmission of cultural practices across generations.
- The cultural knowledge embedded in songlines allows this knowledge to be passed down through generations.

To be awarded full marks, it was important that students link songlines to cultural continuity. A simple description of songlines was not sufficient.

The following is an example of a high-scoring response:

Sharing of songlines involves passing down immense amounts of cultural knowledge from generation to generation through multimodal performances conducted through Country to form a journey.

This aligns with the cultural determinant, cultural continuity, the maintenance of culture from generation to generation by passing down cultural knowledge, practice and values.

Thus by sharing songlines, cultural continuity is strengthened and helps protect a sense of belonging, connection to Culture and to ancestors/family who share songlines, which helps maintain strong social and emotional wellbeing.

Question 8c.

Marks	0	1	2	Average
%	37	41	22	0.9

Students were required to describe how kinship and family supports the social and emotional wellbeing (SEWB) of Aboriginal and Torres Strait Islander peoples.

Responses may have highlighted the following points:

- maintains interconnectedness through cultural ties and caring relationships
- provides a strong sense of belonging
- provides protective factors, which come from connecting to family history, reconnecting families and spending time with Elders
- links to one of the other domains in the SEWB framework.

A common error was to simply restate from the question that kinship and family support social and emotional wellbeing without describing how they do this.

The following is an example of a high-scoring response:

The SEWB framework emphasises the importance of multiple dimensions contributing to wellbeing and considering the whole person. One dimension is connection to family and kinship. Family allows individuals to feel a sense of belonging and ensures they feel a part of a group of people who can share and pass on culture and guidance, thus supporting an individual's social and emotional wellbeing.

Question 9

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	13	6	8	10	13	13	12	12	8	4	1	4.4

The extended-response question was assessed using the assessment criteria published in the [VCE Psychology Examination specifications](#). The assessment criteria are:

- identification and explanation of appropriate psychological terminology in novel and unfamiliar contexts
- analysis and discussion of relevant psychological information, ideas and/or concepts and the connections between them
- analysis and evaluation of data, and/or scientific methodologies and methods, and/or models, and/or theories
- construction of evidence-based arguments and/or drawing of conclusions and/or discussion of implications and findings.

Students were required to:

- use the model provided in the question and their knowledge of synaptic plasticity
- explain the use of cognitive behavioural therapy (CBT) for people with a specific phobia
- evaluate the use of CBT for people with a specific phobia.

Higher-scoring responses addressed each part of the question, often using full sentences and incorporating subheadings to structure their answers effectively. It is important to note that the response is assessed holistically, and assessors look for the relevant criteria throughout the entire answer.

Students are encouraged to always attempt to answer the extended-response question, even if time is running out and they are unable to provide a complete response. Some students who provided high-scoring responses this year did not provide an evaluation of the use of CBT (the fourth assessment criterion) but still scored between 6 and 7 out of 10 due to the strong quality of their work in relation to the other criteria.

The following sections outline each assessment criterion in relation to this year's question. High-scoring examples are included to illustrate how students could achieve a score of 10 out of 10, but these are just one approach to a strong response.

Criterion 1: Identification and explanation of appropriate psychological terminology

This criterion required students to correctly use and explain the psychological terminology outlined in the question, such as CBT, synaptic plasticity, specific phobia, anxiety, excitatory neural activity and amygdala. High-scoring responses for this criterion also incorporated additional relevant terms relating to the question, such as long-term potentiation (LTP), long-term depression (LTD), pruning, phobic stimulus, glutamate, GABA, cognitive biases and avoidance behaviours.

The following is an example of a high-scoring response incorporating the first criterion:

Anxiety is characterised by feelings of worry or uneasiness and can be partly explained by biological mechanisms. The increased excitatory neural activity in the amygdala, shown by people with social anxiety, is due to insufficient GABA. This causes an increase in neurons firing in the brain as GABA is an inhibitory neurotransmitter responsible for regulating anxiety. GABA dysfunction is also a biological contributing factor to specific phobia, an anxiety disorder characterised by irrational, persistent and intense fear of an object or situation.

By using CBT for specific phobia, people can identify maladaptive behaviours such as avoidance behaviours and identify negative thoughts and cognitive biases such as catastrophic thinking (imagining

the worst-case scenario) and memory bias (altering the memory and only focusing on specific fear-inducing parts). In terms of synaptic plasticity, the repeated identification of the maladaptive thoughts and behaviours, and subsequent replacement of them with adaptive ones, is likely to result in LTD and a weakening of the neural connections associated with the phobic stimulus and the fear response and maladaptive thoughts.

Criterion 2: Analysis and discussion of relevant psychological information, ideas and/or concepts and the connections between them

This criterion required students to apply their knowledge of synaptic plasticity to the model provided in the question. High-scoring responses linked the synaptic plasticity processes of LTD and/or pruning to the model, and elaborated on some or all of the following concepts:

- The long-term decrease in neural activity relates to LTD.
- The decrease in amygdala size relates to LTD and/or synaptic pruning.
- LTD directly explains the decrease in anxiety symptoms.
- The decrease in amygdala size leads to the decrease in anxiety.
- The amygdala is responsible for rapid and unconscious processing of emotions.
- Synaptic plasticity describes changes that occur to the synapse due to experiences such as CBT.
- LTD is the change to the connection between neurons that results in a long-lasting reduction in the strength of a response due to regular weak stimulation.
- LTD reduces the transmission of information between neurons.
- LTD helps to weaken and prune unused synapses.
- CBT results in a weakening of the pathways associated with the phobic response (LTD), while those linked to more rational, adaptive responses are strengthened (LTP).

The following is an example of a high-scoring response incorporating the second criterion:

Synaptic plasticity refers to the structural and functional changes that occur to the connections between neurons in the brain in response to experience. Two synaptic plasticity processes are LTP, the experience-dependent long-lasting strengthening of synaptic connections due to repeated co-activation, and LTD, the experience-dependent long-lasting weakening of synaptic connections due to repeated low-intensity stimulation.

Through the use of CBT for an individual with a specific phobia, there is a decrease in neural activity in the amygdala demonstrating the process of long-term depression, thus weakening the neural connections between the fear response and the phobic stimulus. This weakening will lead to a decrease in the size of the amygdala and as a result there would be a decrease in symptoms of a phobic response.

Criterion 3: Analysis and evaluation of data, and/or scientific methodologies and methods, and/or models, and/or theories

This criterion required students to explain the use of CBT for people with a specific phobia. High-scoring responses related a description of CBT to synaptic plasticity concepts and the model in the question, and/or discussed the interaction between the cognitive and behavioural aspects of CBT.

The following is an example of a high-scoring response incorporating the third criterion:

CBT is psychological intervention which involves identifying and replacing dysfunctional thoughts and behaviours with more functional ones. A person with a specific phobia would identify their dysfunctional thoughts of their phobic stimulus, such as catastrophic thinking, and replace these thoughts with more realistic and adaptive ones. Additionally, they would identify maladaptive behaviours such as avoiding the phobic stimulus and replace this behaviour with a more functional one. By no longer avoiding the phobic

stimulus they would realise that it is not as scary and break the cycle of negative reinforcement of removing their fear by avoiding the phobic stimulus.

As a result of changing thoughts and behaviours, old unhelpful neural pathways are weakened (LTD) and neural pathways associated with new adaptive thoughts and behaviours are strengthened (LTP).

Criterion 4: Construction of evidence-based arguments and/or drawing of conclusions and/or discussion of implications and findings

This criterion required students to evaluate the use of CBT for a specific phobia. High-scoring responses provided a detailed, balanced evaluation with at least one strength and one limitation.

Examples of strengths included the following:

- People with phobias have cognitive biases and unhelpful avoidance behaviours that can be targeted through CBT.
- CBT is effective as it can be used to change the thoughts that lead to memory biases and catastrophic thinking.
- CBT is effective as it can be used to change the behaviours that lead to avoidance.
- CBT will target the cause of the phobia rather than just the symptoms.

Examples of limitations included the following:

- CBT is primarily targeting the psychological aspect of the phobia rather than the biological or social/environmental aspects.
- CBT relies on exposure to the phobic stimulus and therefore not everyone will want to engage in it.
- CBT can be emotionally confronting to complete, and might further strengthen and consolidate pathways in the amygdala.
- CBT may take a while before the neural pathways are changed, leading to decreased symptoms.

The following is an example of a high-scoring response incorporating the fourth criterion:

CBT is helpful for people to overcome their phobias as it involves identifying and replacing maladaptive thoughts and memory bias of their phobic stimulus and changing avoidance behaviours, thus decreasing fear, however, it is a time-consuming method. CBT also involves heavy participation from the patient and without their cooperation it would not be effective since they need to take ownership of identifying and replacing these dysfunctional thoughts and behaviours. If a patient is not willing to give it their all then it is unlikely to be effective.