2021 VCE Psychology external assessment report

General comments

The 2021 VCE Psychology examination was based on the *VCE Psychology Study Design 2017–2022*.

All students are strongly advised to provide a response to every multiple-choice question, even if the answer is unknown, as marks are not deducted for incorrect answers. It is always possible to change a response by carefully erasing and re-shading.

As marking is completed online using scanned images of the examination, students should make sure to write within the marked boundaries of the examination paper for each question and clearly indicate if a response is continued in the extra space provided at the end of the question-and-answer book. If students continue a response in the extra space, they must number the response clearly.

For short-answer questions and the extended response, students should ensure that they clearly address each question as it is asked, and that examples provided are relevant to the question. In questions that assess the application of psychological knowledge to a scenario, it is particularly important that students make clear any relevant references to the scenario in their responses. Generic responses to such questions cannot be awarded full marks. Students should also ensure that they attempt to answer all parts of each question.

Students are reminded that although spelling errors are not penalised, the meaning of the response must be clear and unambiguous. If a key term in the student's response spells another word (e.g. 'semantic' when the student intended 'somatic'), then no marks can be awarded. Students should take care to spell key terms from the study design correctly.

Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual 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 – Multiple-choice questions

The following table indicates the percentage of students who chose each option.

Question	Correct answer	% A	% B	% C	% D	Comments
1	C	3	1	81	15	
2	D	3	19	5	72	
3	A	24	43	4	29	This question asked students to consider Vicki's response once she has become so frightened she is unable to move. Option A was the best response as Option D referred to activation of the somatic nervous system and Option B referred to heart rate only in regards to sympathetic nervous system activation. The inability to move (as part of the freeze response) is associated with heart rate deceleration, due to parasympathetic dominance.
4	A	72	8	8	12	
5	B	3	64	8	25	
6	A	88	1	10	0	
7	D	3	3	11	84	
8	B	3	46	14	36	Option B was the best response as having to leave friendship groups and start new ones is not associated with the main sources of acculturative stress.
9	A	58	11	10	20	
10	D	13	19	11	57	
11	A	69	4	17	10	
12	A	71	3	12	13	
13	C	2	2	86	10	
14	C	14	26	58	2	
15	A	62	3	26	10	
16	B	14	70	4	12	
17	C	7	35	43	15	A hypothesis is a testable prediction based upon scientific knowledge or ideas. Option B was incorrect as a hypothesis predicts how the independent variable influences the dependent variable and it is not a research methodology as suggested in Option D.
18	A	39	10	44	7	Because 30 seconds has passed (duration of short-term memory), the final few items will be forgotten and it is easier to recall the first few items.
19	B	4	81	11	3	

| Question	Correct answer	% A	% B	% C	% D	Comments
20	C	0	26	73	1	
21	B	4	85	4	6	
22	C	1	8	61	30	
23	D	17	4	4	75	
24	C	8	12	71	9	
25	B	33	17	3	47	As consciousness is a continuum and the scenario involves playing a computer game, Option B was the most accurate response. Although students learn that perceptual distortions occur in an altered state of consciousness and the scenario specifically stated unawareness of the passage of time, students needed to consider all the information provided in the scenario. Option B was better than Option D as a person when playing a computer game is most likely to be in normal waking consciousness using focused attention, which can also involve a lack of awareness of how fast time is passing.
26	B	1	90	5	4	
27	A	68	5	17	9	
28	C	2	3	91	5	
29	A	31	24	10	35	It is a form of operant conditioning because to stop playing video games is a voluntary response. Progressing through the levels (Option A) is a form of positive reinforcement, which increases the likelihood of repeating the behaviour (playing the game). Feeling excited in Option B is associated with classical conditioning rather than operant conditioning.
30	B	39	46	5	10	
31	A	63	5	5	26	
32	B	3	58	31	8	
33	B	11	61	6	22	
34	C	7	22	62	10	
35	C	7	15	69	10	
36	D	2	1	4	92	
37	C	35	22	13	30	This question required students to consider the information provided. Option C was the best answer as the amount of time before entering the escape room was not consistent between the two groups. There was no information provided that allowed students to conclude that random sampling was not used.

Question	Correct answer	% A	% B	% C	% D	Comments
38	C	6	11	78	5	
39	D	4	8	2	85	
40	A	76	13	6	5	
41	D	14	8	29	50	
42	B	45	45	7	2	Option A was incorrect as mental health, including the distinction between mental disorders, varies on a continuum and some adults with mental disorders do have the capacity to understand the relevant information to make an informed decision. Option C was incorrect as children should not be studied at school without informed consent and observation of children should always require informed consent (Option D).
43	C	4	13	53	30	
44	A	52	2	41	5	
45	B	32	53	8	7	
46	B	1	58	40	1	
47	B	12	63	3	22	
48	A	58	6	27	9	
49	D	27	9	28	35	This question required students to assess each option and decide which behaviours were characteristics of the preparation stage. Option A was a visible change with some internal uncertainty (action stage); Option B was no visible change with no intention to change (pre-contemplation stage); Option C was a visible change with a setback (action stage) making Option D correct as preparation may be associated with visible behaviour change, but not a complete change in behaviour, and individuals may experience a lack of confidence despite having motivation to change.
50	B	29	12	42	16	This question required students to first assess which stage Harper was most likely in, and then decide what a relapse would involve when at that stage. As Harper has been exercising consistently for a week, she is likely to be in the action stage. The action stage can involve both relapse and lapses in behaviour. Option B was the best response as it is indicative of relapse where there is no planned return to the changed behaviour whereas Option C was suggestive of a lapse in behaviour as there is a loss of exercise but a planned quick return to the changed behaviour.

Section B

Question 1ai.

Marks	0	1	Average
%	58	42	0.4

Students were required to indicate a dip in the normal levels of resistance to stress in the 'alarm/shock' stage, a rise in resistance level in the 'resistance' stage and another dip in resistance level in the 'exhaustion' stage (lower than in the alarm stage).
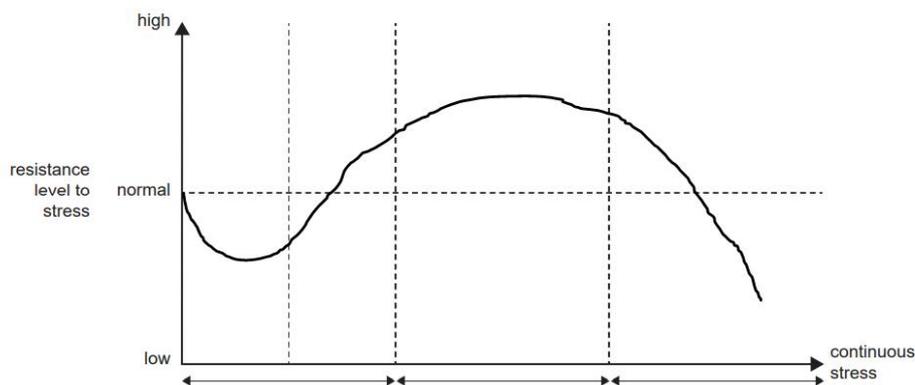
Common errors were to fail to start at the 'normal'/origin line, and not show the level of resistance to increase above normal before the graph entered stage 2 – resistance stage.

Question 1aii.

Marks	0	1	Average
%	33	67	0.7

The answer was Alarm/alarm reaction, Resistance, Exhaustion.

Students commonly mislabelled the stages as Stage 1, 2 and 3 without identifying the names of the stages. All three stages needed to be correctly identified for the mark.

Question 1b.

Marks	0	1	2	3	Average
%	40	11	21	27	1.4

Students needed to identify that Bob was in the resistance stage of Selye's General Adaptation Syndrome, and justify this by referring to the ongoing release of cortisol to overcome stress and the suppression of his immune system.

A common error was to identify it as the exhaustion stage. It is not this because Bob is still continuing to function and only suffering from a cold, which is not a severe illness. For full marks, the ongoing release of cortisol was required (not simply cortisol release).

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

Bob is likely in the resistance stage of GAS. The ongoing stress from his work resulted in his body releasing cortisol over a period of time to help overcome the stressor; however, this caused his immune system to be suppressed, making him more vulnerable to catching a cold.

Question 1c.

Marks	0	1	2	3	Average
%	31	9	20	40	1.7

Students needed to identify that Bob was in the exhaustion stage, explaining that due to Bob's physiological resources having been depleted as his systems had been operating at an elevated rate, his heart was weakened by the elevated heart rate and his resistance levels to stress dropped below normal.

The response needed to address the heart condition specifically experienced by Bob. Most students were able to identify that Bob was in the exhaustion stage. Common errors included identifying the stage as the alarm-reaction stage, or resistance, or not referring to any stage. Another common error was not referring to the heart condition in the explanation.

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

Bob is experiencing the exhaustion stage of the GAS. His heart has been operating at a higher rate as his body tries to resist the stressors, this has resulted in weakening of the heart (wear and tear on his heart) and it has become damaged.

Question 2a.

Marks	0	1	2	3	4	5	Average
%	18	9	10	15	22	25	2.9

Referring to the scenario provided, students were required to identify that the somatic nervous system is involved, that sensory information is received and transmitted to the brain, that the brain makes a (conscious) decision to pat the dog and that motor messages sent from the brain to the muscles in the arm/hand results in the response of patting the dog.

There were a number of options when demonstrating the sequence of biological processes involved when the somatic nervous system is making a conscious response. Students were awarded marks for including the sensory aspect of the process **before** or **after** the child patted the dog, for example, when sensory information regarding sensation of 'fur on the dog' was transmitted to the brain for processing, after they had patted the dog.

Most students were able to identify the somatic nervous system. A common error was not clearly outlining the role of the brain in this conscious response.

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

The somatic branch is involved. Sensory neurons in the children's eyes would detect seeing the dog and send the information to the brain. The brain would process this information (as a voluntary, conscious response) and send a neural message via motor/efferent neurons to (skeletal) muscles in their hand/arm to pat the dog.

Question 2b.

Marks	0	1	2	Average
%	14	55	31	1.2

Referring to the scenario, students were required to recognise that the biological process involved in Matilda's response was a spinal reflex / reflex response / reflex arc / reflex and the role the spinal reflex plays in protecting or improving survival.

Most students were able to identify the spinal reflex. A common error was to misinterpret the intention of this question, which was to outline the role of the spinal reflex in an adaptive sense, not to outline the spinal reflex process. Many students outlined the process of the spinal reflex. Some students did not refer to the scenario.

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

It was a spinal reflex. The role of the spinal reflex was to enable Matilda to remove her hand quickly from the thorn to prevent damage to the hand.

Question 2ci.

Marks	0	1	2	3	Average
%	24	15	22	39	1.8

Referring to the scenario, students were required to demonstrate an understanding of the three-phase process of classical conditioning. This involved showing an understanding that before conditioning the neutral stimulus (NS) elicited no relevant response; that during conditioning the NS was repeatedly presented before the unconditioned stimulus (UCS), which elicited the unconditioned response (UCR); and that after conditioning the conditioned stimulus (CS) on its own produced the conditioned response (CR).

Most students were able to clearly identify the three phases of classical conditioning – before, during and after. Common errors were to omit parts of the information required for each phase, or incorrectly identify one or more of the elements. Students were required to include the language of classical conditioning, which included all five terms (NS, UCS, CS, CR, UCR).

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

Initially the sight of the house NS provided no response. During conditioning, Biscuit repeatedly paired the sight of the house NS with the sound of the dog barking UCS to produce the UCR of becoming excited and barking due to the dog barking. After conditioning, the sight of the house CS alone produces the excited and barking response CR.

Question 2cii.

Marks	0	1	2	3	Average
%	34	11	24	30	1.5

Referring to the scenario, students were required to identify the process involved as being spontaneous recovery. Appropriate descriptions recognised that after a period of extinction **or** after a period of time whereby the CS no longer produced the CR, the CR returns and Biscuit becomes excited and barks at the CS once more.

Most students were able to identify spontaneous recovery. A common error was to identify extinction as the only process that occurred in the scenario.

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

Spontaneous recovery. After a period of extinction has occurred, Biscuit will once again produce the CR of excitement and barking when he sees the house the CS.

Question 3a.

Marks	0	1	2	3	Average
%	20	26	29	25	1.6

This question required students to identify that Parkinson's is a neurodegenerative disease in which dopamine-producing neurons/cells in the brain die and that reduced dopamine results in a decrease in messages that impact motor movement.

Most students were able to suggest that Parkinson's is a neurodegenerative disease. A common error was to confuse this disease with Alzheimer's disease. Some students provided too little detail in describing the biological features (i.e. the reduction in dopamine or cell death).

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

Parkinson's is a neurodegenerative disease, whereby neurons in the substantia nigra that produce dopamine start to die. Due to the significant reduction in dopamine, messages regarding movement are disrupted leading to poorer motor movement (and other symptoms) over time.

Question 3b.

Marks	0	1	2	Average
%	68	8	24	0.6

Students may have either operationalised the independent variable in terms of caffeinated drink consumption, or males'/females' caffeine consumption history.

Common errors were to identify the independent variable, but not operationalise it, or to supply insufficient description of how the variable was operationalised, for example it was important to quantify the amount of caffeine drink being consumed and to include both groups in the response.

The following is an example of high-scoring response.

The operationalised independent variable was whether 3 or more caffeine drinks were consumed per day or no caffeinated drinks were consumed per day.

Question 3c.

Marks	0	1	2	3	Average
%	40	13	21	25	1.3

Students were required to identify an appropriate extraneous variable (such as imbalance of gender, varying amounts of caffeine in different drinks or size of cup, other sources of caffeine in the diet, self-reporting measures), outline how this extraneous variable could have affected the results, and indicate how this extraneous variable could have been controlled to reduce its impact.

Most students were able to do the first two parts of this question, which were to identify a possible extraneous variable for this study and to outline how it could have affected the results. Often students did not indicate how this variable could have been controlled. Another common error was to identify the 'uneven' number of participants in the control and experimental groups as a possible extraneous variable, suggest that the results would not be accurate because of this, and assert that to control this the researchers should have 'made sure the groups had even numbers'. This was not deemed an appropriate extraneous variable.

The following are three examples of high-scoring responses.

> *The levels of caffeine in the drinks per day may have varied so that some drinks contained more caffeine per cup than others. This may impact the results if caffeine reduces tremors with more caffeine being consumed. This may have been controlled by restricting the caffeine drinks to one type and having a finite amount in each cup.*

> *Caffeine drinkers were younger. It is possible that younger people had fewer symptoms because of their age, not because of their caffeine intake. This could have been controlled by sampling to ensure a more equal distribution of age in each group.*

> *The measures were self-reported. It is possible that women and men reported their symptoms differently, and this caused the difference in symptoms reported between groups. This could be controlled by measuring tremors in a more objective way.*

Question 3d.

Marks	0	1	2	Average
%	57	18	25	0.7

Students were required to identify an appropriate factor (such as if the sample was representative of the population; the degree to which the design tested the research question/s; internal validity; the impact of extraneous and confounding variables; match between the tested intervention and the generalisation) and provide an appropriate explanation for why this factor needed to be considered when the researchers were making generalisations to the selected population.

The following are two examples of high-scoring responses.

> *The researchers need to consider if the sample is representative of the population of Parkinson's disease. If not representative of the population, the researcher is unable to generate insights/observations that align with the population.*

> *The sample of newly diagnosed Parkinson's patients may not represent all patients with PD and therefore the results may not be able to be applied to all people with PD.*

Question 3e.

Marks	0	1	2	Average
%	36	31	33	1.0

Students could respond to this question in two ways, by either:

- identifying the population as Parkinson's disease patients and explaining that the researchers wanted to find out whether caffeine reduces tremors/symptoms and/or whether gender and caffeine consumption have an effect on tremors/symptoms, or
- identifying the population as 'newly diagnosed' Parkinson's patients and explaining that the researchers wanted to study the effect of caffeine on the severity of symptoms for people recently diagnosed with Parkinson's disease who would not yet have had other treatments or who exhibited early symptoms.

This question required students to refer to population and not sample. A common error was referring to the sample rather than the population.

The following are two examples of high-scoring responses.

The population they studied was people with Parkinson's so they could find out whether caffeine had an effect on reducing tremors in people who suffer from the disease.

The population they studied was 'newly diagnosed' patients suffering from Parkinson's, as they were less likely to have experienced other treatments for the disease.

Question 4a.

Marks	0	1	2	Average
%	10	40	50	1.4

Referring to the scenario, students were required to correctly identify the direction of the results from the graph and correctly identify the variables from the scenario (e.g. sleep deprivation / time since their last sleep / hours of wakefulness / visual–spatial reasoning / speed and accuracy errors).

Most students were able to correctly identify at least one of the variables. Citing 'percentage error' only was not an adequate identification of the dependent variable.

The following are three examples of high-scoring responses.

As the sleep deprivation of participants increases the number of speed and accuracy errors increases.

As the hours of wakefulness increase the participants' performance on a test of visual spatial reasoning decreases.

As sleep deprivation increases the rate of errors on a test of visual spatial reasoning increases.

Question 4b.

Marks	0	1	2	Average
%	32	15	53	1.2

Students were required to identify that a blood alcohol concentration (BAC) of 0.05% compares to approximately 17 hours of sleep deprivation and that a BAC of 0.10% compares to approximately 24 hours of sleep deprivation. They could alternatively refer to the graph statistics, such as a BAC of 0.05% would be equivalent to about 13% errors and a BAC of 0.10% would be equivalent to about 40% errors.

Most students were able to demonstrate sound knowledge of the comparison between sleep deprivation and BAC. A common error was misplacing the decimal point when reporting the BAC levels (e.g. 0.05 reported as 0.5).

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

Maria would expect that if participants had a BAC of 0.05% they would perform similar to those having 17 hours without sleep and for a BAC of 0.10% would perform similar to those having not slept for 24 hours.

Question 4c.

Marks	0	1	2	Average
%	56	13	31	0.8

Students were required to identify an appropriate measure (such as self-report, sleep diary, Likert scale, interview, video monitoring) and provide likely results that would have been expected using that measure (such as those with sleep deprivation would have more amplified emotions / more irritability / display more aggression / lack motivation / have heightened anxiety, compared to those who were not sleep deprived).

The following are examples of high-scoring responses.

Measure: self-report

Likely result: Participants in the sleep deprived group will rate themselves higher on irritability than those in the non-sleep-deprived group.

Measure: interview

Likely result: Participants in the sleep deprived group will demonstrate amplified emotions during the interview than those in the non-sleep-deprived group.

Question 4d.

Marks	0	1	2	3	4	Average
%	9	18	38	27	8	2.1

This question required students to include a comparison between adults and infants for each identified difference. Appropriate differences students could identify related to differences in total hours of sleep, differences in the proportion of rapid eye movement (REM) and non-REM (NREM) sleep, differences in sleep stages and differences in the sleep–wake cycle.

Most students were able to identify that infants sleep for longer than adults. A common error was not to include comparisons between the two age groups (i.e. only stating one characteristic for one age group). Repetitions of the same point were not awarded marks.

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

Infants sleep about 14 hours a day whereas an adult sleeps about 8 hours. Infants' sleep consists of about 50% REM and 50% NREM, whereas an adult would have 20% REM and 80% NREM. Infants tend to sleep in multiple blocks of time and wake up frequently, whereas an adult will sleep in one or two blocks and sleep through. Infants can experience REM sleep when they first go to sleep, whereas an adult will likely experience NREM sleep first.

Question 4e.

Marks	0	1	2	Average
%	25	36	39	1.2

Students were required to appropriately reference the restoration theory of sleep (such as the process of sleep provides time for our body/brain to grow/repair/recover or REM sleep is responsible for brain growth and NREM sleep is responsible for body repair/recovery/growth) and provide an appropriate reason for the difference between adults and infant sleep patterns (such as infants are undergoing rapid neural connections, they experience more REM sleep than adults; or greater amounts of NREM sleep in infants enables physical

growth, something adults no longer need to do; or infants require more sleep in total as they are doing more growing/developing than adults).

Students didn't need to mention REM or NREM specifically as the question asked about sleep patterns, although many students did do this. A common error was to ignore reference to the restoration theory and simply state that there was a difference in sleep patterns between adults and infants but not suggest why.

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

The restoration theory states that sleep provides the body time for repair and recovery (REM for brain recovery and NREM for body recovery). Infants are undergoing rapid brain development so require more REM sleep than adults.

Question 5a.

Marks	0	1	2	3	Average
%	41	5	12	42	1.6

The question required students to consider the process of operant conditioning from the mother's perspective, not the child's. Students were required to appropriately identify the antecedent, behaviour and consequence for Achara (not Kris).

- Antecedent: Kris (child) cries (for chocolate)
- Behaviour: Achara (mother) ignores child's crying (and/or continues shopping)
- Consequence: Kris (child) stops crying / Achara (mother) can shop peacefully

Most students were able to identify some elements of operant conditioning from the scenario. A common error was to respond to the question from Kris's perspective, not Achara's.

Question 5b.

Marks	0	1	Average
%	53	47	0.5

The answer was negative reinforcement.

No other answer was accepted.

Question 5c.

Marks	0	1	2	3	Average
%	31	12	26	31	1.6

Referring to the scenario, students were required to identify a different reinforcement or punishment type, demonstrate how the consequence could be used and identify the impact on future behaviour.

Most students were able to come up with another consequence, but did not reference operant conditioning terms. A common error was to provide another example of negative reinforcement, where the question clearly asked for 'another way' that Acara could have stopped Kris from crying.

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

Response cost could be used by Achara by taking Kris's IPAD away from him if he continues to cry for chocolate during their shop, by removing a pleasant/positive stimulus from Kris, this will decrease the likelihood of him crying in the future as he doesn't want to lose the use of his IPAD.

Question 6a.

Marks	0	1	2	3	Average
%	41	26	29	5	1.0

Using an appropriate example of an anterograde symptom, students were required to explain that this was a result of the hippocampus being damaged/degenerated and as a consequence, Alzheimer's disease patients have difficulty consolidating explicit/declarative/semantic/episodic memories.

Most students were able to identify the hippocampus. It was not enough to state that the patient will have an inability to form/consolidate new explicit memories as the question explicitly asked for the identification of one anterograde symptom. Another common error was not providing an example of a symptom of the inability to consolidate an explicit memory.

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

Alzheimer's disease affects the hippocampus (cells start to die due to plaques and tangles) so that people may lose the ability to consolidate new explicit memories. These patients may not remember the names of 'new' people they meet, such as the doctors treating them after diagnosis.

Question 6bi.

Marks	0	1	2	Average
%	37	40	23	0.9

Students were required to provide an accurate description of rumination and a link to how rumination can contribute to mental health problems in relatives of people suffering from Alzheimer's disease.

In their response, students were required to identify that rumination involves the element of **repetition** (such as 'continuous', 'constantly thinking about', 'thinking about something over and over'). Responses also needed to link rumination to possible mental health problems for the relatives of people suffering from Alzheimer's disease, **not** for the Alzheimer's patients themselves. It was also important for students not to discuss elements of catastrophic thinking, such as imagining the worst possible scenarios or memory bias (e.g. they only remember the bad things that have happened in the past and do not think about good things).

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

Rumination involves repeated negative thoughts such as self-blame and guilt but the person does nothing to improve problems. Rumination acts as a psychological risk factor as it might precipitate the mental health problem as the relatives are constantly thinking about the challenges they will face caring for someone with Alzheimer's disease and feel guilty when they do something for themselves.

Question 6bii.

Marks	0	1	2	3	Average
%	38	39	17	5	0.9

Referring to the scenario, students were required to outline the two elements of cognitive behavioural therapy (CBT) and link it to how the therapy could be used to improve the mental health of these relatives. Students needed to demonstrate an understanding of the cognitive and behavioural aspect of CBT and how it could help the relatives of people with Alzheimer's. Common errors included outlining how CBT might help improve the Alzheimer's patient's mental health, rather than their relatives'.

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

> *The psychologist can help these family members identify the maladaptive thoughts, such as ruminating on the negative impacts on their relative with Alzheimer's disease, and to encourage them to change their thinking to help them adapt to their relatives' disease.*

They could also identify behavioural aspects that are unhelpful, such as searching the internet to investigate the symptoms of Alzheimer's disease. The psychologist could encourage them to address and change their unhelpful behaviour.

As they change their maladaptive thinking, their maladaptive behaviour can change.

Question 7

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	6	3	6	15	20	16	13	10	7	3	0.5	4.6

This question required students to analyse the results of a research study that compared the effects of two interventions – one biological and one psychological – to determine their effectiveness in decreasing self-reported symptoms of anxiety in patients with dental phobias.

This involved comparing the similarities and differences in the participants' symptoms of anxiety, as well as discussing how each intervention acted to reduce these symptoms. The provided scenario and graph enabled the students to evaluate the most effective condition of treatment.

With regards to the scenario and the question posed, the analysis could include:

- biopsychosocial classification of the two treatment conditions – systematic desensitisation (as a psychological intervention) and benzodiazepine administration (as a biological intervention)
- an accurate description of each type of evidence-based intervention and linking these to the change in the level of anxiety shown by patients with dental phobic symptoms
- the comparison between the lasting effects of the biological and psychological evidence-based interventions
- the implications of the study with comparison between the two evidence-based interventions in reducing anxiety symptoms in people with dental phobias.

Students needed to refer to the graph and/or the information provided in the scenario to analyse the overall results of the study, including both similarities and differences in symptoms of anxiety. They also needed to accurately describe how both systematic desensitisation and benzodiazepines work to reduce the anxiety symptoms in these patients. Higher-scoring responses included implications of the comparison between the two interventions.

In analysing the results and accurately describing the evidence-based interventions used in the study, the responses could include (but were not limited to) the following aspects:

- Similarities in the study's results and how each condition acted to reduce the participants' symptoms of anxiety. For example:
  - Condition 1 and Condition 2 had similar self-reported symptoms of anxiety during the dental appointment (close to 6), which were both lower than those of the control (baseline) Condition 3. This established a short-term reduction in anxiety symptoms among people with dental phobias using both benzodiazepines and systematic desensitisation in a self-report ranking.
  - Conditions 2 and 3 had very similar (high) self-reported symptoms of anxiety (~8.8 and 9, respectively) at the end of the study, (two months) after the initial dental appointment, showing that Condition 2 returned to a relatively high level of symptoms of anxiety – very close to the baseline group.

- Differences in the study's results and how each condition acted to reduce the participants' symptoms of anxiety. For example:
    - The systematic desensitisation evidence-based intervention (Condition 1) observed longer-lasting effects with a reduction in symptoms of anxiety (from 5.8 down to 5) after one month and a further reduction (from 5 to 3) after two months. Conversely, the results show that people in Condition 2 (the benzodiazepine condition) had a return (increase from 6 to 8.8) of symptoms of anxiety one month after treatment. This suggests that benzodiazepines are short-acting because they only remain in the bloodstream for a short period of time (and the phobic anxiety would likely return hours after the drug has cleared from the bloodstream). After two months, Condition 2 still showed an overall increase from the initial symptoms of anxiety and only a slight decrease (8.2 from 8.8) after two months from the one-month measurement.
    - The control group (Condition 3) had a slight decrease in symptoms of anxiety from an initial high level (9.9 to 9 over the two-month period) but levels of the symptoms of anxiety were still the highest of all three conditions.
    - The systematic desensitisation group (Condition 1) observed longer-lasting effects with a reduction in symptoms of anxiety after two months, compared to the benzodiazepine group (Condition 2) that increased in symptoms after one month and essentially returned to a similar anxiety level as the control Condition 3 after two months. Of the 29 participants in each group, there were 21 in Condition 1 who experienced minimal anxiety during future dental appointments; seven in Condition 2; and only one participant in the control Condition 3.
    - These results reflect systematic desensitisation acting as a psychological protective factor allowing the patient to cope with the fear-producing stimulus rather than avoid it, despite only having one session of systematic desensitisation.

Discussion of how each of Condition 1 and Condition 2 acted to reduce the participants' symptoms of anxiety could include:

- Systematic desensitisation (Condition 1) – Psychological evidence-based intervention: Using classical conditioning principles, systematic desensitisation aims to reduce and replace the anxiety response to the stimulus with feelings of calm and relaxation. Firstly, the phobic patient would be taught a relaxation technique such as a slow breathing technique, then asked to create a sequential hierarchical list of feared objects/situations relating to their dental phobia that increased their anxiety, such as seeing a picture of a dentist's chair increasing the anxiety to the experience of sitting in the chair. The patient would apply the relaxation technique to each stimulus, starting at the lowest level, and only moving up to the next level in hierarchy once the specific dental phobic stimulus did not lead to the conditioned response of fear.
- Benzodiazepines (Condition 2) – Biological evidence-based intervention: Benzodiazepines are gamma-amino butyric acid (GABA) agonists. People with phobias may have GABA dysfunction, so the benzodiazepines can mimic the effects of GABA in the central nervous system. Benzodiazepines target the central nervous system to increase GABA's inhibitory effects making the postsynaptic neurons less likely to fire. They may share the same chemical shape and size as GABA to allow for the binding to occur to GABA receptors on the postsynaptic neuron, to decrease the likelihood of the postsynaptic neuron from firing uncontrollably. This results in reduced transmission of neural messages relating to fear and calms the person down.

Overall conclusion and implications may have included:

- Though both conditions helped reduce the symptoms of anxiety in people with a dental phobia, the effect of systematic desensitisation was longer lasting.
- While benzodiazepines are short-acting and may be taken occasionally when required, for example to attend dentist appointments, the long-term effects of reduced awareness and dependency on the drug can be potentially damaging. Therefore, the results suggest that the psychological intervention may be more effective in treating the phobic anxiety in the long term, especially if the patient is required to attend

regular dentist appointments and encounter the phobic stimulus frequently, which may interfere with the person's functioning.

The response may also have included (but was not limited to) the following aspects of the results of the study:

- Role of independent-groups design that does not control for participant-related extraneous variables, especially the inability to establish a pre-treatment baseline for Conditions 1 and 2 before the initial dental appointment.
- Issues related to self-reporting as a subjective measure and whether an objective measure of anxiety symptoms should be considered for future studies.
- The effect of ignoring the social intervention of psychoeducation (biopsychosocial factors are all relevant to phobias) could also be considered in future studies.

The highest-scoring responses provided a balanced analysis of the results along with an accurate description of the evidence-based interventions, and an overall conclusion and evaluation of the best treatment condition. They not only provided an analysis of results from the research that compared both similarities and differences between all conditions, but also accurately identified the importance of the evidence-based interventions, with the overall conclusion that systematic desensitisation was the best long-lasting effect of reduction of anxiety-producing symptoms in patients with a dental phobia.

A number of students provided excellent descriptions of one aspect of the question, such as drawing out the similarities and differences between the results gathered in the research study, but did not mention or discuss the evidence-based interventions (or vice versa).

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

The results in this research study highlight that while both a single session of systematic desensitisation and the administration of benzodiazepine before the dental appointment reduce symptoms of anxiety, systematic desensitisation had longer-lasting effects with continued improvement one month later and even more improvement two months later. While the participants that took part in systematic desensitisation showed improvement, participants that were administrated benzodiazepine show more symptoms of anxiety one month later and almost showed similar symptoms to those in the control group. The research study also highlighted that 21 participants out of the 29 that took part in systematic desensitisation attended future dental appointments with minimal symptoms of anxiety while this only applied to 7 of the 29 participants that took the benzodiazepine and only 1 in the control group. The study concludes that both systematic desensitisation and benzodiazepine results in fewer symptoms of anxiety for individuals with a phobia of the dentist, but systematic desensitisation has much more long-lasting effects. Benzodiazepine is a type of anxiety agonist that mimics the role of the main inhibitory neurotransmitter GABA. People with a specific phobia tend to have lower levels of GABA, which is why they experience high levels of anxiety because their post-synaptic neurons continue firing. Benzodiazepine acts as GABA in inhibiting the post-synaptic neuron from firing. Systematic desensitisation involves ordering the phobic stimulus in a hierarchy from least feared to most feared. For example, in this research study, participants taking part in systematic desensitisation may have placed thinking about the dentist on the bottom of the hierarchy, and attending a dentist appointment at the top of the hierarchy. Before the hierarchy is made however, patients would need to learn a calming method such as breathing retraining, that they could practice when faced with their specific phobia. Once they have learnt this, they will go through the hierarchy and expose themselves to each stimuli, but can only move through the hierarchy once they have successfully completed the stage prior, using their coping strategy and experiencing lower or no symptoms of anxiety. Once participants have experienced every stimulus in the hierarchy successfully, their phobia will be distinguished. The study also highlights that one dose of benzodiazepine is not enough to eliminate a phobia in the long-term, while one session of systematic desensitisation is effective.