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Important information

Accreditation period

Units 1–4: 1 January 2023 – 31 December 2027

Implementation of this study commences in 2023.

Other sources of information

The [*VCAA Bulletin*](https://www.vcaa.vic.edu.au/news-and-events/bulletins-and-updates/bulletin/Pages/index.aspx) is the only official source of changes to regulations and accredited studies. The Bulletin also regularly includes advice on VCE studies. It is the responsibility of each VCE teacher to refer to each issue of the Bulletin. The Bulletin is available as an e-newsletter via [free subscription](https://www.vcaa.vic.edu.au/Footer/Pages/Subscribe.aspx) on the VCAA website.

To assist teachers in developing courses, the VCAA publishes online [Support materials](https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx) (incorporating the previously known *Advice for teachers*).

The current [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx) contains essential information on assessment processes and other procedures.

VCE providers

Throughout this study design the term ‘school’ is intended to include both schools and other VCE providers.

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Introduction

Scope of study

Psychology is a multifaceted discipline that seeks to describe, explain, understand and predict human behaviour and mental processes. It includes many sub-fields of study that explore and seek to better understand how individuals, groups, communities and societies think, feel and act.

There are many different approaches to the study of psychology. VCE Psychology applies a biopsychosocial approach to the systematic study of mental processes and behaviour. Within this approach, different perspectives, models and theories are considered. Each of these has strengths and weaknesses, yet considered together they allow students to develop their understanding of human behaviour and mental processes and the interrelated nature of biological, psychological and social factors. Biological perspectives focus on how physiology influences individuals through exploring concepts such as hereditary and environmental factors, nervous system functioning and the role of internal biological mechanisms. Psychological perspectives consider the diverse range of cognitions, emotions and behaviours that influence individuals. Within the social perspective, factors such as cultural considerations, environmental influences, social support and socioeconomic status are explored. The biopsychosocial approach can be applied to understand a variety of mental processes and behaviours.

Students study contemporary research, models and theories to understand how knowledge in psychology has developed and how this knowledge continues to change in response to new evidence and discoveries in an effort to solve day-to-day problems and improve psychological wellbeing. Where possible, engagement with Aboriginal and Torres Strait Islander ways of doing, being and knowing has been integrated into the study, providing students with the opportunity to contrast the Western paradigm of psychology with Indigenous psychology. An understanding of the complexities and diversity of psychology provides students with the opportunity to appreciate the interconnectedness of concepts both within psychology and across psychology and the other sciences.

An important feature of undertaking a VCE science study is the opportunity for students to engage in a range of scientific investigation methodologies, to develop key science skills and to interrogate the links between knowledge, theory and practice. Students work collaboratively as well as independently on a range of scientific investigations including controlled experiments, case studies, correlational studies, modelling, simulations and literature reviews. Knowledge and application of the research, ethical and safety guidelines associated with psychological investigations is integral to the study of VCE Psychology.

As well as increasing their understanding of scientific processes, students develop insights into how knowledge in psychology has changed, and continues to change, in response to new evidence, discoveries and thinking. They develop the capacity to critically assess the strengths and limitations of science, they develop respect for evidence-based conclusions, and they gain an awareness of the ethical and cultural contexts of scientific endeavours. Students consider how science is connected to innovation in addressing contemporary psychological challenges.

Rationale

VCE Psychology is designed to enable students to explore the complex interactions between thought, emotions and behaviour. They develop an insight into biological, psychological and social factors and the key science skills that underpin much of psychology. VCE Psychology is designed to promote students’ understanding of how society applies such skills and psychological concepts to resolve problems and make scientific advancements. The study is designed to promote students’ confidence and their disposition to use the information they learn in the study in everyday situations.

Studying VCE Psychology enables students to develop their capacity to think, question and analyse psychological research and critically reflect on the findings of experiments and research. They are encouraged to use their problem-solving skills, including critical and creative thinking, to establish and articulate their understandings through their class discussions, practical work and written responses – all of which may help students to think deeply and critically about their own lives, manage life circumstances and reach personal goals.

Students who study VCE Psychology can consider a pathway within this discipline that can lead to a range of careers and roles that work with diverse populations and communities. Areas that registered psychologists may work in include clinical, developmental, educational, environmental, forensic, health, neuropsychology, sport and exercise, and organisational psychology. Psychologists can also work in cross-disciplinary areas such as academia and research institutions, medical research, management and human resources, and government, corporate and private enterprises, or as part of ongoing or emergency support services in educational and institutional settings. Students exposed to the study of VCE Psychology recognise the diverse nature of the discipline and career opportunities within the field. These opportunities include careers and roles that do not involve being a registered psychologist, including roles in aged, family and child services; case managers; communications specialists; counsellors; community health and welfare roles; health services support roles; human resource specialists; managers; marketing and market research roles; office administration roles; policy and planning roles; probation and parole services roles; and social work and teaching roles.

Aims

This study enables students to:

* develop knowledge and understanding of psychological models, theories and concepts to describe, explain, analyse and predict human thoughts, emotions and behaviour
* understand and apply a biopsychosocial approach to human thoughts, emotions and behaviour
* apply psychological models, theories and/or concepts to everyday situations to enhance understanding of mental wellbeing

and more broadly to:

* develop attitudes that include curiosity, open-mindedness, creativity, flexibility, integrity, attention to detail and respect for evidence-based conclusions and Aboriginal and Torres Strait Islander knowledges
* develop an understanding of the cooperative, cumulative, iterative and interdisciplinary nature of science as a human endeavour, including its possibilities, limitations and sociocultural, economic, political and legal influences and consequences
* develop a range of individual and collaborative science inquiry skills through a variety of investigation methodologies in the laboratory and field, refining investigations to improve data quality
* understand the research, ethical and safety guidelines that govern the study and practice of the discipline and apply these guidelines to generate, collate, analyse, critically evaluate and report data
* analyse and interpret qualitative and quantitative data to provide evidence, recognising patterns, relationships and limitations of data
* develop an informed and critical perspective, as local and global citizens, on contemporary science-based issues
* develop knowledge and understanding of key models, concepts, theories and laws of science to explain scientific processes and phenomena, and apply this understanding in familiar and unfamiliar situations, including personal, sociocultural, environmental and technological contexts
* communicate clearly and accurately an understanding of the discipline, using appropriate terminology, conventions and formats.

Structure

The study is made up of four units, structured as a series of curriculum-framing questions that reflect the inquiry nature of the discipline:

* Unit 1: How are behaviour and mental processes shaped?
* Unit 2: How do internal and external factors influence behaviour and mental processes?
* Unit 3: How does experience affect behaviour and mental processes?
* Unit 4: How is mental wellbeing supported and maintained?

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and is complemented by a set of key science skills.

Entry

There are no prerequisites for entry to Units 1, 2 and 3. Students must undertake Unit 3 and Unit 4 as a sequence. Units 1–4 are designed to the equivalent standard of the final two years of secondary education. All VCE studies are benchmarked against comparable national and international curriculum.

Duration

Each unit involves at least 50 hours of scheduled classroom instruction.

Changes to the study design

During its period of accreditation minor changes to the study will be announced in the [*VCAA Bulletin*](https://www.vcaa.vic.edu.au/news-and-events/bulletins-and-updates/bulletin/Pages/index.aspx). The Bulletin is the only source of changes to regulations and accredited studies. It is the responsibility of each VCE teacher to monitor changes or advice about VCE studies published in the Bulletin.

Monitoring for quality

As part of ongoing monitoring and quality assurance, the VCAA will periodically undertake an audit of
VCE Psychology to ensure the study is being taught and assessed as accredited. The details of the audit procedures and requirements are published annually in the [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx). Schools will be notified if they are required to submit material to be audited.

Safety and wellbeing

As part of this study, teachers and students may be involved in teaching and learning activities that may include potentially sensitive topics. VCE Psychology is informed by a strengths-based and culturally safe approach and teachers should ensure students are supported to develop knowledge and skills that nurture their own health and wellbeing. Teachers should ensure that students have opportunities to consider topics systematically, objectively and in a culturally responsive way, and to become aware of the diversity of views held on such topics. Students should not be asked to disclose personal information about their own or others’ health status and behaviours and students should be provided with information about sourcing available support services within and outside school, if appropriate and as needed.

VCE Psychology engages students in critical inquiry processes that assist them to research, analyse, apply and appraise psychological knowledge and research. It is important, however, that students are clearly and specifically advised that they are neither trained nor equipped to diagnose problems, including their own, or offer any counselling or therapy. Teachers and students may consider different psychological assessments, including standardised psychological tests that are designed to be administered only by trained psychologists, but teachers must limit access to such tests and ensure that students understand that such tests should be administered only by a qualified clinician.

In VCE Psychology classes, it is the responsibility of the school to ensure that duty of care is exercised in relation to the health and safety of all students undertaking the study. Teachers and students should observe appropriate safety precautions and cultural responsiveness when undertaking practical investigations. All laboratory work should be supervised by the teacher. It is the responsibility of schools to ensure that they comply with health and safety requirements.

Relevant Acts, regulations and codes include:

* Occupational Health and Safety Act 2004 (Vic)
* Occupational Health and Safety Regulations 2017 (Vic)
* Occupational Health and Safety Management Systems (AS/NZS ISO 45001:2018)
* Dangerous Goods (Storage and Handling) Regulations 2021 (Vic)
* Code of Practice for the Storage and Handling of Dangerous Goods 2013
* Hazardous Substances Compliance Code, Edition 2, 2019 (Vic)
* Electrical Safety Act 1998 (Vic).

Teachers should ensure they access up-to-date versions of all Acts, regulations and codes.

Ethical conduct of scientific investigations

As part of this study, teachers and students may be involved in teaching and learning activities that involve practical work and scientific investigations using human subjects, including the students studying VCE Psychology. Teachers and schools have a legal and moral responsibility to ensure that students always demonstrate ethical conduct when undertaking such activities. Teachers should refer to the following documents for detailed advice:

* the National Statement on Ethical Conduct in Human Research 2007 (Updated 2018), issued by the National Health and Medical Research Council (NHMRC) in accordance with the National Health and Medical Research Council Act 1992 (Cwlth), [www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018](http://www.nhmrc.gov.au/about-us/publications/national-statement-ethical-conduct-human-research-2007-updated-2018)
* *Ethical conduct in research with Aboriginal and Torres Strait Islander Peoples and communities: Guidelines for researchers and stakeholders*, NHMRC, [www.nhmrc.gov.au/about-us/resources/ethical-conduct-research-aboriginal-and-torres-strait-islander-peoples-and-communities](https://www.nhmrc.gov.au/about-us/resources/ethical-conduct-research-aboriginal-and-torres-strait-islander-peoples-and-communities)
* the Australian Privacy Principles from the *Privacy Amendment (Enhancing Privacy Protection) Act 2012* (Cwlth), [www.oaic.gov.au/individuals/privacy-fact-sheets/general/privacy-fact-sheet-17-australian-privacy-principles](http://www.oaic.gov.au/individuals/privacy-fact-sheets/general/privacy-fact-sheet-17-australian-privacy-principles)
* the Australian Psychological Society’s *APS Code of Ethics*, [www.psychology.org.au/About-Us/What-we-do/ethics-and-practice-standards/APS-Code-of-Ethics](http://www.psychology.org.au/About-Us/What-we-do/ethics-and-practice-standards/APS-Code-of-Ethics)
* Australian Institute of Aboriginal and Torres Strait Islander Studies’ *AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research*, <https://aiatsis.gov.au/sites/default/files/2020-10/aiatsis-code-ethics.pdf>.

It is not expected that animals will be used in the teaching of this study. If using animals in teaching, schools must comply with the current legislation, including:

* the *Prevention of Cruelty to Animals Act 1986* (Vic) and Prevention of Cruelty to Animals Regulations 2019
* the *Australian Code for the Care and Use of Animals for Scientific Purposes*, 8th edition, 2013, [www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes](http://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes).

Employability skills

This study offers a number of opportunities for students to develop employability skills. The [Support materials](https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx)provide specific examples of how students can develop employability skills during learning activities and assessment tasks.

Legislative compliance

When collecting and using information, the provisions of privacy and copyright legislation, such as the Victorian *Privacy and Data Protection Act 2014* and *Health Records Act 2001*, and the federal *Privacy Act 1988* and *Copyright Act 1968*, must be met.

Child Safe Standards

Schools and education and training providers are required to comply with the Child Safe Standards made under the Victorian *Child Wellbeing and Safety Act 2005*. Registered schools are required to comply with *Ministerial Order No. 1359 Implementing the Child Safe Standards – Managing the Risk of Child Abuse in Schools and School Boarding Premises*. For further information, consult the websites of the [Victorian Registration and Qualifications Authority](https://www.vrqa.vic.gov.au/childsafe/Pages/Home.aspx), the [Commission for Children and Young People](https://ccyp.vic.gov.au/) and the [Department of Education and Training](https://www2.education.vic.gov.au/pal/child-safe-standards/policy).

Assessment and reporting

Satisfactory completion

The award of satisfactory completion for a unit is based on the teacher’s decision that the student has demonstrated achievement of the set of outcomes specified for the unit. Demonstration of achievement of outcomes and satisfactory completion of a unit are determined by evidence gained through the assessment of a range of learning activities and tasks.

Teachers must develop courses that provide appropriate opportunities for students to demonstrate satisfactory achievement of outcomes.

The decision about satisfactory completion of a unit is distinct from the assessment of levels of achievement. Schools will report a student’s result for each unit to the VCAA as S (satisfactory) or N (not satisfactory).

Levels of achievement

Units 1 and 2

Procedures for the assessment of levels of achievement in Units 1 and 2 are a matter for school decision. Assessment of levels of achievement for these units will not be reported to the VCAA. Schools may choose to report levels of achievement using grades, descriptive statements or other indicators.

Units 3 and 4

The VCAA specifies the assessment procedures for students undertaking scored assessment in Units 3 and 4. Designated assessment tasks are provided in the details for each unit in VCE study designs.

The student’s level of achievement in Units 3 and 4 will be determined by School-assessed Coursework (SAC) as specified in the VCE study design, and external assessment.

The VCAA will report the student’s level of achievement on each assessment component as a grade from
A+ to E or UG (ungraded). To receive a study score the student must achieve two or more graded assessments in the study and receive an S for both Units 3 and 4. The study score is reported on a scale of 0–50; it is a measure of how well the student performed in relation to all others who completed the study. Teachers should refer to the current [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx) for details on graded assessment and calculation of the study score. Percentage contributions to the study score in VCE Psychology are as follows:

* Unit 3 School-assessed Coursework: 20 per cent
* Unit 4 School-assessed Coursework: 30 per cent
* end-of-year examination: 50 per cent.

Details of the assessment program are described in the sections on Units 3 and 4 in this study design.

Authentication

Work related to the outcomes of each unit will be accepted only if the teacher can attest that, to the best of their knowledge, all unacknowledged work is the student’s own. Teachers need to refer to the current [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx) for authentication rules and strategies.

Cross-study specifications

Key science skills

The key science skills are a core component of the study of VCE Psychology and apply across Units 1 to 4
in all areas of study. In designing teaching and learning programs for each unit and in assessing student learning for each outcome, teachers should ensure that students are given the opportunity to develop, use and demonstrate these skills in a variety of contexts, including when undertaking their own investigations and when evaluating the research of others. As the complexity of key knowledge increases from Units 1 to 4, and as opportunities are provided to undertake scientific investigations, students should aim to demonstrate the key science skills at a progressively higher level.

The key science skills are common to all VCE science studies and have been contextualised in the following table for VCE Psychology.

| **Key science skill** | **VCE Psychology Units 1–4** |
| --- | --- |
| Develop aims and questions, formulate hypotheses and make predictions  | * identify, research and construct aims and questions for investigation
* identify independent, dependent and controlled variables in controlled experiments
* formulate hypotheses to focus investigations
* predict possible outcomes of investigations
 |
| Plan and conduct investigations  | * determine appropriate investigation methodology: case study; classification and identification; controlled experiment (within-subjects design, between-subjects design, mixed design); correlational study; fieldwork; literature review; modelling; product, process or system development; simulation
* design and conduct investigations; select and use methods appropriate to the investigation, including consideration of sampling technique (random and stratified) and size to achieve representativeness, and consideration of equipment and procedures, taking into account potential sources of error and uncertainty; determine the type and amount of qualitative and/or quantitative data to be generated or collated
* work independently and collaboratively as appropriate and within identified research constraints, adapting or extending processes as required and recording such modifications
 |
| Comply with safety and ethical guidelines | * demonstrate ethical conduct and apply ethical guidelines when undertaking and reporting investigations
* demonstrate safe laboratory practices when planning and conducting investigations by using risk assessments that are informed by safety data sheets (SDS), and accounting for risks
* apply relevant occupational health and safety guidelines while undertaking practical investigations
 |
| Generate, collate and record data | * systematically generate and record primary data, and collate secondary data, appropriate to the investigation
* record and summarise both qualitative and quantitative data, including use of a logbook as an authentication of generated or collated data
* organise and present data in useful and meaningful ways, including tables, bar charts and line graphs
 |

| **Key science skill** | **VCE Psychology Units 1–4** |
| --- | --- |
| Analyse and evaluate data and investigation methods  | * process quantitative data using appropriate mathematical relationships and units, including calculations of percentages, percentage change and measures of central tendencies (mean, median, mode), and demonstrate an understanding of standard deviation as a measure of variability
* identify and analyse experimental data qualitatively, applying where appropriate concepts of: accuracy, precision, repeatability, reproducibility and validity; errors; and certainty in data, including effects of sample size on the quality of data obtained
* identify outliers and contradictory or incomplete data
* repeat experiments to ensure findings are robust
* evaluate investigation methods and possible sources of error or uncertainty, and suggest improvements to increase validity and to reduce uncertainty
 |
| Construct evidence-based arguments and draw conclusions | * distinguish between opinion, anecdote and evidence, and scientific and non-scientific ideas
* evaluate data to determine the degree to which the evidence supports the aim of the investigation, and make recommendations, as appropriate, for modifying or extending the investigation
* evaluate data to determine the degree to which the evidence supports or refutes the initial prediction or hypothesis
* use reasoning to construct scientific arguments, and to draw and justify conclusions consistent with evidence base and relevant to the question under investigation
* identify, describe and explain the limitations of conclusions, including identification of further evidence required
* discuss the implications of research findings and proposals, including appropriateness and application of data to different cultural groups and cultural biases in data and conclusions
 |
| Analyse, evaluate and communicate scientific ideas | * use appropriate psychological terminology, representations and conventions, including standard abbreviations, graphing conventions and units of measurement
* discuss relevant psychological information, ideas, concepts, theories and models and the connections between them
* analyse and explain how models and theories are used to organise and understand observed phenomena and concepts related to psychology, identifying limitations of selected models/theories
* critically evaluate and interpret a range of scientific and media texts (including journal articles, mass media communications, opinions, policy documents and reports in the public domain), processes, claims and conclusions related to psychology by considering the quality of available evidence
* analyse and evaluate psychological issues using relevant ethical concepts and guidelines, including the influence of social, economic, legal and political factors relevant to the selected issue
* use clear, coherent and concise expression to communicate to specific audiences and for specific purposes in appropriate scientific genres, including scientific reports and posters
* acknowledge sources of information and assistance, and use standard scientific referencing conventions
 |

Scientific investigation

Students undertake scientific investigations across Units 1 to 4 of this study. Scientific investigations may be undertaken in groups, but all work for assessment must be completed individually.

All VCE science studies include scientific investigations that are student-designed. In approving student-designed investigation topics, teachers and schools must ensure that an investigation proposed by a student for a VCE Psychology assessment task is not able to be presented as an assessment task in another VCE study at the school.

Scientific investigation methodologies

Scientific investigations can be undertaken in a variety of ways depending on the aim of the investigation, the question under investigation and the nature of evidence, as well as the cultural appropriateness and cultural safety of each methodology. For the purposes of VCE Psychology, the planning and conducting of scientific investigations will require consideration of the following scientific investigation methodologies:

* **Case study:** An investigation of a particular activity, behaviour, event or problem that contains a real or hypothetical situation and includes the complexities that would be encountered in the real world. Case studies can take various forms: historical, involving the analysis of causes and consequences, and discussion of knowledge learned from the situation; a real situation or a role-play of an imagined situation, where plausible recommendations are to be made; or problem-solving, where developing a new design, methodology or method is required.
* **Classification and identification:** Classification is the arrangement of phenomena, objects or events into manageable sets, whereas identification is a process of recognition of phenomena as belonging to particular sets or possibly being part of a new or unique set.
* **Controlled experiment:** An experimental investigation of the relationship between one or more independent variables and a dependent variable, controlling all other variables. This may include the use of control groups.
* **Correlational study:** Planned observation and recording of events and behaviours that have not been manipulated or controlled to understand the relationships/associations that exist between variables, to identify which factors may be of greater importance and to make predictions.
* **Fieldwork:** Based on inquiry or the investigation of an issue, fieldwork involves observing and interacting with a selected environment beyond the classroom, usually to determine correlation, rather than a causal relationship. It may be conducted through a range of methods, including direct qualitative and/or quantitative observations and sampling, participant observation, qualitative interviews, questionnaires, focus groups and yarning circles.
* **Literature review:** Involves the collation and analysis of secondary data related to other people’s scientific findings and/or viewpoints in order to answer a question or provide background information to help explain observed events, or as preparation for an investigation to generate primary data.
* **Modelling:** Involves the construction and/or manipulation of either a physical model, such as a small- or large-scale representation of an object, or a conceptual model that represents a system involving concepts that help people know, understand or simulate the system.
* **Product, process or system development:** Design or evaluation of an artefact, process or system to meet a human need, which may involve technological applications in addition to scientific knowledge and procedures.
* **Simulation:** A process of using a model to study the behaviour of a real or theoretical system. The modelling and manipulation of variables in a real system is useful because often the variables cannot be controlled as the system may be too complex, too large or small, too fast or slow, not accessible or too dangerous.

Logbooks

Students undertaking this study must maintain a logbook of practical work in each of Units 1 to 4 for recording, authentication and assessment purposes. All items in the logbook must be dated and clearly documented.

The logbook is submitted as a requirement for satisfactory completion in each of Units 1 to 4. Teachers must regularly sight and monitor the logbook, particularly for the student-designed practical and/or research investigations in Outcome 3 of Units 1 and 2 and Outcome 3 of Unit 4.

The logbook may be maintained in hard-copy or electronic form. However, to avoid falsification and/or alteration of results, for assessment tasks it is recommended that students maintain a hard copy, as is commonly the practice in scientific research.

Unit 4 scientific poster

In Unit 4 Area of Study 3, students demonstrate their science communication skills by presenting the findings of a student-designed scientific investigation and the significance of these findings to both technical and non-technical audiences as a poster. The poster may be produced electronically or in hard-copy format and should not exceed 600 words. Supporting text, such as tables, graphs, image captions, references and acknowledgements, is not included in the word count.

Students will use the following scientific poster format when reporting on their investigation.

|  |  |  |
| --- | --- | --- |
|  | TitleStudent name |  |
| IntroductionMethodology and methodsResults | Communication statement reporting the key finding of the investigation as a one-sentence summary | DiscussionConclusion |
| References and acknowledgements |

The centre of the poster will occupy between 20 to 25 per cent of the poster space and will be a one-sentence summary of the major finding of the investigation that answers the investigation question.

The presentation format of the poster will include the following sections.

| **Poster section** | **Content** |
| --- | --- |
| Title  | Question under investigation |
| Introduction  | Brief explanation or reason for undertaking the investigation, including a clear aim, a hypothesis and/or prediction and relevant background psychological concepts |
| Methodology and methods | Brief outline of the selected methodology used to address the investigation question |
| Summary of data generation method(s) and data analysis method(s) |
| Results | Presentation of generated data/evidence in appropriate format to illustrate trends, patterns and/or relationships |
| Discussion  | Interpretation and evaluation of analysed primary data |
| Identification of limitations in data and methods, and suggested improvements |
| Cross-referencing of results to relevant psychological concepts and previous research |
| Linking of results to the investigation question and the aim, to explain whether the investigation data and findings support the hypothesis |
| Implications of the investigation and/or suggestions as to further investigations that may be undertaken |
| Conclusion | Conclusion that provides a response to the investigation question |
| Identification of the extent to which the analysis has answered the investigation question, with no new information being introduced  |
| References and acknowledgements | Referencing and acknowledgement of all quotations and sourced content relevant to the investigation |

Students record in their logbooks all elements of their investigation planning, comprising identification and management of relevant risks, recording of raw data, and preliminary analysis and evaluation of results, including identification of outliers and their subsequent treatment. Both the students’ poster and logbook entries are assessed as part of Unit 4 Area of Study 3.

Aboriginal and Torres Strait Islander knowledge, cultures and history

Aboriginal and Torres Strait Islander peoples have diverse cultures, social structures and a history of unique, complex knowledge systems. In VCE Psychology, students consider how psychological understanding can be informed and enhanced by considering how Aboriginal and Torres Strait Islander peoples have developed and refined their own knowledge about the world through observation, using all the senses; prediction and hypothesis testing, including trial and error; and making generalisations within specific contexts, including their connection to Country and/or Place and experiences within groups within Australia.

Teachers are encouraged to include Aboriginal and Torres Strait Islander knowledge and perspectives in a culturally safe way in the design and delivery of teaching and learning programs related to VCE Psychology, to understand and recognise the contribution of Aboriginal and Torres Strait Islander knowledges and Indigenous psychology as a field to the discipline of psychology, as well as to recognise the cultural diversity within and between Aboriginal and Torres Strait Islander peoples.

Many local Aboriginal and Torres Strait Islander communities have protocols that they have developed in relation to education. The Victorian Koorie community-preferred education model enables teachers to focus inclusively on supporting students to consider Victorian Koorie education matters, and systematically support students to learn about local, regional, state and national Indigenous perspectives. VCE studies involve a focused extension of this model and include a broader application of national Aboriginal and Torres Strait Islander and international indigenous perspectives.

*Protocols for Koorie Education in Victorian Primary and Secondary Schools*, developed through the Yalca policy, and other resources relating to the inclusion of Aboriginal and Torres Strait Islander knowledge and perspectives can be accessed on the [Victorian Aboriginal Education Association (VAEAI) website](http://www.vaeai.org.au/documents/).

Critical and creative thinking

Critical and creative thinking are embedded in the key science skills and applied across the VCE sciences during learning experiences in which students develop questions and hypotheses, design and undertake investigations, make reasoned predictions, generate and evaluate knowledge, clarify concepts and ideas, seek possibilities, consider alternatives and consequences, make evidence-based decisions, devise real or imagined solutions, and solve problems.

Students may engage in scientific investigations involving both primary and secondary data after they identify an aim and methodology and develop a specific investigation method that includes consideration of participants, sampling technique and size, equipment and procedure. A commitment to accuracy, precision and integrity in observation is an important precursor to critical thinking when generating primary data.

Problem-solving of any kind requires initial deconstruction to identify an appropriate methodology, followed by consideration of potential risks, and perseverance in adopting different strategies to develop a solution or to reach a conclusion.

In VCE Psychology, students also consider how critical and creative thinking has been applied by others in the development of knowledge and applications related to addressing psychological challenges.

Ethical understanding

Ethical understanding is applied across Units 1 to 4 of the VCE sciences. Students apply ethical understanding when they undertake their own investigations, analyse their own and others’ data, and identify and investigate issues relating to the application of scientific knowledge in society. Applying the knowledge and skills of ethical understanding enables students to:

* consider the implications of their own and others’ investigations of living things and the environment
* apply integrity when recording and reporting the outcomes of their own investigations, and when using their own and others’ data
* reach a position about science-related ethical issues based on an understanding of ethical concepts and scientific knowledge and skills, considering current and future needs
* recognise the importance of values, and social, economic, political and legal factors in responsible science-related decision-making.

Five ethical concepts are pertinent to Units 1 to 4 VCE Psychology: beneficence, integrity, justice, non-maleficence and respect. These are supplemented with several specific ethical guidelines that underpin psychological research. Further explanation of these terms can be found in the ‘Terms used in this study’ section on [pages 19–22](#Terms).

Individual and collaborative scientific endeavour

Scientific endeavour is commonly a collaborative, and often global, undertaking that draws on the knowledge and skills of individuals. Units 1 to 4 of VCE Psychology provide students with opportunities to manage themselves and their interactions with others through activities that include discussions about scientific concepts, problem-solving, and decision-making, and to undertake individual and group practical work.

In working individually, students should be encouraged to plan and manage their time effectively, work safely, make responsible decisions and constructively handle challenging situations.

When working with others, students are expected to actively participate, share ideas and offer viewpoints and suggestions while respecting the perspectives of others. In group work, students should identify collective goals and make use of strategies to work effectively as a group member to complete tasks and solve problems.

Students learn to seek, value and act on feedback when undertaking both individual and collaborative endeavours.

Terms used in this study

For the purposes of this study design and associated assessment, the following definitions will apply. The [Support materials](https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx) provide additional information and should be used in conjunction with this study design.

Data and measurement

A major aim of science is to develop explanations that are supported by evidence for natural phenomena and events. This involves considering the quality and quantity of evidence and, before conclusions are drawn from data, considering questions such as ‘Can I be certain the data I have generated is valid when drawing conclusions?’ and ‘Does the difference between one measurement and another indicate a real change in what is being measured?’.

When analysing and discussing investigations of a quantitative nature, the following terms require consideration:

* **Accuracy:** The accuracy of a measurement relates to how close it is to the true value of the quantity being measured. Accuracy is not quantifiable; measurement values may be described as more accurate or less accurate.
* **Precision:** Refers to how closely a set of measurement values agree with each other. Precision gives no indication of how close the measurements are to the true value and is therefore a separate consideration to accuracy.
* **Repeatability:** The closeness of the agreement between the results of successive measurements of the same quantity being measured, carried out under the same conditions of measurement. These conditions include the same measurement procedure, the same observer, the same measuring instrument used under the same conditions, the same location, and repetition over a short period of time.
* **Reproducibility:** The closeness of the agreement between the results of measurements of the same quantity being measured, carried out under changed conditions of measurement. These different conditions include a different method of measurement, different observer, different measuring instrument, different location, different conditions of use, different time and/or different culture(s). Scientific findings can be considered in terms of whether they are replicable or irreplicable, where irreplicable results may lack credibility.
* **True value:** The value, or range of values, that would be found if the quantity could be measured perfectly.
* **Validity:** A measurement is said to be valid if it measures what it is supposed to be measuring, while the validity of a psychological investigation refers to how well the results among the study participants represent true findings among similar individuals outside of a study.
* A psychological investigation is said to be **internally valid** if it investigates what it sets out and/or claims to investigate. When considering the internal validity of an investigation in psychology, the appropriateness of the investigation design, sampling and allocation techniques may be considered, as well as the impact of extraneous and confounding variables on the investigation results. Lack of internal validity implies that the results of the study deviate from the truth and therefore no conclusions can be drawn. If a study is not internally valid, external validity is irrelevant.
* A psychological investigation is said to be **externally valid** if the results of the research can be applied to similar individuals in a different setting. Lack of external validity implies that the results of the research may not apply to individuals who are different from the study population. External validity can be increased by using broad inclusion criteria and sampling techniques that result in a study population more closely resembling the overall general human population.

Ethical concepts and guidelines

Consideration of ethical concepts and ethical principles or guidelines supports students in exploring ethical and moral conduct in psychological investigations and psychological issues. These concepts may be useful as standalone ways of exploring ethical conduct of psychological investigations. They can also be used when identifying a psychological issue and when deciding the extent to which the outcome of a particular course of action (the effect) or the action itself (the cause) is ethically acceptable.

Teachers should ensure that students understand and are able to recognise that ethical concepts are general in nature and are separate to any codes, legislation and ethical principles or guidelines that may apply to the ethical conduct of scientific investigations involving humans and non-human participants. While there are many ethical concepts that can support the analysis and evaluation of ethical issues and psychological research, one or more of the following **ethical concepts** should be applied:

* **Beneficence:** The commitment to maximising benefits and minimising the risks and harms involved in taking a particular position or course of action.
* **Integrity:** The commitment to searching for knowledge and understanding, and the honest reporting of all sources of information and results, whether favourable or unfavourable, in ways that permit scrutiny and contribute to public knowledge and understanding.
* **Justice:** The moral obligation to ensure that there is fair consideration of competing claims; that there is no unfair burden on a particular group from an action; and that there is fair distribution and access to the benefits of an action.
* **Non-maleficence:** Involves avoiding the causations of harm; however, as a position or course of action may involve some degree of harm, the concept of non-maleficence implies that the harm resulting from any position or course of action should not be disproportionate to the benefits from any position or course of action.
* **Respect:** Involves consideration of the extent to which living things have an intrinsic value and/or instrumental value; giving due regard to the welfare, liberty and autonomy, beliefs, perceptions, customs and cultural heritage of both the individual and the collective; consideration of the capacity of living things to make their own decisions; and when living things have diminished capacity to make their own decisions, ensuring that they are empowered where possible and protected as necessary.

These are supplemented by the following **ethical guidelines**, which should be considered when conducting and evaluating psychological investigations:

* **Confidentiality:** The privacy, protection and security of a participant’s personal information in terms of personal details and the anonymity of individual results, including the removal of identifying elements.
* **Debriefing:** Ensures that, at the end of the experiment, the participant leaves understanding the experimental aim, results and conclusions. Any participant questions are addressed, and support is also provided to ensure there is no lasting harm from their involvement in the study. Debriefing is essential for all studies that involve deception.
* **Informed consent procedures:** Ensure participants understand the nature and purpose of the experiment, including potential risks (both physical and psychological), before agreeing to participate in the study. Voluntary written consent should be obtained by the experimenter and if participants are unable to give this consent, then a parent or legal guardian should provide this.
* **Use of deception in research:** Is only permissible when participants knowing the true purpose of the experiment may affect their behaviour while participating in the study, and the subsequent validity of the experiment. The use of deception is discouraged in psychological research and used only when necessary.
* **Voluntary participation:** Ensures that there is no coercion of or pressure put on the participant to partake in an experiment, and they freely choose to be involved.
* **Withdrawal rights:** Involves a participant being able to discontinue their involvement in an experiment at any time during or after the conclusion of an experiment, without penalty. This may include the removal of the participant’s results from the study after the study has been completed.

Errors, uncertainty and outliers

It is important not to confuse the terms ‘measurement error’ and ‘personal error’. Error, from a scientific measurement perspective, is the difference between the measured value and the true value of what is being measured. For the purposes of VCE Psychology, two types of measurement errors should be considered when evaluating the quality of data: systematic errors and random errors. Personal errors should not be included in reporting and analysis of data. Rather, the experiment should be repeated correctly.

* **Random errors:** Affect the *precision* of a measurement and are present in all measurements except for measurements involving counting. Random errors are unpredictable variations in the measurement process and result in a spread of readings. These may be caused by limitations of instruments, environmental factors and slight variations in procedures. The effect of random errors can be reduced by making more or repeated measurements and calculating a new mean, increasing sample size and/or by refining the measurement method or technique.
* **Systematic errors:** Affect the *accuracy* of a measurement. Systematic errors cause readings to differ from the true value by a consistent amount or by the same proportion each time a measurement is made, so that all the readings are shifted in one direction from the true value. They may be observational error, imperfect instrument calibration and environmental interference. The accuracy of measurements subject to systematic errors cannot be improved by repeating those measurements. Most systematic errors can be reduced by being familiar with the limitations of instruments and experience with their correct use.
* **Personal errors:** Include mistakes, miscalculations and observer errors when conducting research.

It is also important not to confuse the terms ‘error’ and ‘uncertainty’, which are not synonyms. ‘Outliers’ in data are a separate consideration, and must be further analysed and accounted for, rather than being automatically dismissed.

* **Uncertainty:** All scientific efforts are directed towards reducing the degree of uncertainty in the world about observations, relationships and causes. All measurements are subject to uncertainty and may have many potential sources of variation and this uncertainly extends to all inferences and conclusions that depend on uncertain measurements. The uncertainty of the result of a measurement reflects the lack of exact knowledge of the value of the quantity being measured. The nature of human behaviour and mental processes measured in the discipline of psychology often involves psychological constructs which, by their very nature, can increase the degree of uncertainty associated with such measurements. VCE Psychology requires only a qualitative treatment of uncertainty (no calculations). When evaluating personally sourced or provided data, students should be able to identify contradictory (incorrect data) and incomplete data (missing data – questions without answers or variables without observations), including possible sources of bias.
* **Outliers:** Readings that lie a long way from other results are sometimes called outliers. These may occur by chance in any given data set, with a small number of outliers expected when there is a larger sample. Their presence alone does not suggest an anomaly, but repeating readings may be useful in further exploring an outlier. Measurement and recording errors, a skewed distribution or data points from a different underlying distribution may be all causes of outliers. VCE Psychology requires students to use data visualisation to recognise whether outliers are present in the data and reflect on how these outliers would affect the testing efforts and validity of the research.

Variables

A variety of different variables are used in psychological research to determine if changes in one variable may result in changes to another. The following types of variables should be explored in VCE Psychology:

* **Controlled:** Variables that a researcher holds constant (controls) in an investigation. They are not part of an investigation itself – a controlled variable is neither the independent nor dependent variable, nor the same as a control group. They are kept constant to ensure the manipulation of the independent variable causes the changes in the dependent variable.
* **Independent:** The variable for which quantities are manipulated (controlled, selected or changed) by the researcher, and the variable that is assumed to have a direct effect on the dependent variable. Independent variables are plotted on the horizontal axis of a graph.
* **Dependent:** The variable the researcher measures, after selecting the independent variable that is assumed to affect the dependent variable. Dependent variables are plotted on the vertical axis of a graph.
* **Extraneous:** Any variable that is not the independent variable but may affect the results (dependent variable) of the research. These variables should be controlled (kept constant), or at least monitored, in order that they do not threaten the internal validity of the investigation results by becoming a confounding variable.
* **Confounding:** Variables that have affected the results (dependent variable), apart from the independent variable. A confounding variable may have been an extraneous variable that has not been controlled for, or it can be a type of variable that cannot be controlled for. These variables interfere with the internal validity of the investigation by providing alternative explanations for the investigation results.

Unit 1: How are behaviour and mental processes shaped?

In this unit students examine the complex nature of psychological development, including situations where psychological development may not occur as expected. Students examine the contribution that classical and contemporary knowledge from Western and non-Western societies, including Aboriginal and Torres Strait Islander peoples, has made to an understanding of psychological development and to the development of psychological models and theories used to predict and explain the development of thoughts, emotions and behaviours. They investigate the structure and functioning of the human brain and the role it plays in mental processes and behaviour and explore brain plasticity and the influence that brain damage may have on a person’s psychological functioning.

A student-directed research investigation into contemporary psychological research is undertaken in Area of Study 3. The investigation involves the exploration of research, methodology and methods, as well as the application of critical and creative thinking to evaluate the validity of a research study by analysing secondary data. The investigation draws on the key science skills and key knowledge from Area of Study 1 and/or Area of Study 2.

Area of Study 1

What influences psychological development?

The psychological development of an individual involves complex interactions between biological, psychological and social factors. In this area of study students explore how these factors influence different aspects of a person’s psychological development, recognising that individuals are not fixed from birth but instead can grow and change psychologically across their lives.

Students consider the interactive influences of hereditary and environmental factors on a person’s psychological development. They explore psychological development across the life span through the lens of emotional, cognitive and social development, including the consideration and evaluation of relevant models and theories.

Students explore concepts of normality and neurotypicality and consider how typical or atypical psychological development in individuals may be culturally defined, classified and categorised. They consider how normal cognitive variations within society can be illustrated through consideration of neurodiversity, investigating selected developmental differences. The role of mental health workers, psychologists, psychiatrists and organisations in supporting psychological development and the diagnosis and management of atypical behaviour is considered, and depending on interest and context, students may extend their understanding of atypical behaviour to explore the diagnosis and treatment of selected mental disorders.

Outcome 1

On completion of this unit the student should be able to discuss complexity of psychological development over the life span, and evaluate ways of understanding and representing psychological development.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 1 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

The complexity of psychological development

* the interactive influences of hereditary and environmental factors on a person’s psychological development
* the biopsychosocial approach as a model for considering psychological development and mental wellbeing
* the process of psychological development (emotional, cognitive and social development) over the course of the life span
* the role of sensitive and critical periods in a person’s psychological development

Defining and supporting psychological development

* the usefulness, and limitations, of psychological criteria to categorise behaviour as typical or atypical, including cultural perspectives, social norms, statistical rarity, personal distress and maladaptive behaviour
* the concepts of normality and neurotypicality, including consideration of emotions, behaviours and cognitions that may be viewed as adaptive or maladaptive for an individual
* normal variations of brain development within society, as illustrated by neurodiversity
* the role of mental health workers, psychologists, psychiatrists and organisations in supporting psychological development and mental wellbeing as well as the diagnosis and management of atypical behaviour, including culturally responsive practices

Area of Study 2

How are mental processes and behaviour influenced by the brain?

In this area of study students explore how the understanding of brain structure and function has changed over time, considering the influence of different approaches and contributions to understanding the role of the brain. They develop their understanding of how the brain enables humans to interact with the external world around them and analyse the interactions between different areas of the brain that enable the processing of complex sensory information, the initiation of voluntary movements, language, decision-making, and the regulation of emotions.

Students consider how the brain changes with age and experience, and subsequently how mental functions adapt. Students explore neuroplasticity as the result of experience and brain trauma. They investigate ways to maintain brain functioning and an opportunity is provided to investigate the impact of acquired brain injuries (ABIs), to consolidate students’ understanding of brain functioning. Chronic traumatic encephalopathy (CTE) is also considered as area of contemporary research into progressive and fatal brain disease.

Outcome 2

On completion of this unit the student should be able to analyse the role of the brain in mental processes and behaviour and evaluate how brain plasticity and brain injury can change biopsychosocial functioning.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 2 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Role of the brain in mental processes and behaviour

* different approaches over time in understanding the role of the brain in behaviour and mental processes
* the roles of the hindbrain, midbrain and forebrain, including the cerebral cortex, in behaviour and mental processes

Brain plasticity and brain injury

* the capacity of the brain to change in response to experience and brain trauma, including factors influencing neuroplasticity and ways to maintain and/or maximise brain functioning
* the impact of an acquired brain injury (ABI) on a person’s biological, psychological and social functioning
* the contribution of contemporary research to the understanding of neurological disorders
* chronic traumatic encephalopathy (CTE) as an example of emerging research into progressive and fatal brain disease

Area of Study 3

How does contemporary psychology conduct and validate psychological research?

Researchers in psychology work to continually expand and refine the ability to understand and describe human thoughts, feelings and behaviours and to review the validity of research already conducted in a particular area of research. Historically, psychological research has been conducted using samples selected from Western, educated, industrialised, rich and democratic (WEIRD) societies – samples that under-represent a large proportion of the overall population. Reproducing previous research with different population groups has led to the accuracy of published findings and the external validity of the original research being questioned.

In this area of study students investigate how science is used to explore and validate contemporary psychological research questions. Making connections between the research of others and their own learning enables students to explore and compare responses to contemporary psychological concepts as well as engage in the analysis and evaluation of methodologies, methods and conclusions of research studies. When evaluating information and research, students consider questions such as ‘Where does this idea come from?’, ‘Can it be tested empirically?’, ‘What are the underlying scientific processes?’, ‘What is the scientific evidence to support the research question?’, ‘Does the evidence address the research question?’, ‘Is the claim well justified?’, ‘Is the evidence subject to critique?’, ‘What uncertainties still exist?’ and ‘Have cultural biases impacted on the research design, data collection and interpretation?’

Students select and evaluate a recent discovery, finding, innovation, issue, advance or case study linked to the knowledge and skills developed in Area of Study 1 and/or Area of Study 2. Students may develop a research question individually or in conjunction with their class or a group of students. Possible starting points when developing a research question include reviewing contemporary research such as announcements of recent psychological research, an expert’s published point of view, a TED Talk, a YouTube presentation, a report from a community program or an article from a scientific publication.

Analysing and synthesising secondary data, students demonstrate and apply their knowledge and relevant key science skills to identify the psychological concepts specific to the research question; consider different perspectives and evidence available; identify any social, economic, legal and/or political factors relevant to the selected research question; and analyse and evaluate the validity of the psychological research.

Students consider the appropriateness of different methodologies to the needs and world views of Aboriginal and Torres Strait Islander peoples and identify cultural biases in research methods and data interpretations, including those that may exclude Aboriginal and Torres Strait Islander voices and knowledges.

When communicating their findings, students apply critical and creative thinking and scientific inquiry skills to explain the relevant psychological concepts; critically examine the evidence available to answer the research question; and identify the sociocultural, economic, political, legal and ethical implications of the selected investigation for society.

Outcome 3

On completion of this unit the student should be able to identify, analyse and evaluate the evidence available to answer a research question relating to contemporary psychology.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 3 and the related key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Scientific evidence

* the distinction between primary and secondary data
* the nature of evidence and information: distinction between opinion, anecdote and evidence, and between scientific and non-scientific ideas
* the quality of evidence, including uncertainty, validity and authority of data and sources of possible errors or bias
* methods of organising, analysing and evaluating secondary data
* the use of a logbook to authenticate collated secondary data

Scientific communication

* psychological concepts specific to the investigation: definitions of key terms; and use of appropriate psychological terminology, conventions and representations
* the characteristics of effective science communication: accuracy of psychological information; clarity of explanation of scientific concepts, ideas and models; contextual clarity with reference to importance and implications of findings; conciseness and coherence; and appropriateness for purpose and audience
* the use of data representations, models and theories in organising and explaining observed phenomena and psychological concepts, and their limitations
* the influence of sociocultural, economic, legal and political factors, and application of ethical understanding to science as a human endeavour
* conventions for referencing and acknowledging sources of information

Analysis and evaluation of psychological research

* characteristics of repeatable and reproducible psychological research and the consideration of uncertainty
* criteria used to evaluate the validity of psychological research

Assessment

The award of satisfactory completion for a unit is based on whether the student has demonstrated the set of outcomes specified for the unit. Teachers should use a variety of learning activities and assessment tasks that provide a range of opportunities for students to demonstrate the key science skills and key knowledge in the outcomes.

The areas of study, including the key science skills and key knowledge listed for the outcomes, should be used for course design and the development of learning activities and assessment tasks. Assessment must be a part of the regular teaching and learning program and should be completed mainly in class and within a limited timeframe.

All assessments at Units 1 and 2 are school-based. Procedures for assessment of levels of achievement in Units 1 and 2 are a matter for school decision.

For this unit students are required to demonstrate three outcomes. As a set these outcomes encompass the areas of study in the unit.

Suitable tasks for assessment in this unit may be selected from the list below.

**Outcome 1 and Outcome 2**

For each outcome, at least one task selected from:

* analysis and evaluation of an experiment or case study
* a data analysis of generated primary and/or collated secondary data
* reflective annotations of a logbook of practical activities
* media analysis of one or more contemporary media texts
* a literature review
* response to a psychological issue or ethical dilemma
* a modelling or simulation activity
* problem-solving involving psychological concepts, skills and/or issues
* a report of a scientific investigation, including the generation, analysis and evaluation of primary data.

If multiple tasks are selected for Outcome 1 and/or Outcome 2, they must be different. The same task cannot be selected more than once across Outcomes 1 and 2.

Where teachers allow students to choose between tasks, they must ensure that the tasks they set are of comparable scope and demand.

**Outcome 3**

* a response to an investigation into contemporary psychological research and how science can be used to explore and validate psychological research questions

Practical work

Practical work is a central component of learning and assessment and may include activities such as experiments, fieldwork, simulations, modelling and other direct experiences as described in the scientific investigation methodologies on [page 14](#methodologies). A minimum of 10 hours of class time should be devoted to student practical activities and scientific investigations across Areas of Study 1 and 2. For Area of Study 3, a minimum of seven hours of class time should be devoted to undertaking, and communicating findings of, the student-adapted or student-designed scientific investigation.

Unit 2: How do internal and external factors influence behaviour and mental processes?

In this unit students evaluate the role social cognition plays in a person’s attitudes, perception of themselves and relationships with others. Students explore a variety of factors and contexts that can influence the behaviour of individuals and groups, recognising that different cultural groups have different experiences and values. Students are encouraged to consider Aboriginal and Torres Strait Islander people’s experiences within Australian society and how these experiences may affect psychological functioning.

Students examine the contribution that classical and contemporary research has made to the understandings of human perception and why individuals and groups behave in specific ways. Students investigate how perception of stimuli enables a person to interact with the world around them and how their perception of stimuli can be distorted.

A student-adapted or student-designed scientific investigation is undertaken in Area of Study 3. The investigation involves the generation of primary data and is related to internal and external factors that influence behaviour and mental processes. The investigation draws on key knowledge and key science skills from Area of Study 1 and/or Area of Study 2.

Area of Study 1

How are people influenced to behave in particular ways?

In this area of study students explore the interplay of psychological and social factors that shape the identity and behaviour of individuals and groups. Students consider how factors such as person perception, attributions, attitudes and stereotypes can be used to explain the cause and dynamics of individual and group behaviours. Students explore how cognitive biases may assist with the avoidance of cognitive dissonance. They also consider the important role that heuristics have in problem-solving and decision-making.

Students are given an opportunity to explore the psychological impact of stereotypes, prejudice, discrimination and stigma on individuals and groups in Australian society, including on Aboriginal and Torres Strait Islander peoples. They investigate strategies to reduce prejudice, discrimination and stigma.

Students evaluate the findings of classical and contemporary research when considering impacts of social groups and culture on individual behaviour, including obedience and conformity. They explore the positive and negative influences of different media sources on an individual’s mental wellbeing and group behaviour. They also consider mechanisms to understand group processes and biases that may assist in decision-making and the critical evaluation of people they encounter in life.

Outcome 1

On completion of this unit the student should be able to analyse how social cognition influences individuals to behave in specific ways and evaluate factors that influence individual and group behaviour.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 1 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Social cognition

* the role of person perception, attributions, attitudes and stereotypes in interpreting, analysing, remembering and using information about the social world, including decision-making and interpersonal interactions
* the avoidance of cognitive dissonance using cognitive biases
* the positive and negative influences of heuristics as mechanisms for decision-making and problem-solving
* the influence of prejudice, discrimination and stigma within society on a person’s and/or group’s mental wellbeing and ways to reduce it

Factors that influence individual and group behaviour

* the influence of social groups and culture on individual behaviour
* the concepts of obedience and conformity and their relative influence on individual behaviour
* positive and negative influences of different media sources on individual and group behaviour, such as changing nature of social connections, social comparison, addictive behaviours and information access
* the development of independence and anti-conformity to empower individual decision-making when in groups

Area of Study 2

What influences a person’s perception of the world?

Human perception of internal and external stimuli is influenced by a variety of biological, psychological and social factors. In this area of study students explore the role of attention in making sense of the world around them and they consider two aspects of human perception – vision and taste – and consider how perception is influence by cultural norms and historical experiences.

Students explore the influence of biological, psychological and social factors on visual and gustatory perception. Perceptual distortions of vision and taste are explored when looking at the fallibility of perceptual systems. Students may choose to explore a range of different visual illusions to understand how individuals misinterpret real sensory stimuli. Different forms of agnosia may be investigated by students to understand issues with sensory processing areas within the brain.

Aboriginal and Torres Strait Islander experiences of sensory connection to Country and/or Place, ancestors, spirituality and songlines may also be considered.

Outcome 2

On completion of this unit the student should be able to explain the roles of attention and perception, compare gustatory and visual perception and analyse factors that may lead to perceptual distortions.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 2 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Perception

* the role of attention (sustained, divided, selective) in making sense of the world around us
* the role of perception in the processing and interpretation of sensory information, as demonstrated through top-down and bottom-up processing
* the influence of biological, psychological and social factors on visual perception and gustatory perception

Distortions of perception

* the fallibility of visual perceptual systems, for example, visual illusions and agnosia
* the fallibility of gustatory perception, for example, supertasters, exposure to miraculin and the judgment of flavours
* distortions of perception of taste and vision in healthy individuals, such as synaesthesia and spatial neglect

Area of Study 3

How do scientific investigations develop understanding of influences on perception and behaviour?

Individuals are influenced by a variety of biological, psychological and social and cultural factors. These determinants can be classified as either internal or external factors and they lead to a diverse range of perceptions and behaviour.

In this area of study students adapt or design and then conduct a scientific investigation into the internal or external influences on perception and/or behaviour. They generate appropriate qualitative and/or quantitative data, organise and interpret the data, and research a conclusion in response to the research question.

The student-adapted or student-designed scientific investigation relates to knowledge and skills developed in Area of Study 1 and/or Area of Study 2.

Outcome 3

On completion of this unit the student should be able to adapt or design and then conduct a scientific investigation related to internal and external influences on perception and/or behaviour and draw an evidence-based conclusion from generated primary data.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 3 and the related key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Investigation design

* the role of scientific investigations in reducing uncertainty
* psychological science concepts specific to the selected scientific investigation and their significance, including the definition of key terms
* scientific methodology relevant to the selected scientific investigation, selected from classification and identification; controlled experiment; correlational study; fieldwork; modelling; or simulation
* techniques of primary qualitative and quantitative data generation relevant to the investigation
* accuracy, precision, repeatability, reproducibility and validity of measurements in relation to the investigation
* health, safety and ethical guidelines relevant to the selected scientific investigation

Scientific evidence

* the distinction between an aim, a hypothesis, a model and a theory
* observations and investigations that are consistent with, or challenge, current scientific models or theories
* the characteristics of primary data
* ways of organising, analysing and evaluating generated primary data to identify patterns and relationships, including sources of error and remaining uncertainty
* use of a logbook to authenticate generated primary data
* the limitations of investigation methodologies and methods, and of data generation and/or analysis

Science communication

* the conventions of scientific report writing, including scientific terminology and representations, standard abbreviations and units of measurement
* ways of presenting key findings and implications of the selected scientific investigation

Assessment

The award of satisfactory completion for a unit is based on whether the student has demonstrated the set of outcomes specified for the unit. Teachers should use a variety of learning activities and assessment tasks that provide a range of opportunities for students to demonstrate the key science skills and key knowledge in the outcomes.

The areas of study, including the key science skills and key knowledge listed for the outcomes, should be used for course design and the development of learning activities and assessment tasks. Assessment must be a part of the regular teaching and learning program and should be completed mainly in class and within a limited timeframe.

All assessments at Units 1 and 2 are school-based. Procedures for assessment of levels of achievement in Units 1 and 2 are a matter for school decision.

For this unit students are required to demonstrate three outcomes. As a set these outcomes encompass the areas of study in the unit.

Suitable tasks for assessment in this unit may be selected from the list below.

**Outcome 1 and Outcome 2**

For each outcome, at least one task selected from:

* analysis and evaluation of an experiment or case study
* a data analysis of generated primary and/or collated secondary data
* reflective annotations of a logbook of practical activities
* media analysis of one or more contemporary media texts
* a literature review
* response to a psychological issue or ethical dilemma
* a modelling or simulation activity
* problem-solving involving psychological concepts, skills and/or issues
* a report of a scientific investigation, including the generation, analysis and evaluation of primary data.

If multiple tasks are selected for Outcome 1 and/or Outcome 2, they must be different. The same task cannot be selected more than once across Outcomes 1 and 2.

Where teachers allow students to choose between tasks, they must ensure that the tasks they set are of comparable scope and demand.

**Outcome 3**

* a report of a student-adapted or student-designed scientific investigation using a selected format, such as a scientific poster, an article for a scientific publication, a practical report, an oral presentation, a multimedia presentation or a visual representation

Practical work

Practical work is a central component of learning and assessment and may include activities such as laboratory experiments, fieldwork, simulations, modelling and other direct experiences as described in the scientific investigation methodologies on [page 14](#methodologies). A minimum of 10 hours of class time should be devoted to student practical activities and investigations across Areas of Study 1 and 2. For Area of Study 3, a minimum of seven hours of class time should be devoted to undertaking the investigation and communicating findings.

Unit 3: How does experience affect behaviour and mental processes?

In this unit students investigate the contribution that classical and contemporary research has made to the understanding of the functioning of the nervous system and to the understanding of biological, psychological and social factors that influence learning and memory.

Students investigate how the human nervous system enables a person to interact with the world around them. They explore how stress may affect a person’s psychological functioning and consider stress as a psychobiological process, including emerging research into the relationship between the gut and the brain in psychological functioning.

Students investigate how mechanisms of learning and memory lead to the acquisition of knowledge and the development of new and changed behaviours.They consider models to explain learning and memory as well as the interconnectedness of brain regions involved in memory. The use of mnemonics to improve memory is explored, including Aboriginal and Torres Strait Islander peoples’ use of place as a repository of memory.

A student-designed scientific investigation involving the generation of primary data related to mental processes and psychological functioning is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3. The design, analysis and findings of the investigation are presented in a scientific poster format as outlined on [pages 15 and 16](#poster).

Area of Study 1

How does the nervous system enable psychological functioning?

In this area of study students explore the role of different branches of the nervous system in enabling a person to integrate, coordinate and respond to internal and external sensory stimuli. Students apply their understanding of neurotransmitters in the transmission of neural information across a neural synapse to produce excitatory and inhibitory effects and explore the effect that neuromodulators have on brain activity. The interaction of gut microbiota with stress and the nervous system in the control of processes and behaviour is also explored.

Students evaluate the ways in which stress can affect mental wellbeing, by considering stress as a psychobiological process. They compare the explanatory power of different models that explain stress as well as exploring strategies for coping with stress and improving mental wellbeing.

Outcome 1

On completion of this unit the student should be able to analyse how the functioning of the human nervous system enables a person to interact with the external world, and evaluate the different ways in which stress can affect psychobiological functioning.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 1 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Nervous system functioning

* the roles of different subdivisions of the central and peripheral nervous systems in responding to, and processing and coordinating with, sensory stimuli received by the body to enable conscious and unconscious responses, including spinal reflexes
* the role of neurotransmitters in the transmission of neural information across a neural synapse to produce excitatory effects (as with glutamate) or inhibitory effects (as with gamma-amino butyric acid [GABA]) as compared to neuromodulators (such as dopamine and serotonin) that have a range of effects on brain activity
* synaptic plasticity – resulting from long-term potentiation and long-term depression, which together act to modify connections between neurons (sprouting, rerouting and pruning) – as the fundamental mechanism of memory formation that leads to learning

Stress as an example of a psychobiological process

* internal and external stressors causing psychological and physiological stress responses, including the flight-or-fight-or-freeze response in acute stress and the role of cortisol in chronic stress
* the gut–brain axis (GBA) as an area of emerging research, with reference to the interaction of gut microbiota with stress and the nervous system in the control of psychological processes and behaviour
* the explanatory power of Hans Selye’s General Adaptation Syndrome as a biological model of stress, including alarm reaction (shock/counter shock), resistance and exhaustion
* the explanatory power of Richard Lazarus and Susan Folkman’s Transactional Model of Stress and Coping to explain stress as a psychological process (primary and secondary appraisal only)
* use of strategies (approach and avoidance) for coping with stress and improving mental wellbeing, including context-specific effectiveness and coping flexibility

Area of Study 2

How do people learn and remember?

Learning and memory are interdependent processes that demonstrate the acquisition of skills and knowledge through experience across the life span. In this area of study students evaluate models to explain learning and apply their knowledge of learning to a range of everyday experiences and contemporary social issues.

Students explore memory as the process by which knowledge is encoded, stored and later retrieved, as illustrated by Richard Atkinson and Richard Shiffrin’s multi-store model of memory, including how information passes through distinct memory stores in order for it to be stored relatively permanently. Students explore the interconnectedness of brain regions in storing explicit and implicit memories and the role of semantic and episodic memory in cognition. They consider the use of mnemonics to increase the encoding, storage and retrieval of information and develop an understanding of the contribution of Aboriginal and Torres Strait Islander knowledges and perspectives in understanding memory and learning.

Outcome 2

On completion of this unit the student should be able to apply different approaches to explain learning to familiar and novel contexts and discuss memory as a psychobiological process.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 2 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design

Key knowledge

Approaches to understand learning

* behaviourist approaches to learning, as illustrated by classical conditioning as a three-phase process (before conditioning, during conditioning and after conditioning) that results in the involuntary association between a neutral stimulus and unconditioned stimulus to produce a conditioned response, and operant conditioning as a three-phase process (antecedent, behaviour and consequence) involving reinforcement (positive and negative) and punishment (positive and negative)
* social-cognitive approaches to learning, as illustrated by observational learning as a process involving attention, retention, reproduction, motivation and reinforcement
* approaches to learning that situate the learner within a system, as illustrated by Aboriginal and Torres Strait Islander ways of knowing where learning is viewed as being embedded in relationships where the learner is part of a multimodal system of knowledge patterned on Country

The psychobiological process of memory

* the explanatory power of the Atkinson-Shiffrin multi-store model of memory in the encoding, storage and retrieval of stored information in sensory, short-term and long-term memory stores
* the roles of the hippocampus, amygdala, neocortex, basal ganglia and cerebellum in long-term implicit and explicit memories
* the role of episodic and semantic memory in retrieving autobiographical events and in constructing possible imagined futures, including evidence from brain imaging and post-mortem studies of brain lesions in people with Alzheimer’s disease and aphantasia as an example of individual differences in the experience of mental imagery
* the use of mnemonics (acronyms, acrostics and the method of loci) by written cultures to increase the encoding, storage and retrieval of information as compared with the use of mnemonics such as sung narrative used by oral cultures, including Aboriginal peoples’ use of songlines

School-based assessment

Satisfactory completion

The award of satisfactory completion for a unit is based on whether the student has demonstrated the set of outcomes specified for the unit. Teachers should use a variety of learning activities and assessment tasks to provide a range of opportunities for students to demonstrate the key science skills and key knowledge in the outcomes.

The areas of study and key knowledge and relevant key science skills listed for the outcomes should be used for course design and the development of learning activities and assessment tasks.

Assessment of levels of achievement

School-assessed Coursework

The student’s level of achievement in Unit 3 will be determined by School-assessed Coursework. School-assessed Coursework tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe.

Where teachers provide a range of options for the same School-assessed Coursework task, they should ensure that the options are of comparable scope and demand.

The types and range of forms of School-assessed Coursework for the outcomes are prescribed within the study design. The VCAA publishes [Support materials](https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx) for this study, which includes advice on the design
of assessment tasks and the assessment of student work for a level of achievement.

Teachers will provide to the VCAA a numerical score representing an assessment of the student’s level of achievement. The score must be based on the teacher’s assessment of the performance of each student on the tasks set out in the following table.

Contribution to final assessment

School-assessed Coursework for Unit 3 will contribute 20 per cent to the study score.

|  |  |  |
| --- | --- | --- |
| Outcomes | Marks allocated | Assessment tasks |
| **Outcome 1**Analyse how the functioning of the human nervous system enables a person to interact with the external world, and evaluate the different ways in which stress can affect psychobiological functioning. | **40** | *For Outcomes 1 and 2*For each outcome, one task selected from: * analysis and evaluation of at least one psychological case study, experiment, model or simulation
* analysis and evaluation of generated primary and/or collated secondary data
* comparison and evaluation of psychological concepts, methodologies and methods, and findings from three student practical activities
* analysis and comparison of two or more contemporary media texts.

Each task type can be selected only once across Units 3 and 4.For each task the time allocated should be approximately 50–70 minutes for a written response and 10 minutes for a multimodal or oral presentation. |
| **Outcome 2**Apply different approaches to explain learning to familiar and novel contexts and discuss memory as a psychobiological process. | **40** |
| **Total marks** | **80** |  |

Practical work

Practical work is a central component of learning and assessment and may include activities such as experiments, fieldwork, simulations and other direct experiences as described in the scientific investigation methodologies on [page 14](#methodologies). A minimum of 10 hours of class time should be devoted to student practical activities and investigations across Areas of Study 1 and 2.

External assessment

The level of achievement for Units 3 and 4 is also assessed by an end-of-year examination, which will contribute 50 per cent to the study score.

Unit 4: How is mental wellbeing supported and maintained?

In this unit students explore the demand for sleep and the influences of sleep on mental wellbeing. They consider the biological mechanisms that regulate sleep and the relationship between rapid eye movement (REM) and non-rapid eye movement (NREM) sleep across the life span. They also study the impact that changes to a person’s sleep-wake cycle and sleep hygiene have on a person’s psychological functioning and consider the contribution that classical and contemporary research has made to the understanding of sleep.

Students consider ways in which mental wellbeing may be defined and conceptualised, including social and emotional wellbeing (SEWB) as a multidimensional and holistic framework to wellbeing. They explore the concept of mental wellbeing as a continuum and apply a biopsychosocial approach, as a scientific model, to understand specific phobia. They explore how mental wellbeing can be supported by considering the importance of biopsychosocial protective factors and cultural determinants as integral to the wellbeing of Aboriginal and Torres Strait Islander peoples.

A student-designed scientific investigation involving the generation of primary data related to mental processes and mental wellbeing is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3. The design, analysis and findings of the investigation are presented in
a scientific poster format as outlined on [pages 15 and 16](#poster).

Area of Study 1

How does sleep affect mental processes and behaviour?

In this area of study students focus on sleep as an example of an altered state of consciousness and the different demands humans have for sleep across the life span. They compare REM and NREM sleep as examples of naturally occurring altered states of consciousness and investigate the biological mechanisms of the sleep-wake cycle in terms of the timing of sleep, what causes individuals to be sleepy at night and why individuals wake when required.

Students analyse the effects of sleep deprivation on psychological functioning, including emotional, behavioural and cognitive functioning. They compare the effects of total sleep deprivation and blood alcohol concentration readings of 0.05 and 0.10 in terms of affective and cognitive functioning. Students examine circadian rhythm disorders as the result of changes to an individual’s sleep-wake cycle and apply their knowledge regarding sleep hygiene and zeitgebers to suggest ways to improve the sleep-wake cycle and mental wellbeing.

Outcome 1

On completion of this unit the student should be able to analyse the demand for sleep and evaluate the effects of sleep disruption on a person’s psychological functioning.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 1 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

The demand for sleep

* sleep as a psychological construct that is broadly categorised as a naturally occurring altered state of consciousness and is further categorised into REM and NREM sleep, and the measurement of physiological responses associated with sleep, through electroencephalography (EEG), electromyography (EMG), electro-oculography (EOG), sleep diaries and video monitoring
* regulation of sleep-wake patterns by internal biological mechanisms, with reference to circadian rhythm, ultradian rhythms of REM and NREM Stages 1–3, the suprachiasmatic nucleus and melatonin
* differences in, and explanations for, the demands for sleep across the life span, with reference to total amount of sleep and changes in a typical pattern of sleep (proportion of REM and NREM)

Importance of sleep to mental wellbeing

* the effects of partial sleep deprivation (inadequate sleep either in quantity or quality) on a person’s affective, behavioural and cognitive functioning, and the affective and cognitive effects of one night of full sleep deprivation as a comparison to blood alcohol concentration readings of 0.05 and 0.10
* changes to a person’s sleep-wake cycle that cause circadian rhythm sleep disorders (Delayed Sleep Phase Syndrome [DSPS], Advanced Sleep Phase Disorder [ASPD] and shift work) and the treatments of circadian rhythm sleep disorders through bright light therapy
* improving sleep hygiene and adaptation to zeitgebers to improve sleep-wake patterns and mental wellbeing, with reference to daylight and blue light, temperature, and eating and drinking patterns

Area of Study 2

What influences mental wellbeing?

In this area of study students explore mental wellbeing in terms of social and emotional wellbeing, levels of functioning, and resilience to cope with and manage change and uncertainty. Students investigate the concept of mental wellbeing as a continuum, recognising that an individual’s mental wellbeing is influenced by the interaction of internal and external factors and fluctuates over time. They recognise that for Aboriginal and Torres Strait Islander people mental wellbeing is one element of a multidimensional and holistic view of wellbeing. Students apply a biopsychosocial approach to consider how biological, psychological and social factors are involved in the development and management of a specific phobia. Students explore protective factors that contribute to an individual’s mental wellbeing from a biopsychosocial perspective and the importance of cultural determinants to the wellbeing of Aboriginal and Torres Strait Islander peoples.

Outcome 2

On completion of this unit the student should be able to discuss the concept of mental wellbeing, apply a biopsychosocial approach to explain the development and management of specific phobia, and discuss protective factors that contribute to the maintenance of mental wellbeing.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 2 and relevant key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Defining mental wellbeing

* ways of considering mental wellbeing, including levels of functioning; resilience, as the ability to cope with and manage change and uncertainty; and social and emotional wellbeing (SEWB), as a multidimensional and holistic framework for wellbeing that encapsulates all elements of being (body, mind and emotions, family and kinship, community, culture, country, spirituality and ancestors) for Aboriginal and Torres Strait Islander people
* mental wellbeing as a continuum, with an individual’s mental wellbeing influenced by the interaction of internal and external factors and fluctuating over time, as illustrated by variations for individuals experiencing stress, anxiety and phobia

Application of a biopsychosocial approach to explain specific phobia

* the relative influences of factors that contribute to the development of specific phobia, with reference to gamma-amino butyric acid (GABA) dysfunction and long-term potentiation (biological); behavioural models involving precipitation by classical conditioning and perpetuation by operant conditioning, and cognitive biases including memory bias and catastrophic thinking (psychological); and specific environmental triggers and stigma around seeking treatment (social)
* evidence-based interventions and their use for specific phobia, with reference to the use of short-acting anti-anxiety benzodiazepine agents (GABA agonists) in the management of phobic anxiety and breathing retraining (biological); the use of cognitive behavioural therapy (CBT) and systematic desensitisation as psychotherapeutic treatments of phobia (psychological); and psychoeducation for families/supporters with reference to challenging unrealistic or anxious thoughts and not encouraging avoidance behaviours (social)

Maintenance of mental wellbeing

* the application of a biopsychosocial approach to maintaining mental wellbeing, with reference to protective factors including adequate nutritional intake and hydration and sleep (biological), cognitive behavioural strategies and mindfulness meditation (psychological) and support from family, friends and community that is authentic and energising (social)
* cultural determinants, including cultural continuity and self-determination, as integral for the maintenance of wellbeing in Aboriginal and Torres Strait Islander peoples

Area of Study 3

How is scientific inquiry used to investigate mental processes and psychological functioning?

Students undertake a student-designed scientific investigation in either Unit 3 or Unit 4, or across both Units 3 and 4. The investigation involves the generation of primary data relating to mental processes and psychological functioning. The investigation draws on knowledge and related key science skills developed across Units 3 and 4 and is undertaken by students in the laboratory and/or the field.

When undertaking the investigation students are required to apply the key science skills to develop a research question, state an aim, formulate a hypothesis, and plan an appropriate methodology and method to answer the question, while complying with safety and ethical guidelines. Students then undertake an investigation to generate primary quantitative data, analyse and evaluate the data, identify limitations of data and methods, link experimental results to scientific ideas, discuss implications of the results, and draw a conclusion in response to the question. The presentation format for the investigation is a scientific poster constructed according to the structure outlined on [pages 15 and 16](#poster). A logbook is maintained by students for recording, assessment and authentication purposes.

Outcome 3

On completion of this unit the student should be able to design and conduct a scientific investigation related to mental processes and psychological functioning, and present an aim, methodology and method, results, discussion and conclusion in a scientific poster.

To achieve this outcome the student will draw on key knowledge outlined in Area of Study 3 and the related key science skills on [pages 12 and 13](#ScienceSkills) of the study design.

Key knowledge

Investigation design

* psychological concepts specific to the selected scientific investigation and their significance, including definitions of key terms
* characteristics of the selected scientific methodology and method, and appropriateness of the use of independent, dependent and controlled variables in the selected scientific investigation
* techniques of primary quantitative data generation relevant to the selected scientific investigation
* the accuracy, precision, repeatability, reproducibility and validity of measurements
* the health, safety and ethical guidelines relevant to the selected scientific investigation

Scientific evidence

* the nature of evidence that supports or refutes a hypothesis, model or theory
* ways of organising, analysing and evaluating primary data to identify patterns and relationships, including sources of error and uncertainty
* authentication of generated primary data using a logbook
* assumptions and limitations of investigation methodology and/or data generation and/or analysis methods
* criteria used to evaluate the validity of measurements and psychological research

Science communication

* conventions of science communication: scientific terminology and representations, symbols, formulas, standard abbreviations and units of measurement
* conventions of scientific poster presentation, including succinct communication of the selected scientific investigation and acknowledgements and references
* the key findings and implications of the selected scientific investigation

School-based assessment

Satisfactory completion

The award of satisfactory completion for a unit is based on whether the student has demonstrated the set of outcomes specified for the unit. Teachers should use a variety of learning activities and assessment tasks to provide a range of opportunities for students to demonstrate the key science skills and key knowledge in the outcomes.

The areas of study and key knowledge and relevant key science skills listed for the outcomes should be used for course design and the development of learning activities and assessment tasks.

Assessment of levels of achievement

School-assessed Coursework

The student’s level of achievement in Unit 4 will be determined by School-assessed Coursework. School-assessed Coursework tasks must be a part of the regular teaching and learning program and must not unduly add to the workload associated with that program. They must be completed mainly in class and within a limited timeframe.

Where teachers provide a range of options for the same School-assessed Coursework task, they should ensure that the options are of comparable scope and demand.

The types and range of forms of School-assessed Coursework for the outcomes are prescribed within the study design. The VCAA publishes [Support materials](https://www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/psychology/Pages/Index.aspx) for this study, which includes advice on the design of assessment tasks and the assessment of student work for a level of achievement.

Teachers will provide to the VCAA a numerical score representing an assessment of the student’s level of achievement. The score must be based on the teacher’s assessment of the performance of each student on the tasks set out in the following table.

Contribution to final assessment

School-assessed Coursework for Unit 4 will contribute 30 per cent to the study score.

| Outcomes | Marks allocated | Assessment tasks |
| --- | --- | --- |
| **Outcome 1**Analyse the demand for sleep and evaluate the effects of sleep disruption on a person’s psychological functioning. | **40** | *For Outcomes 1 and 2*For each outcome, one task selected from: * analysis and evaluation of at least one psychological case study, experiment, model or simulation
* analysis and evaluation of generated primary and/or collated secondary data
* comparison and evaluation of psychological concepts, methodologies and methods, and findings from three student practical activities
* analysis and comparison of two or more contemporary media texts.

Each task type can be selected only once across Units 3 and 4.For each task the time allocated should be approximately 50–70 minutes for a written response and 10 minutes for a multimodal or oral presentation. |
| **Outcome 2**Discuss the concept of mental wellbeing, apply a biopsychosocial approach to explain the development and management of specific phobia, and discuss protective factors that contribute to the maintenance of mental wellbeing. | **40** |
| **Outcome 3**Design and conduct a scientific investigation related to mental processes and psychological functioning, and present an aim, methodology and method, results, discussion and conclusion in a scientific poster. | **40** | *For Outcome 3*Communication of the design, analysis and findings of a student-designed and student-conducted scientific investigation through a structured scientific poster and logbook entries.The poster should not exceed 600 words. |
| **Total marks** | **120** |  |

Practical work

Practical work is a central component of learning and assessment and may include activities such as laboratory experiments, fieldwork, simulations and other direct experiences as described in the scientific investigation methodologies on [page 14](#methodologies). A minimum of 10 hours of class time should be devoted to student practical activities and investigations across Areas of Study 1 and 2. For Area of Study 3, a minimum of 10 hours of class time should be devoted to designing and undertaking the student-designed scientific investigation and communicating findings.

External assessment

The level of achievement for Units 3 and 4 is also assessed by an end-of-year examination.

Contribution to final assessment

The examination will contribute 50 per cent to the study score.

End-of-year examination

Description

The examination will be set by a panel appointed by the VCAA. All the key knowledge that underpin the outcomes in Units 3 and 4 and the key science skills are examinable.

Conditions

The examination will be completed under the following conditions:

* Duration: 2.5 hours
* Date: end-of-year, on a date to be published annually by the VCAA
* VCAA examination rules will apply. Details of these rules are published annually in the [*VCE and VCAL Administrative Handbook*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx)
* The examination will be marked by assessors appointed by the VCAA.

Further advice

The VCAA publishes specifications for all VCE examinations on the VCAA website. Examination specifications include details about the sections of the examination, their weighting, the question format(s) and any other essential information. The specifications are published in the year prior to implementation of the revised Unit 3 and 4 sequence together with any sample material.