



International Baccalaureate®
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Diploma Programme

Psychology guide

First examinations 2011



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IB mission statement

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

IB learners strive to be:

Inquirers	They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning and this love of learning will be sustained throughout their lives.
Knowledgeable	They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.
Thinkers	They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.
Communicators	They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.
Principled	They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.
Open-minded	They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience.
Caring	They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.
Risk-takers	They approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.
Balanced	They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.
Reflective	They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development.

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Purpose of this document

This publication is intended to guide the planning, teaching and assessment of the subject in schools. Subject teachers are the primary audience, although it is expected that teachers will use the guide to inform students and parents about the subject.

This guide can be found on the subject page of the online curriculum centre (OCC) at <http://occ.ibo.org>, a password-protected IB website designed to support IB teachers. It can also be purchased from the IB store at <http://store.ibo.org>.

Additional resources

Additional publications such as teacher support materials, subject reports, internal assessment guidance and grade descriptors can also be found on the OCC. Specimen and past examination papers as well as markschemes can be purchased from the IB store.

Teachers are encouraged to check the OCC for additional resources created or used by other teachers. Teachers can provide details of useful resources, for example: websites, books, videos, journals or teaching ideas.

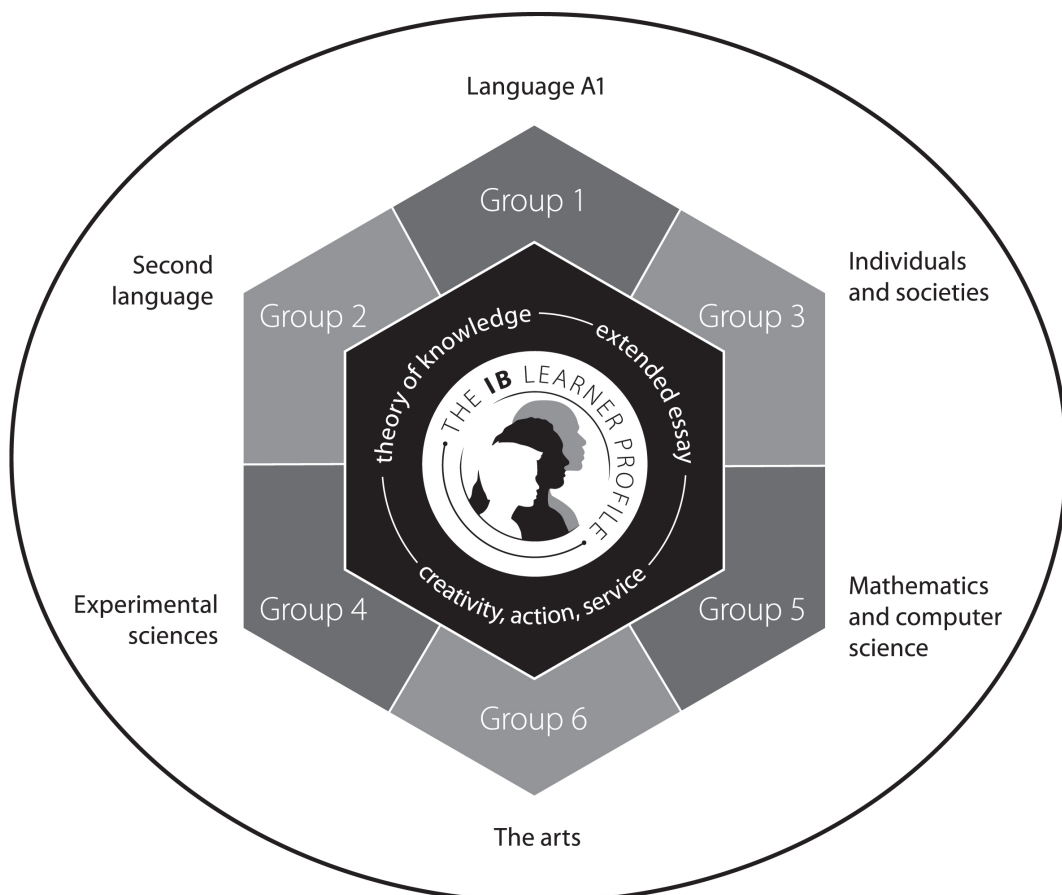
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The Diploma Programme

The Diploma Programme is a rigorous pre-university course of study designed for students in the 16 to 19 age range. It is a broad-based two-year course that aims to encourage students to be knowledgeable and inquiring, but also caring and compassionate. There is a strong emphasis on encouraging students to develop intercultural understanding, open-mindedness, and the attitudes necessary for them to respect and evaluate a range of points of view.

The Diploma Programme hexagon

The course is presented as six academic areas enclosing a central core. It encourages the concurrent study of a broad range of academic areas. Students study: two modern languages (or a modern language and a classical language); a humanities or social science subject; an experimental science; mathematics; one of the creative arts. It is this comprehensive range of subjects that makes the Diploma Programme a demanding course of study designed to prepare students effectively for university entrance. In each of the academic areas students have flexibility in making their choices, which means they can choose subjects that particularly interest them and that they may wish to study further at university.



Choosing the right combination

Students are required to choose one subject from each of the six academic areas, although they can choose a second subject from groups 1 to 5 instead of a group 6 subject. Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). The IB recommends 240 teaching hours for HL subjects and 150 hours for SL. Subjects at HL are studied in greater depth and breadth than at SL.

At both levels, many skills are developed, especially those of critical thinking and analysis. At the end of the course, students' abilities are measured by means of external assessment. Many subjects contain some element of coursework assessed by teachers. The course is available for examinations in English, French and Spanish.

The core of the hexagon

All Diploma Programme students participate in the three course requirements that make up the core of the hexagon. Reflection on all these activities is a principle that lies at the heart of the thinking behind the Diploma Programme.

The theory of knowledge course encourages students to think about the nature of knowledge, to reflect on the process of learning in all the subjects they study as part of their Diploma Programme course, and to make connections across the academic areas. The extended essay, a substantial piece of writing of up to 4,000 words, enables students to investigate a topic of special interest that they have chosen themselves. It also encourages them to develop the skills of independent research that will be expected at university. Creativity, action, service involves students in experiential learning through a range of artistic, sporting, physical and service activities.

The IB mission statement and the IB learner profile

The Diploma Programme aims to develop in students the knowledge, skills and attitudes they will need to fulfill the aims of the IB, as expressed in the organization's mission statement and the learner profile. Teaching and learning in the Diploma Programme represent the reality in daily practice of the organization's educational philosophy.

Nature of the subject

Psychology is the systematic study of behaviour and mental processes. Psychology has its roots in both the natural and social sciences, leading to a variety of research designs and applications, and providing a unique approach to understanding modern society.

IB psychology examines the interaction of biological, cognitive and sociocultural influences on human behaviour, thereby adopting an integrative approach. Understanding how psychological knowledge is generated, developed and applied enables students to achieve a greater understanding of themselves and appreciate the diversity of human behaviour. The ethical concerns raised by the methodology and application of psychological research are key considerations in IB psychology.

Psychology and the international dimension

IB psychology takes a holistic approach that fosters intercultural understanding and respect. In the core of the IB psychology course, the biological level of analysis demonstrates what all humans share, whereas the cognitive and sociocultural levels of analysis reveal the immense diversity of influences that produce human behaviour and mental processes. Cultural diversity is explored and students are encouraged to develop empathy for the feelings, needs and lives of others within and outside their own culture. This empathy contributes to an international understanding.

Distinction between SL and HL

Both SL and HL students are assessed on the syllabus core (levels of analysis) in paper 1. In addition:

- SL students are assessed on their knowledge and comprehension of one option in paper 2, whereas HL students are assessed on two options
- HL students are assessed on their knowledge and comprehension of qualitative research methodology in paper 3
- in the internal assessment, the report of a simple experimental study conducted by HL students requires inferential statistical analysis and a more in-depth approach than that required of SL students.

Prior learning

No prior study of psychology is expected. No particular background in terms of specific subjects studied for national or international qualifications is expected or required of students. The skills needed for the psychology course are developed during the course itself.

Links to the Middle Years Programme

Psychology can be offered as one of the disciplines within the humanities subject group of the IB Middle Years Programme (MYP). The concepts of MYP humanities, such as time and change, can provide a useful foundation for students who go on to study Diploma Programme psychology. Analytical and investigative skills developed in the MYP humanities course are augmented and expanded through the psychology course.

Psychology and theory of knowledge

Students of group 3 subjects study individuals and societies. More commonly, these subjects are collectively known as the human sciences or social sciences. In essence, group 3 subjects explore the interactions between humans and their environment in time, space and place.

As with other areas of knowledge, there is a variety of ways of gaining knowledge in group 3 subjects. Archival evidence, data collection, experimentation and observation, and inductive and deductive reasoning can all be used to help explain patterns of behaviour and lead to knowledge claims. Students in group 3 subjects are required to evaluate these knowledge claims by exploring knowledge issues such as validity, reliability, credibility, certainty, and individual as well as cultural perspectives.

The relationship between group 3 subjects and theory of knowledge is of crucial importance and fundamental to the Diploma Programme. Having followed a course of study in group 3, students should be able to critically reflect on the various ways of knowing and on the methods used in human sciences, and in so doing become “inquiring, knowledgeable and caring young people” (IB mission statement).

Questions related to theory of knowledge activities that a psychology student might consider during the course include the following.

- To what extent are the methods of the natural sciences applicable in the human sciences?
- Are the findings of the natural sciences as reliable as those of the human sciences?
- To what extent can empathy, intuition and feeling be legitimate ways of knowing in the human sciences?
- Are there human qualities or behaviours that will remain beyond the scope of the human sciences?
- To what extent can information in the human sciences be quantified?
- Do knowledge claims in the human sciences imply ethical responsibilities?
- To what extent do the knowledge claims of the social sciences apply across different historical periods and cultures?
- Does psychological research ever prove anything? Why do we say that results only indicate or suggest?
- How are ethics involved in the study of psychology? When and how do ethical standards change?
- Noam Chomsky has written, “... we will always learn more about human life and human personality from novels than from scientific psychology.” Would you agree?

Aims

Group 3 aims

The aims of all subjects in **group 3, individuals and societies** are to:

1. encourage the systematic and critical study of: human experience and behaviour; physical, economic and social environments; and the history and development of social and cultural institutions
2. develop in the student the capacity to identify, to analyse critically and to evaluate theories, concepts and arguments about the nature and activities of the individual and society
3. enable the student to collect, describe and analyse data used in studies of society, to test hypotheses, and to interpret complex data and source material
4. promote the appreciation of the way in which learning is relevant to both the culture in which the student lives, and the culture of other societies
5. develop an awareness in the student that human attitudes and beliefs are widely diverse and that the study of society requires an appreciation of such diversity
6. enable the student to recognize that the content and methodologies of the subjects in group 3 are contestable and that their study requires the toleration of uncertainty.

Psychology aims

In addition, the aims of the **psychology** course at SL and at HL are to:

7. develop an awareness of how psychological research can be applied for the benefit of human beings
8. ensure that ethical practices are upheld in psychological inquiry
9. develop an understanding of the biological, cognitive and sociocultural influences on human behaviour
10. develop an understanding of alternative explanations of behaviour
11. understand and use diverse methods of psychological inquiry.

Assessment objectives

Having followed the psychology course at SL or at HL, students will be expected to demonstrate the following.

1. Knowledge and comprehension of specified content
 - Demonstrate knowledge and comprehension of key terms and concepts in psychology
 - Demonstrate knowledge and comprehension of psychological research methods
 - Demonstrate knowledge and comprehension of a range of appropriately identified psychological theories and research studies
 - Demonstrate knowledge and comprehension of the biological, cognitive and sociocultural levels of analysis
 - Demonstrate knowledge and comprehension of one option at SL or two options at HL
2. Application and analysis
 - Demonstrate an ability to use examples of psychological research and psychological concepts to formulate an argument in response to a specific question
 - At HL only, analyse qualitative psychological research in terms of methodological, reflexive and ethical issues involved in research
3. Synthesis and evaluation
 - Evaluate psychological theories and empirical studies
 - Discuss how biological, cognitive and sociocultural levels of analysis can be used to explain behaviour
 - Evaluate research methods used to investigate behaviour
4. Selection and use of skills appropriate to psychology
 - Demonstrate the acquisition of knowledge and skills required for experimental design, data collection and presentation, data analysis and interpretation
 - At HL only, analyse data using an appropriate inferential statistical test
 - Write an organized response

Assessment objectives in practice

Objectives	Paper 1	Paper 2	Paper 3	Internal assessment	Overall
1. Knowledge and comprehension of specified content	40%	40%	33% (HL)		30%
2. Application and analysis	30%	20%	33% (HL)		25%
3. Synthesis and evaluation	20%	20%	33% (HL)		15%
4. Selection and use of skills appropriate to psychology	10%	20%		100%	30%

Command terms

Classification of command terms

In the learning outcomes (see syllabus content) the command terms are associated with assessment objectives 1, 2 or 3 and indicate the depth of understanding that is required of students in relation to each item of content. The grouping of command terms under assessment objectives reflects the cognitive demand of each term and is related to Bloom's taxonomy.

A command term used in an examination question will be:

- the same as that specified in the related learning outcome, or
- another command term associated with the same assessment objective, or
- a command term of less cognitive demand.

For example, if a learning outcome begins with the command term "explain", an examination question based on this learning outcome could contain the command term "explain", another command term associated with assessment objective 2 (such as "analyse"), or a command term associated with assessment objective 1 (such as "describe"), but not a command term associated with assessment objective 3 (such as "evaluate").

**Command terms associated with assessment objective 1:
Knowledge and comprehension**

Define	Give the precise meaning of a word, phrase, concept or physical quantity.
Describe	Give a detailed account.
Outline	Give a brief account or summary.
State	Give a specific name, value or other brief answer without explanation or calculation.

**Command terms associated with assessment objective 2:
Application and analysis**

Analyse	Break down in order to bring out the essential elements or structure.
Apply	Use an idea, equation, principle, theory or law in relation to a given problem or issue.
Distinguish	Make clear the differences between two or more concepts or items.
Explain	Give a detailed account including reasons or causes.

**Command terms associated with assessment objective 3:
Synthesis and evaluation**

Compare	Give an account of the similarities between two (or more) items or situations, referring to both (all) of them throughout.
Compare and contrast	Give an account of similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.
Contrast	Give an account of the differences between two (or more) items or situations, referring to both (all) of them throughout.
Discuss	Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence.
Evaluate	Make an appraisal by weighing up the strengths and limitations.
Examine	Consider an argument or concept in a way that uncovers the assumptions and interrelationships of the issue.
To what extent	Consider the merits or otherwise of an argument or concept. Opinions and conclusions should be presented clearly and supported with appropriate evidence and sound argument.

Syllabus outline

Syllabus component	Teaching hours	
	SL	HL
Part 1: Core (SL/HL) <ul style="list-style-type: none"> The biological level of analysis The cognitive level of analysis The sociocultural level of analysis 	90	90
Part 2: Options (SL/HL) <ul style="list-style-type: none"> Abnormal psychology Developmental psychology Health psychology Psychology of human relationships Sport psychology 	30	60
Part 3: Qualitative research methodology (HL only) <ul style="list-style-type: none"> Qualitative research in psychology 		50
Part 4: Simple experimental study (SL/HL) <ul style="list-style-type: none"> Introduction to experimental research methodology 	30	40
Total teaching hours	150	240

Approaches to the teaching of psychology

The IB recommends 240 hours of teaching time at HL, and 150 at SL. The syllabus is designed to allow sufficient time for in-depth analysis, evaluation and consolidation of learning.

Teachers are encouraged to find ways of delivering the course that are most relevant to their students' interests and to the school's resources. The overall aim of the course is to give students a deeper understanding of the nature and scope of psychology.

The different parts of the syllabus should complement each other. They are taught most successfully when they are integrated throughout the course of study, allowing students to make comparisons and to evaluate different psychological theories and arguments.

Requirements

Standard level

The course of study must include:

- all **three** compulsory levels of analysis
- **one** option from a choice of five
- **one** simple experimental study.

Higher level

The course of study must include:

- all **three** compulsory levels of analysis
- **two** options from a choice of five
- qualitative research methodology
- **one** simple experimental study.

Structure of the syllabus

The descriptions of the levels of analysis and options have the following structure.

- Introduction
- Learning outcomes
- Examples

Introduction

The introduction gives the background to the level of analysis or option. The content included in this section is intended only as background material and will not be formally examined.

Learning outcomes

The purpose of the learning outcomes is to clarify the content of the syllabus by indicating the depth of understanding and skills expected of students at the end of the course.

A command term used in an examination question will be:

- the same as that specified in the related learning outcome, or
- another command term associated with the same assessment objective, or
- a command term of less cognitive demand.

For example, if a learning outcome begins with the command term “explain”, an examination question based on this learning outcome could contain the command term “explain”, another command term associated with assessment objective 2 (such as “analyse”), or a command term associated with assessment objective 1 (such as “describe”), but not a command term associated with assessment objective 3 (such as “evaluate”).

Part 1: Core

There are four general learning outcomes that are common to all three levels of analysis. In addition, there are learning outcomes specific to each level of analysis.

Part 2: Options

There are two general learning outcomes that are common to all five options, providing a general framework that is applicable to each topic in each option. In addition, there are learning outcomes specific to each option.

Examples

Examples of psychological research are provided (*in italics*) in order to clarify some items of content. These examples are intended to illustrate the kind of research that can be used to place the learning outcomes in context.

Because the examples are intended as illustrations only, other examples of psychological research may be studied in addition to, or instead of, those suggested in the syllabus details.

When choosing examples to study, teachers should ensure that a range of methods is exemplified.

Quotations from the introduction or from other sources may be used to provide a context for examination questions, but questions will be drawn only from the learning outcomes.

Estimated teaching hours

The core of the syllabus is the study of the levels of analysis and therefore most of the teaching time should be allocated to covering the levels of analysis. The following is a guide to time allocations that teachers should keep in mind when planning their course.

Standard level

Syllabus component	Hours
Levels of analysis	90
Option	30
Simple experimental study	30
Total hours	150

Higher level

Syllabus component	Hours
Levels of analysis	90
Options	60
Qualitative research methodology	50
Simple experimental study	40
Total hours	240

Critical thinking in psychology: A framework for evaluation

- Ask questions, challenge assertions.
 - Why are some studies still so influential in spite of their methodological or theoretical flaws?
 - What was the historical context of the research?
- Define the problem.
 - This helps the student to focus his or her argument and keep it on track.
- Examine the evidence for and against.
 - Evaluate the research that gives support, fails to give support, or contradicts a theory.
- Avoid emotional reasoning and be aware of one's own biases.
 - Reflexivity can be used to reduce a student's own bias.
- Do not oversimplify.
 - Recognize reductionist arguments.
- Consider alternative explanations.
 - Be aware of the findings of other studies or alternative theories.
- Tolerate uncertainty.
 - It is acceptable to say that research is inconclusive or contradictory.

- Employ cultural evaluation.
 - Make comparisons with studies done in other cultures.
 - Is there a cultural bias in the theory/study?
- Employ gender evaluation.
 - Has gender been considered as a variable in the theory/study?
 - Is there a gender bias in the theory/study?
- Employ methodological evaluation.
 - What strengths and limitations are inherent in the methodology/method/technique used?
 - Are there aspects of the method used that compromise its validity (for example, representativeness of the sample)?
 - What would happen if the study were repeated today with different subjects?
 - Consider the use of triangulation to evaluate findings.
- Employ ethical evaluation.
 - Would the study be acceptable to modern ethical committees?
 - Is there any justification for the infringement of ethical standards?
- Evaluate by comparison.
 - How effective is the theory in explaining the behaviour compared with another theory?
 - How do the findings of study x compare with those of study y, and what could account for any differences?

Adapted from Wade, C and Tavris, C. 1990. *Psychology*. 2nd Edition. New York. Harper and Row.

Part 1: Core

The study of the biological level of analysis, the cognitive level of analysis and the sociocultural level of analysis comprises the core of the psychology course.

The three levels of analysis focus on three fundamental influences on behaviour:

- biological
- cognitive
- sociocultural.

The interaction of these influences substantially determines behaviour.

The level of analysis approach reflects a modern trend in psychology towards integration and demonstrates how explanations offered by each of the three levels of analysis (biological, cognitive and sociocultural) complement one another and together provide more complete and satisfactory explanations of behaviour.

The three levels of analysis can be usefully compared to three microscope lenses of different magnification. Each lens reveals a different picture of the intricate structure that exists at a variety of levels, but no single picture explains the whole object; a synthesis is necessary. Synthesis of the rich and diverse content of modern psychology is the chief aim of IB psychology.

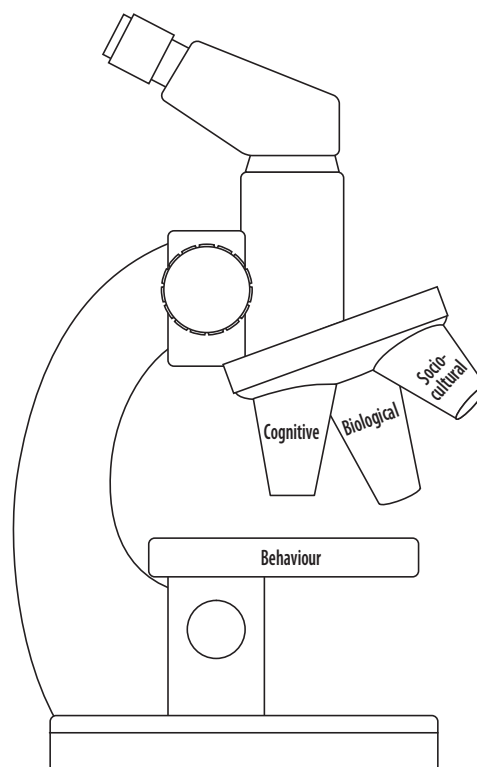


Figure 1
Microscope lenses analogy for the three levels of analysis

Biological level of analysis

Introduction

At the most basic level of analysis, human beings are biological systems. Our cognitions, emotions and behaviours are products of the anatomy and physiology of our nervous and endocrine systems. Over the last few centuries, discoveries have shown that:

- the nature of the nervous system is electrical in part (Galvani)
- different areas of the brain carry out different functions (Broca)
- small gaps exist between nerve cells that require the action of chemicals to carry neural transmissions across these gaps
- hormones play an important role in our psychological functioning.

Since the 1960s, with the invention and development of brain imaging technologies (for example, CAT (computerized axial tomography), PET (positron emission tomography), fMRI (functional magnetic resonance imaging)) it has become possible to directly study living brains in action as various tasks are performed, and to correlate specific areas of brain damage with specific changes in a person's personality or cognitive abilities. Advances in psychopharmacology—the field of medicine that addresses the balance of chemicals in the brain—have led to the development of new medications for problems as diverse as depression, anxiety disorders and Alzheimer's disease.

After Darwin published his theory of evolution through natural selection, animals came to be studied in order to shed light on human behaviour. With the completion of the human genome project, the chimpanzee genome project, and with other species having the full structure of their DNA mapped, the contribution of genes to our cognitions, emotions and behaviour is becoming better understood. Behavioural genetics takes the skills of biological analysis used to study the differences between species and applies these skills to studying individual differences in humans. These are the components at the biological level of analysis needed to understand our complex biological system and the psychological functions it supports.

Learning outcomes

General learning outcomes

- Outline principles that define the biological level of analysis (*for example, patterns of behaviour can be inherited; animal research may inform our understanding of human behaviour; cognitions, emotions and behaviours are products of the anatomy and physiology of our nervous and endocrine systems*).
- Explain how principles that define the biological level of analysis may be demonstrated in research (that is, theories and/or studies).
- Discuss how and why particular research methods are used at the biological level of analysis (*for example, experiments, observations, correlational studies*).
- Discuss ethical considerations related to research studies at the biological level of analysis.

Physiology and behaviour

- Explain one study related to localization of function in the brain (*for example, Wernicke, Broca, Gazzaniga and Sperry*).
- Using one or more examples, explain effects of neurotransmission on human behaviour (*for example, the effect of noradrenaline on depression*).
- Using one or more examples, explain functions of two hormones in human behaviour.

- Discuss two effects of the environment on physiological processes (*for example, effects of jet lag on bodily rhythms, effects of deprivation on neuroplasticity, effects of environmental stressors on reproductive mechanisms*).
- Examine one interaction between cognition and physiology in terms of behaviour (*for example, agnosia, anosognosia, prosopagnosia, amnesia*). Evaluate two relevant studies.
- Discuss the use of brain imaging technologies (*for example, CAT, PET, fMRI*) in investigating the relationship between biological factors and behaviour.

Genetics and behaviour

- With reference to relevant research studies, to what extent does genetic inheritance influence behaviour?
- Examine one evolutionary explanation of behaviour.
- Discuss ethical considerations in research into genetic influences on behaviour.

Cognitive level of analysis

Introduction

At the second level of analysis, the products of our biological machinery can be seen in our cognitive system, which includes our cognitions, emotions and behaviours.

Around the 1950s psychologists began systematically to explore cognition to further understanding of human behaviour. This shift in focus from studying observable behaviour to studying mental processes, such as memory and perception, is called “the cognitive revolution”. Cognitive psychologists suggested that humans form internal mental representations that guide behaviour, and they developed a range of research methods to study these. In recent years, researchers within social and cultural psychology have used findings from cognitive psychologists to understand how mental processes may be influenced by social and cultural factors.

Cognitive psychology represents a vast array of research areas including cognitive psychology, cognitive science, cognitive neuropsychology and cognitive neuroscience. Topics such as memory, perception, artificial intelligence, amnesia and social cognition are studied. Cognitive psychologists use traditional research methods (*for example, experiments and verbal protocols*) but there is an increasing focus on the use of modern technology.

Cognitive psychologists collaborate increasingly with neuroscientists, social psychologists and cultural psychologists in order to explore the complexity of human cognition. This approach is illustrated in the field of cultural and social cognitive neuroscience, indicating the complementary nature of social, cognitive and biological levels of analysis. Research that integrates these three levels can develop more meaningful theories to explain the mechanisms underlying complex behaviour and the mind.

Learning outcomes

General learning outcomes

- Outline principles that define the cognitive level of analysis (*for example, mental representations guide behaviour, mental processes can be scientifically investigated*).
- Explain how principles that define the cognitive level of analysis may be demonstrated in research (*that is, theories and/or studies*).

- Discuss how and why particular research methods are used at the cognitive level of analysis (*for example, experiments, observations, interviews*).
- Discuss ethical considerations related to research studies at the cognitive level of analysis.

Cognitive processes

- Evaluate schema theory with reference to research studies.
- Evaluate two models or theories of one cognitive process (*for example, memory, perception, language, decision-making*) with reference to research studies.
- Explain how biological factors may affect one cognitive process (*for example, Alzheimer's disease, brain damage, sleep deprivation*).
- Discuss how social or cultural factors affect one cognitive process (*for example, education, carpentered-world hypothesis, effect of video games on attention*).
- With reference to relevant research studies, to what extent is one cognitive process reliable (*for example, reconstructive memory, perception/visual illusions, decision-making/heuristics*)?
- Discuss the use of technology in investigating cognitive processes (*for example, MRI (magnetic resonance imaging) scans in memory research, fMRI scans in decision-making research*).

Cognition and emotion

- To what extent do cognitive and biological factors interact in emotion (*for example, two factor theory, arousal theory, Lazarus' theory of appraisal*)?
- Evaluate one theory of how emotion may affect one cognitive process (*for example, state-dependent memory, flashbulb memory, affective filters*).

Sociocultural level of analysis

Introduction

At the third level of analysis, the biological and cognitive systems that make up the individual are embedded in an even larger system of interrelationships with other individuals. At its beginning, psychology largely confined itself to the study of the individual acting alone. As the discipline matured, a few psychologists recognized that human behaviour could be fully understood only if the social context in which behaviour occurred was also taken into account. This recognition led to many investigations of social influence, that is, how the presence and behaviour of one or a few people affect the behaviour and attitudes of another individual. It also provided a broader context for exploring topics such as aggression and helping behaviour that had largely been regarded as individual personality traits.

Although there has long been an exchange between the sciences of psychology and anthropology, the study of culture has largely been the province of anthropology. Recently, as many societies have become more multicultural, the need to understand the effect of culture on a person's behaviour has risen to a new prominence. Social psychologists saw the need not only to achieve an understanding of the role of culture in human behaviour, but also to devise means for alleviating problems that arise from misunderstandings when individuals from different cultures come into contact with each other.

In what appeared to be a contrary movement, as social psychologists turned their attention to exploring the power of culture, other investigators were focusing attention on the biological bases of human social behaviour: the role played by genes. These investigators explained important social behaviours as special adaptations to becoming social organisms acquired throughout the course of human evolution. As social psychologists continue to integrate the biological and cultural contributions to social behaviour, there

is a general consensus in the discipline of psychology that a synthesis of the biological, cognitive and sociocultural levels of analysis holds out the greatest promise of bringing us closer to the goal of more fully understanding the nature of the complex interacting systems that make up the human being.

Learning outcomes

General learning outcomes

- Outline principles that define the sociocultural level of analysis (*for example, the social and cultural environment influences individual behaviour; we want connectedness with, and a sense of belonging to, others; we construct our conceptions of the individual and social self*).
- Explain how principles that define the sociocultural level of analysis may be demonstrated in research (that is, theories and/or studies).
- Discuss how and why particular research methods are used at the sociocultural level of analysis (*for example, participant/naturalistic observation, interviews, case studies*).
- Discuss ethical considerations related to research studies at the sociocultural level of analysis.

Sociocultural cognition

- Describe the role of situational and dispositional factors in explaining behaviour.
- Discuss two errors in attributions (*for example, fundamental attribution error, illusory correlation, self-serving bias*).
- Evaluate social identity theory, making reference to relevant studies.
- Explain the formation of stereotypes and their effect on behaviour.

Social norms

- Explain social learning theory, making reference to two relevant studies.
- Discuss the use of compliance techniques (*for example, lowballing, foot-in-the-door, reciprocity*).
- Evaluate research on conformity to group norms.
- Discuss factors influencing conformity (*for example, culture, groupthink, risky shift, minority influence*).

Cultural norms

- Define the terms “culture” and “cultural norms”.
- Examine the role of two cultural dimensions on behaviour (*for example, individualism/collectivism, power distance, uncertainty avoidance, Confucian dynamism, masculinity/femininity*).
- Using one or more examples, explain “emic” and “etic” concepts.

Part 2: Options

The options have been chosen to provide continuity with the previous syllabus and to reflect developing fields in psychology.

There are five options.

- Abnormal psychology
- Developmental psychology
- Health psychology
- Psychology of human relationships
- Sport psychology

Students at SL must study **one** option. Students at HL must study **two** options.

The study of the core (levels of analysis) provides a foundation and a broad overview of psychology, whereas the options allow students the opportunity to study a specialized area of psychology in depth (including empirical studies and theories), according to their own particular interests.

Teachers are advised to integrate the options with the study of the core (levels of analysis) wherever possible.

Abnormal psychology

Introduction

Abnormal psychology focuses on diagnosing, explaining and treating humans suffering from psychological disorders. This option begins with a consideration of normal and abnormal behaviour. An understanding of issues related to diagnosis provides a framework for the subsequent study of disorders and therapeutic approaches.

Although there are numerous psychological disorders this option focuses on the following three groups of disorders:

- anxiety (for example, agoraphobia)
- affective (for example, depression)
- eating (for example, bulimia).

By studying one disorder from two of these groups of disorders, students are encouraged to develop an awareness of the range of psychological disorders. This approach embraces the etiology, symptoms and prevalence of each disorder. As a consequence of this understanding, it is possible to administer effective treatments while at the same time having an appreciation of relevant cultural and gender variations.

Therapeutic approaches to treating disorders may be broadly organized into three groups:

- biomedical therapies (for example, drug therapy)
- individual psychological therapies (for example, systematic desensitization, cognitive restructuring therapy)
- group psychological therapies (for example, encounter groups, family therapy, community-based therapy).

Therapies from each of these approaches involve the use of specific techniques that need to be applied appropriately. These approaches should reflect a considerable degree of efficacy and ethical appropriateness to the specific disorder.

Learning outcomes

General framework (applicable to all topics in the option)

- To what extent do biological, cognitive and sociocultural factors influence abnormal behaviour?
- Evaluate psychological research (that is, theories and/or studies) relevant to the study of abnormal behaviour.

Concepts and diagnosis

- Examine the concepts of normality and abnormality.
- Discuss validity and reliability of diagnosis.
- Discuss cultural and ethical considerations in diagnosis (*for example, cultural variation, stigmatization*).

Psychological disorders

- Describe symptoms and prevalence of one disorder from two of the following groups:
 - anxiety disorders
 - affective disorders
 - eating disorders.
- Analyse etiologies (in terms of biological, cognitive and/or sociocultural factors) of one disorder from two of the following groups:
 - anxiety disorders
 - affective disorders
 - eating disorders.
- Discuss cultural and gender variations in prevalence of disorders.

Implementing treatment

- Examine biomedical, individual and group approaches to treatment.
- Evaluate the use of biomedical, individual and group approaches to the treatment of one disorder.
- Discuss the use of eclectic approaches to treatment.
- Discuss the relationship between etiology and therapeutic approach in relation to one disorder.

Developmental psychology

Introduction

Developmental psychology is the study of how and why people change over time in the way they behave, think, and relate to others. Developmental psychology focuses on developmental themes such as identity, attachment and adolescence.

It is important to gain an understanding of the extent to which early experience may influence later development and if there are critical periods in development. Knowledge about the influence of biological, social and cultural factors in people's lives is helpful not only for families but also in childcare and education to create good opportunities for children and young people all over the world.

Controversies related to developmental psychology include the extent of the impact of early experiences and why some children seem to be more resilient than others after stressful experiences in childhood. In recent years knowledge about resilience has been used to develop programmes that can increase resilience.

Learning outcomes

General framework (applicable to all topics in the option)

- To what extent do biological, cognitive and sociocultural factors influence human development?
- Evaluate psychological research (that is, theories and/or studies) relevant to developmental psychology.

Cognitive development

- Evaluate theories of cognitive development (*for example, Piaget, Bruner, Vygotsky, brain development theories*).
- Discuss how social and environmental variables (*for example, parenting, educational environment, poverty, diet*) may affect cognitive development.

Social development

- Examine attachment in childhood and its role in the subsequent formation of relationships.
- Discuss potential effects of deprivation or trauma in childhood on later development.
- Define resilience.
- Discuss strategies to build resilience.

Identity development

- Discuss the formation and development of gender roles.
- Explain cultural variations in gender roles.
- Describe adolescence.
- Discuss the relationship between physical change and development of identity during adolescence.
- Examine psychological research into adolescence (*for example, Erikson's identity crisis, Marcia*).

Health psychology

Introduction

Over the past century the relationship between behaviour and individual health has attracted attention because of an increase in diseases caused by personal habits. Health psychology is concerned with how different factors, such as lifestyle and social context, may influence health and illness. One of the goals of health psychology is to promote an understanding of behaviour that leads to a healthier lifestyle. The health psychology option focuses on stress, substance abuse, addiction, obesity and health promotion.

Health psychologists have investigated causes of health problems such as stress, substance abuse, addiction, overeating and obesity in order to find ways to counter their damaging consequences and prevent their occurrence. One of the benefits of this research is an improved understanding of the relationship between environmental and biological factors as well as cognition in determining individual behaviour. This helps in the development of prevention and treatment strategies, for example, in terms of understanding how people value their health. It also enables health promotion campaigns to be more efficiently designed.

There are differences in attitudes towards health-related behaviour among different cultures, as well as variations in the incidence of health problems such as stress, eating disorders and substance abuse. It is important for health psychologists to take these factors into account.

Learning outcomes

General framework (applicable to all topics in the option)

- To what extent do biological, cognitive and sociocultural factors influence health-related behaviour?
- Evaluate psychological research (that is, theories and/or studies) relevant to health psychology.

Stress

- Describe stressors.
- Discuss physiological, psychological and social aspects of stress.
- Evaluate strategies for coping with stress (*for example, stress inoculation therapy, hardiness training, yoga and meditation*).

Substance abuse, addictive behaviour and obesity

- Explain factors related to the development of substance abuse or addictive behaviour.
- Examine prevention strategies and treatments for substance abuse and addictive behaviour (*for example, Alcoholics Anonymous, family therapy, drugs and biopsychosocial treatments*).
- Discuss factors related to overeating and the development of obesity.
- Discuss prevention strategies and treatments for overeating and obesity.

Health promotion

- Examine models and theories of health promotion (*for example, health belief model, stages of change model, theory of reasoned action*).
- Discuss the effectiveness of health promotion strategies (*for example, measurement of outcomes, cultural blindness, cognitive dissonance*).

Psychology of human relationships

Introduction

This social psychology option focuses on human relationships; these relationships may be romantic, friendship, familial, or antagonistic. Humans are social animals, but while we depend upon others for our well-being, conflict with others can threaten our survival individually and as social groups.

Key goals of social psychologists are to understand the complexities of relationships, improve interpersonal relationships, promote social responsibility and reduce violence. Psychologists assume that we may actively change our environment and not simply be manipulated by it.

Violence is defined here as a specific aspect of aggression characterized by victimization of another (for example, bullying, domestic violence, genocide). Though much of the research on aggression may be used to understand the basis of violence, the focus of this part of the option is to apply this research to social problems in which violence is often manifested.

One approach to the study of human relationships concentrates on the role of hormones and genetics. However, this gives a limited understanding of how relationships develop. Cognitive theorists have contributed to the understanding of relationships by applying schema theory, whereas social psychologists have focused on attribution theory, social identity theory and the role of culture.

Studying human relationships, however, has its challenges. It is tempting to oversimplify complex social issues or misdirect the blame for problems. When studying human relationships psychologists must also be concerned about the objectivity of the researcher, the right to privacy of the individual and the temptation of social engineering.

Learning outcomes

General framework (applicable to all topics in the option)

- To what extent do biological, cognitive and sociocultural factors influence human relationships?
- Evaluate psychological research (that is, theories and/or studies) relevant to the study of human relationships.

Social responsibility

- Distinguish between altruism and prosocial behaviour.
- Contrast two theories explaining altruism in humans.
- Using one or more research studies, explain cross-cultural differences in prosocial behaviour.
- Examine factors influencing bystanderism.

Interpersonal relationships

- Examine biological, psychological and social origins of attraction.
- Discuss the role of communication in maintaining relationships.
- Explain the role that culture plays in the formation and maintenance of relationships.
- Analyse why relationships may change or end.

Violence

- Evaluate sociocultural explanations of the origins of violence.
- Discuss the relative effectiveness of two strategies for reducing violence.
- Discuss the effects of short-term and long-term exposure to violence.

Sport psychology

Introduction

Sport psychology is the scientific study of the behaviour of individuals in sport contexts, including both individual and social aspects of behaviour.

Participation in sport is increasingly recognized to be of value in many cultures because of the contribution of sport to health and well-being. Participation in sport also serves to enhance international cooperation through competitions, thereby acting as a platform for communication and cross-cultural understanding.

This option addresses cognitive, sociocultural and biological aspects of sport psychology. The biological level of analysis is used in arousal theories. The cognitive level of analysis is used in the investigation of topics such as goal-setting and motivation. The sociocultural level of analysis is applied to team cohesion and the motivation of individuals.

Controversies related to areas of sport psychology are the issues of overtraining, burnout, and the way in which individuals and coaches deal with injuries.

Learning outcomes

General framework (applicable to all topics in the option)

- To what extent do biological, cognitive and sociocultural factors influence behaviour in sport?
- Evaluate psychological research (that is, theories and/or studies) relevant to the study of sport psychology.

Emotion and motivation

- Evaluate theories of motivation in sport (*for example, cognitive-evaluation theory, achievement goal theory, self-efficacy theory*).
- Using one or more research studies, explain the role of goal-setting in the motivation of individuals.
- Discuss theories relating arousal and anxiety to performance (*for example, optimal arousal theory/inverted U hypothesis, drive theory, reversal theory*).

Skill development and performance

- Evaluate techniques for skill development used in sport (*for example, repetition, mental imagery, attention control/concentration training*).
- To what extent does the role of coaches affect individual or team behaviour in sport?
- Explain relationships between team cohesion and performance.
- Describe aids and barriers to team cohesion.

Problems in sports

- Discuss athlete response to stress and chronic injury (*for example, stress-based model, grief reaction response, relaxation techniques*).
- Examine reasons for using drugs in sport.
- Discuss effects of drug use in sport.
- Compare models of causes and prevention of burnout (*for example, cognitive-affective stress model, negative training stress model, investment model*).

Part 3: Qualitative research methodology

Qualitative research in psychology

Introduction

Qualitative research takes place in the real world, as opposed to the laboratory, and deals with how people give meaning to their own experiences. It involves research of behaviour in a natural setting, and is followed by an attempt to interpret the behaviour and the meanings that people have given to their experiences.

Qualitative research strategies include the use of observations, interviews and case studies, among others. These will often involve face-to-face interactions between researcher and participant where the researcher needs to be flexible and sensitive to the needs of the social context within which the data is obtained. The data is subsequently analysed and interpreted. Generally the aim of qualitative research is to allow themes, categories or theories to emerge from the data, rather than to focus narrowly on preconceived ideas or hypotheses.

Sampling methods used in qualitative research are significantly different to those used in quantitative research. Random sampling is not normally used, as generalization of findings to a large population is less important. Purposive sampling is preferred in qualitative research; participants are often selected for their salient features, which are closely tied to the research aim.

The number of participants used in qualitative studies is often small and may, in some cases, be limited to a single individual. Qualitative research normally deals with few participants since its great value lies in understanding the in-depth experiences and feelings of individuals. Psychologists have learned much from the qualitative research that they currently employ and continue to develop, including the notion that it is possible, with considerable care, to offer a limited degree of generalization from their findings.

The qualitative approach needs to be transparent in the description of the methods that it uses since this adds to its credibility. Credibility improves when researchers are reflexive; they attempt to make readers of their research aware of their own potential researcher bias. In addition, it should be acknowledged that participants in the research may change their minds as the research proceeds. The methods used to produce data and the manner of analysis can and do influence research findings.

Particularly for those who are new to qualitative research, it is imperative to be able to tolerate a degree of uncertainty. Human behaviour is frequently complex; the meaning of similar experiences may be interpreted differently by individuals. For example, chronic injury may have a devastating effect upon elite athletes and their immediate family members since it may involve the end of a playing career and a substantial fall of income; but for others, the same injury may offer an opportunity to retire gracefully from the continual demands of their sport and to start a new career in a different area.

It is important for students to realize that qualitative and quantitative research complement each other. Each is suited to investigating different aspects of behaviour and should be used appropriately.

Learning outcomes

Theory and practice in qualitative research

- Distinguish between qualitative and quantitative data.
- Explain strengths and limitations of a qualitative approach to research.
- To what extent can findings be generalized from qualitative studies?
- Discuss ethical considerations in qualitative research.
- Discuss sampling techniques appropriate to qualitative research (*for example, purposive sampling, snowball sampling*).
- Explain effects of participant expectations and researcher bias in qualitative research.
- Explain the importance of credibility in qualitative research.
- Explain the effect of triangulation on the credibility/trustworthiness of qualitative research.
- Explain reflexivity in qualitative research.

Interviews

- Evaluate semi-structured, focus group and narrative interviews.
- Discuss considerations involved before, during and after an interview (*for example, sampling method, data recording, traditional versus postmodern transcription, debriefing*).
- Explain how researchers use inductive content analysis (thematic analysis) on interview transcripts.

Observations

- Evaluate participant, non-participant, naturalistic, overt and covert observations.
- Discuss considerations involved in setting up and carrying out an observation (*for example, audience effect, Hawthorne effect, disclosure*).
- Discuss how researchers analyse data obtained in observational research.

Case studies

- Evaluate the use of case studies in research.
- Explain how a case study could be used to investigate a problem in an organization or group (*for example, a football team, a school, a family*).
- Discuss the extent to which findings can be generalized from a single case study.

Part 4: Simple experimental study

Students are required to plan and undertake a simple experimental study and to produce a report of their study. A simple experimental study involves the manipulation, by the student, of a single independent variable and the measurement of the effect of this independent variable on a dependent variable, while controlling other variables. Teachers should prepare students for the simple experimental study and the writing of the report.

Assessment in the Diploma Programme

General

Assessment is an integral part of teaching and learning. The most important aims of assessment in the Diploma Programme are that it should support curricular goals and encourage appropriate student learning. Both external and internal assessment are used in the Diploma Programme. IB examiners mark work produced for external assessment, while work produced for internal assessment is marked by teachers and externally moderated by the IB.

There are two types of assessment identified by the IB.

- Formative assessment informs both teaching and learning. It is concerned with providing accurate and helpful feedback to students and teachers on the kind of learning taking place and the nature of students' strengths and weaknesses in order to help develop students' understanding and capabilities. Formative assessment can also help to improve teaching quality, as it can provide information to monitor progress towards meeting the course aims and objectives.
- Summative assessment gives an overview of previous learning and is concerned with measuring student achievement.

The Diploma Programme primarily focuses on summative assessment designed to record student achievement at, or towards the end of, the course of study. However, many of the assessment instruments can also be used formatively during the course of teaching and learning, and teachers are encouraged to do this. A comprehensive assessment plan is viewed as being integral with teaching, learning and course organization. For further information, see the IB *Programme standards and practices* document.

The approach to assessment used by the IB is criterion-related, not norm-referenced. This approach to assessment judges students' work by their performance in relation to identified levels of attainment, and not in relation to the work of other students. For further information on assessment within the Diploma Programme please refer to the publication *Diploma Programme assessment: Principles and practice*.

To support teachers in the planning, delivery and assessment of the Diploma Programme courses a variety of resources can be found on the OCC or purchased from the IB store (<http://store.ibo.org>). Teacher support materials, subject reports, internal assessment guidance, grade descriptors, as well as resources from other teachers, can be found on the OCC. Specimen and past examination papers as well as markschemes can be purchased from the IB store.

Methods of assessment

The IB uses several methods to assess work produced by students.

Assessment criteria

Assessment criteria are used when the assessment task is open-ended. Each criterion concentrates on a particular skill that students are expected to demonstrate. An assessment objective describes what students should be able to do and assessment criteria describe how well they should be able to do it. Using assessment criteria allows discrimination between different answers and encourages a variety of responses.

Each criterion comprises a set of hierarchically ordered level descriptors. Each level descriptor is worth one or more marks. Each criterion is applied independently using a best-fit model. The maximum marks for each criterion may differ according to the criterion's importance. The marks awarded for each criterion are added together to give the total mark for the piece of work.

Markbands

Markbands are a comprehensive statement of expected performance against which responses are judged. They represent a single holistic criterion divided into level descriptors. Each level descriptor corresponds to a range of marks to differentiate student performance. A best-fit approach is used to ascertain which particular mark to use from the possible range for each level descriptor.

Markschemes

This generic term is used to describe analytic markschemes that are prepared for specific examination papers. Analytic markschemes are prepared for those examination questions that expect a particular kind of response and/or a given final answer from the students. They give detailed instructions to examiners on how to break down the total mark for each question for different parts of the response. A markscheme may include the content expected in the responses to questions or may be a series of marking notes giving guidance on how to apply criteria.

Assessment outline—SL

First examinations 2011

Assessment component	Weighting
External assessment (3 hours)	75%
<p>Paper 1 (2 hours) Section A: Three compulsory questions on part 1 of the syllabus. Section B: Three questions on part 1 of the syllabus. Students choose one question to answer in essay form. (46 marks)</p>	50%
<p>Paper 2 (1 hour) Fifteen questions on part 2 of the syllabus. Students choose one question to answer in essay form. (22 marks)</p>	25%
<p>Internal assessment A report of a simple experimental study conducted by the student. (20 marks)</p>	25%

Assessment outline—HL

First examinations 2011

Assessment component	Weighting
External assessment (4 hours)	80%
<p>Paper 1 (2 hours) Section A: Three compulsory questions on part 1 of the syllabus.</p> <p>Section B: Three questions on part 1 of the syllabus. Students choose one question to answer in essay form.</p> <p>(46 marks)</p>	35%
<p>Paper 2 (2 hours) Fifteen questions on part 2 of the syllabus. Students choose two questions to answer in essay form.</p> <p>(44 marks)</p>	25%
<p>Paper 3 (1 hour) Three compulsory questions based on an unseen text, covering part 3 of the syllabus.</p> <p>(30 marks)</p>	20%
<p>Internal assessment A report of a simple experimental study conducted by the student.</p> <p>(28 marks)</p>	20%

External assessment

Two different methods are used to assess students.

- Detailed markschemes specific to each examination paper
- Assessment criteria

The assessment criteria are published in this guide.

For paper 1, there are markschemes and assessment criteria.

For paper 2, there are markschemes and assessment criteria.

For paper 3, there are markschemes.

The assessment criteria are related to the assessment objectives established for the psychology course and the group 3 grade descriptors. The markschemes are specific to each examination.

External assessment details—SL

Paper 1

Duration: 2 hours

Weighting: 50%

Paper 1 assesses the core of the syllabus: the biological, cognitive and sociocultural levels of analysis. The paper is divided into two sections (section A and section B).

Students have two hours to answer paper 1. It is recommended that students spend approximately one hour on section A and one hour on section B.

The maximum mark for the paper is 46.

The assessment weighting of paper 1 at SL is 50%.

Section A

The purpose of this section is to assess students' knowledge and understanding of all three levels of analysis.

Students are required to answer three short-answer questions, one on the syllabus content of each level of analysis.

Assessment objective 1 (knowledge and comprehension) and 2 (application and analysis) command terms will be used in section A questions, students could be required to:

- analyse
- apply
- define
- describe

- distinguish
- explain
- outline
- state.

The maximum mark for section A is 24.

Section B

The purpose of this section is to assess students' knowledge and understanding of the levels of analysis.

Theoretical and/or empirical support is required in all answers.

Students are required to answer one out of a choice of three essay questions drawn from the learning outcomes of the levels of analysis.

In order to access the full range of marks available in the assessment criteria, all questions in section B of paper 1 will include an assessment objective 3 command term (synthesis and evaluation). Within a question, assessment objective 1 and 2 command terms may also be used.

Each question is worth 22 marks.

The maximum mark for section B is 22.

Paper 2

Duration: 1 hour

Weighting: 25%

The purpose of this paper is to assess students' knowledge and understanding of the option studied and to give students the opportunity to demonstrate application of psychological research, analysis, synthesis and evaluation in relation to the option.

Theoretical and/or empirical support is required in all answers.

Paper 2 consists of fifteen questions on the five options, three on each of the following options.

- Abnormal psychology
- Developmental psychology
- Health psychology
- Psychology of human relationships
- Sport psychology

Evidence of critical thinking is expected to be an important element of student responses (see "Critical thinking in psychology: A framework for evaluation" in section "Approaches to the teaching of psychology").

SL students spend one hour on paper 2 and are required to answer one question.

Each question is worth 22 marks.

The maximum mark for the paper is 22.

The assessment weighting of paper 2 at SL is 25%.

External assessment criteria—SL

Markbands for paper 1: Section A

The framework below provides a general guide for teachers to the assessment of responses to paper 1 section A questions. Markschemes prepared for each examination question guide the awarding of marks by examiners.

Markband	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
Low	There is an attempt to answer the question, but knowledge and understanding is limited, often inaccurate, or of marginal relevance to the question.
Mid	The question is partially answered. Knowledge and understanding is accurate but limited. Either the command term is not effectively addressed or the response is not sufficiently explicit in answering the question.
High	The question is answered in a focused and effective manner and meets the demands of the command term. The response is supported by appropriate and accurate knowledge and understanding of research.

Assessment criteria for paper 1: Section B

A Knowledge and comprehension

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–3	The answer demonstrates limited knowledge and understanding that is of marginal relevance to the question. Little or no psychological research is used in the response.
4–6	The answer demonstrates limited knowledge and understanding relevant to the question or uses relevant psychological research to limited effect in the response.
7–9	The answer demonstrates detailed, accurate knowledge and understanding relevant to the question, and uses relevant psychological research effectively in support of the response.

B Evidence of critical thinking: Application, analysis, synthesis, evaluation

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–3	The answer goes beyond description but evidence of critical thinking is not linked to the requirements of the question.

Marks	Level descriptor
4–6	The answer offers appropriate but limited evidence of critical thinking or offers evidence of critical thinking that is only implicitly linked to the requirements of the question.
7–9	The answer integrates relevant and explicit evidence of critical thinking in response to the question.

C Organization

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–2	The answer is organized or focused on the question. However, this is not sustained throughout the response.
3–4	The answer is well organized, well developed and focused on the question.

Assessment criteria for paper 2

A Knowledge and comprehension

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–3	The answer demonstrates limited knowledge and understanding that is of marginal relevance to the question. Little or no psychological research is used in the response.
4–6	The answer demonstrates limited knowledge and understanding relevant to the question or uses relevant psychological research to limited effect in the response.
7–9	The answer demonstrates detailed, accurate knowledge and understanding relevant to the question, and uses relevant psychological research effectively in support of the response.

B Evidence of critical thinking: application, analysis, synthesis, evaluation

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–3	The answer goes beyond description but evidence of critical thinking is not linked to the requirements of the question.
4–6	The answer offers appropriate but limited evidence of critical thinking or offers evidence of critical thinking that is only implicitly linked to the requirements of the question.
7–9	The answer integrates relevant and explicit evidence of critical thinking in response to the question.

C Organization

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1–2	The answer is organized or focused on the question. However, this is not sustained throughout the response.
3–4	The answer is well organized, well developed and focused on the question.

External assessment details—HL

The external assessment at HL is the same as at SL but with the following differences.

Paper 1

Duration: 2 hours

Weighting: 35%

The questions on HL paper 1 are the same as those on SL paper 1 and are marked according to the same markscheme (for section A) and assessment criteria (for section B).

The assessment weighting of paper 1 at HL is 35%.

Paper 2

Duration: 2 hours

Weighting: 25%

The questions on HL paper 2 are the same as those on SL paper 2 and are marked according to the same assessment criteria.

HL students spend two hours on paper 2 and are required to answer two questions. Each of the questions must be chosen from a different option.

Each question is worth 22 marks.

The maximum mark for the paper is 44.

The assessment weighting for paper 2 at HL is 25%.

Paper 3

Duration: 1 hour

Weighting: 20%

The purpose of paper 3 is to assess students' knowledge and understanding of qualitative research methodology. This paper consists of questions based on an abstract or an extract from a study, interview, observation or scenario (approximately 500 words) including, for example:

- the aim
- participant characteristics
- the research method used
- results and/or findings.

Students must answer all the questions.

The total mark for paper 3 is 30 marks. These marks will be distributed across assessment objectives 1, 2 and 3. The maximum for any one assessment objective will not exceed 12 marks nor be lower than 8 marks.

The assessment weighting of paper 3 at HL is 20%.

External assessment criteria—HL

Paper 1

The assessment criteria for HL paper 1 are the same as those for SL paper 1.

Paper 2

The assessment criteria for HL paper 2 are the same as those for SL paper 2.

Markbands for paper 3

The framework below provides a general guide for teachers to the assessment of responses to paper 3 questions. Mark schemes prepared for each examination question guide the awarding of marks by examiners.

Markband	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
Low	There is an attempt to answer the question, but knowledge and understanding is limited, often inaccurate, or of marginal relevance to the question. The response makes no direct reference to the stimulus material or relies too heavily on quotations from the text.
Mid	The question is partially answered. Knowledge and understanding is accurate but limited. Either the command term is not effectively addressed or the response is not sufficiently explicit in answering the question. The response makes limited use of the stimulus material.
High	The question is answered in a focused and effective manner and meets the demands of the command term. The answer is supported by appropriate and accurate knowledge and understanding of qualitative research methodology. The response demonstrates a critical understanding of qualitative research methodology applied to the stimulus material.

Internal assessment

Purpose of internal assessment

Internal assessment is an integral part of the course and is compulsory for both SL and HL students. It enables students to demonstrate the application of their skills and knowledge, and to pursue their personal interests, without the time limitations and other constraints that are associated with written examinations. The internal assessment should, as far as possible, be woven into normal classroom teaching and not be a separate activity conducted after a course has been taught.

The internal assessment requirements at SL and at HL are different. SL students plan, undertake and report a replication of a simple experimental study. HL students also plan, undertake and report a simple experimental study but this may be a replication or a modification of a published study. Additional requirements are made of HL students, for example, they are required to apply an inferential statistical test to the data they gather.

Guidance and authenticity

The report of the simple experimental study submitted for internal assessment must be the student's own work. However, it is not the intention that students should decide upon a title or topic and be left to work on the internal assessment component without any further support from the teacher. The teacher should play an important role during both the planning stage and the period when the student is working on the internally assessed work. It is the responsibility of the teacher to ensure that students are familiar with:

- the requirements of the type of work to be internally assessed
- the psychology course ethical guidelines
- the assessment criteria; students must understand that the work submitted for assessment must address these criteria effectively.

Teachers and students must discuss the internally assessed work. Students should be encouraged to initiate discussions with the teacher to obtain advice and information, and students must not be penalized for seeking guidance. However, if a student could not have completed the work without substantial support from the teacher, this should be recorded on the appropriate form from the *Handbook of procedures for the Diploma Programme*.

It is the responsibility of teachers to ensure that all students understand the basic meaning and significance of concepts that relate to academic honesty, especially authenticity and intellectual property. Teachers must ensure that all student work for assessment is prepared according to the requirements and must explain clearly to students that the internally assessed work must be entirely their own.

As part of the learning process, teachers can give advice to students on a first draft of the internally assessed work. This advice should be in terms of the way the work could be improved, but this first draft must not be heavily annotated or edited by the teacher. The next version handed to the teacher after the first draft must be the final one.

All work submitted to the IB for moderation or assessment must be authenticated by a teacher, and must not include any known instances of suspected or confirmed malpractice. Each student must sign the coversheet for internal assessment to confirm that the work is his or her authentic work and constitutes the final version of that work. Once a student has officially submitted the final version of the work to a teacher (or the coordinator) for internal assessment, together with the signed coversheet, it cannot be retracted.

Authenticity may be checked by discussion with the student on the content of the work, and scrutiny of one or more of the following:

- the student's initial proposal
- the first draft of the written work
- the references cited
- the style of writing compared with work known to be that of the student
- the analysis of the work by a web-based plagiarism detection service such as turnitin.com.

The requirement for teachers and students to sign the coversheet for internal assessment applies to the work of all students, not just the sample work that will be submitted to an examiner for the purpose of moderation. If the teacher and student sign a coversheet, but there is a comment to the effect that the work may not be authentic, the student will not be eligible for a mark in that component and no grade will be awarded. For further details refer to the IB publication *Academic honesty* and the relevant articles in the *General regulations: Diploma Programme*.

The same piece of work cannot be submitted to meet the requirements of both the internal assessment and the extended essay.

Group work

Group work may be undertaken by groups of up to four students. Each group must collect its own data and this may be pooled with data collected by other groups. More than one group is allowed to research the same aim at SL (see "Internal assessment details—SL") or the same hypothesis at HL (see "Internal assessment details—HL"), but each student must write up his or her own individual report. It is accepted that considerable similarities will exist in the procedures reported by members of a group working together on a study.

Time allocation

Internal assessment is an integral part of the psychology course, contributing 25% to the final assessment in the SL course and 20% to the final assessment in the HL course. This weighting should be reflected in the time that is allocated to teaching the knowledge, skills and understanding required to undertake the work as well as the total time allocated to carry out the work.

It is recommended that a total of approximately 30 hours (SL) or 40 hours (HL) should be allocated to the work. This should include:

- time for the teacher to explain to students the requirements of the internal assessment
- time to consider the psychology course ethical guidelines
- class time for students to work on the internal assessment component
- time for consultation between the teacher and each student
- time to review and monitor progress, and to check authenticity.

Requirements and recommendations

Ethical guidelines for internal assessment

The IB acknowledges that individual cultures have different interpretations of how ethical issues should be resolved in relation to the simple experimental study. Based on feedback from examiners, it is evident that a clear set of guidelines is needed for teachers and students when they are considering possible topics for the simple experimental study.

The following guidelines should be applied to all experimental studies.

- Any experimental study that creates anxiety, stress, pain or discomfort for participants must not be permitted.
- Any experimental study that involves unjustified deception, involuntary participation or invasion of privacy, including the inappropriate use of information and communication technology (ICT), email and the internet, must be avoided. There may be rare occasions when such infringements cannot be avoided, in which case the approval of other experienced psychologists should be sought before proceeding. (See the psychology forum on the online curriculum centre (OCC) for further guidance.)
- All participants must be informed before commencing the experimental study that they have the right to withdraw at any time. Pressure must **not** be placed on any individual participant to continue with the investigation beyond this point.
- Each participant must be informed of the aims and objectives of the research and must be shown the results of the research.
- Young children should not be used as participants. Experimental studies involving children need the written consent of parent(s) or guardian(s). Students must ensure that parents are fully informed about the implications for children who take part in such research. Where an experimental study is conducted with children in a school, the written consent of the teachers concerned must also be obtained.
- Participants must be debriefed and given the right to withdraw their own personal data and responses. Anonymity for each participant must be guaranteed.
- Teachers and students must exercise the greatest sensitivity to local and international cultures.
- Students must avoid conducting research with any adult who is not in a fit state of mind and cannot respond freely and independently.
- If any participant shows stress and/or pain at any stage of an experimental study, the investigation must finish immediately, and the participant must be allowed to withdraw.
- Non-human animals must not be used for experimental study.
- All data collected must be kept in a confidential and responsible manner and not divulged to any other person.
- Students must regard it as their duty to monitor the ways in which their peers conduct research, and to encourage public re-evaluation of any research that contravenes these guidelines.

Experimental studies that are conducted online, using ICT methods, are subject to the same guidelines. Any data collected online must be deleted once the research is complete. Such data must not be used for any purpose other than the conduct of the experimental study.

Students found to have carried out unethical work will be awarded no marks for the internal assessment component.

Introduction to experimental research methodology

Knowledge and understanding of quantitative methods and statistical analysis of data is assessed through the reporting of one simple experimental study. In this context students should be able to:

- explain what is meant by the experimental method
- explain the use of quantitative research methods.

The experimental method

For the IB Diploma Programme psychology course the experimental method is defined as requiring:

- the manipulation of one independent variable while other variables are kept constant
- the measurement of the effect of the independent variable on one dependent variable.

Quasi-experimental studies examine the effect of a naturally occurring or pre-existing independent variable (for example, age, gender, ethnicity) not an independent variable that is manipulated by the researcher. Therefore, in quasi-experimental studies the participants cannot be randomly allocated to conditions but are assigned to conditions on the basis of the pre-existing independent variable.

In correlational studies a relationship is sought between two variables, but neither of these variables is manipulated by the researcher. Consequently cause and effect cannot be inferred from the findings of correlational studies.

The use of quantitative research methods

Psychologists use quantitative methods to investigate areas of study where it is possible to test hypotheses under rigorous conditions. Experiments can take place in the laboratory or in the field. The aim is to be able to establish a cause and effect relationship through the use of descriptive as well as inferential statistics, allowing the researcher to determine the significance of the results.

Experimental research learning outcomes

Experimental design

- Define the aim of a study.
- State a research and null hypothesis of a study (**HL only**).
- State the independent and dependent variable in an experiment.
- State operational definitions of variables.
- Describe potential confounding variables.
- Explain the controls needed for an experiment (*for example, maturation, contamination, placebo effect*).
- Explain effects of participant and researcher expectations and bias (including demand characteristics, expectancy effect, observer bias, Hawthorne effect).
- Explain the use of single- and double-blind techniques.
- Discuss the strengths and limitations of experimental designs (*for example, independent samples, repeated measures, matched pairs, single participant*).

Sampling procedures

- Discuss sampling techniques appropriate to quantitative research (*for example, random, opportunity, systematic, stratified*).
- Discuss how participants are allocated to experimental and control groups (*for example, matched pairs, random allocation*).
- Explain the concept of representative sampling.

Evaluation of research

- Discuss the concepts of internal and external validity.
- Discuss conditions that increase a study's reliability.
- Apply descriptive statistics to analyse data (*for example, mean, median, mode, range, standard deviation*).
- Distinguish between levels of measurement (including nominal, ordinal, interval, ratio).
- Apply appropriate graphing techniques to represent data (*for example, bar chart, histogram, line graph, frequency polygon*).
- Apply an appropriately chosen statistical test (*for example, Wilcoxon matched-pairs signed-ranks test, Mann–Whitney U test, sign test, chi-squared test*) in order to determine the level of significance of data (**HL only**).

Using assessment criteria for internal assessment

For internal assessment, a number of assessment criteria have been identified. Each assessment criterion has level descriptors describing specific levels of achievement together with an appropriate range of marks. The level descriptors concentrate on positive achievement, although for the lower levels failure to achieve may be included in the description.

Teachers must judge the internally assessed work at SL and at HL against the criteria using the level descriptors.

- Different assessment criteria are provided for SL and HL.
- The aim is to find, for each criterion, the descriptor that conveys most accurately the level attained by the student, using the best-fit model. A best-fit approach means that compensation should be made when a piece of work matches different aspects of a criterion at different levels. The mark awarded should be one that most fairly reflects the balance of achievement against the criterion. It is not necessary for every single aspect of a level descriptor to be met for that mark to be awarded.
- When assessing a student's work, teachers should read the level descriptors for each criterion until they reach a descriptor that most appropriately describes the level of the work being assessed. If a piece of work seems to fall between two descriptors, both descriptors should be read again and the one that more appropriately describes the student's work should be chosen.
- Where there are two or more marks available within a level, teachers should award the upper marks if the student's work demonstrates the qualities described to a great extent. Teachers should award the lower marks if the student's work demonstrates the qualities described to a lesser extent.
- Only whole numbers should be recorded; partial marks, such as fractions and decimals, are not acceptable.
- Teachers should not think in terms of a pass or fail boundary, but should concentrate on identifying the appropriate descriptor for each assessment criterion.
- The highest level descriptors do not imply faultless performance but should be achievable by a student. Teachers should not hesitate to use the extremes if they are appropriate descriptions of the work being assessed.

- A student who attains a high level of achievement in relation to one criterion will not necessarily attain high levels of achievement in relation to the other criteria. Similarly, a student who attains a low level of achievement for one criterion will not necessarily attain low achievement levels for the other criteria. Teachers should not assume that the overall assessment of the students will produce any particular distribution of marks.
- It is recommended that the assessment criteria be made available to students.

Internal assessment details—SL

Simple experimental study

Duration: 30 recommended teaching hours

Weighting: 25%

Introduction

The simple experimental study forms an important part of psychological training. It enables students to demonstrate the application of their skills and knowledge of psychology. The purpose of the internal assessment is for students to experience the research process by practising sound research methodology.

The psychology course defines a simple experimental study as requiring the manipulation of **one** independent variable and the measurement of **one** dependent variable, while other variables are kept constant. Consequently, correlational studies, quasi-experiments and natural experiments (that is, any research undertaken without control over the independent variable and without a controlled sampling procedure) are **not** acceptable for the simple experimental study.

Variables that are based upon pre-existing characteristics of the participants are not suitable for the internal assessment. Variables that are **not** acceptable independent variables include, but are not limited to:

- gender (for example, comparing the results of female and male participants)
- age (for example, comparing the performance of 10-year-old participants and 18-year-old participants)
- native language (for example, comparing native French speakers and native Mandarin speakers)
- culture (for example, comparing the results of Afro-Caribbean participants and Swedish participants)
- education level (for example, comparing the performance of students in grade 5 and grade 11)
- socio-economic status (for example, poor participants and rich participants)
- handedness (for example, left-handed and right-handed participants).

While these variables might be of interest to students, they cannot be manipulated within the framework of the internal assessment. If such a variable is defined as the independent variable, the project has not met the requirements and will not earn marks.

It should be noted that some of these variables may be used if they are not pre-existing characteristics of the participants and can be manipulated. One example would be gender. If students are interested in studying the effect of gender on behaviour expectations they could show two groups of participants a photograph of a baby in unisex clothing. One group of participants is told that the baby is a boy and the other group is told that the baby is a girl. Both groups are asked to describe the baby in the photograph. The descriptions given by the two groups can then be compared. In this example the student has manipulated the perceived gender of the baby and this would be suitable for the internal assessment.

Studies submitted for internal assessment that do not meet the requirements for experimental work will be awarded no marks.

SL students are required to do a simple experiment by undertaking a replication of a published experimental study. Characteristics of the SL simple experimental study are as follows.

- Limited in scope
- Involves the manipulation of only one independent variable
- Involves the measurement of only one dependent variable
- Requires the use and interpretation of descriptive statistics
- Does **not** require the use of inferential statistics

Many published research studies are quite complex in nature. For the purposes of the internal assessment, the scope of the original study may be deliberately limited in order to fulfill the requirements.

As the purpose of the internal assessment is to introduce students to simple experimental research, it is very important for students to keep their experimental studies within a reasonable, limited scope. Students should manipulate only one independent variable with two conditions and should report on only one dependent variable, as outlined in their experimental hypothesis.

KEEP IT SIMPLE

- Manipulate one independent variable (two conditions)
- Measure one dependent variable

Choice of topic

Students should choose their own topic, but this must be with the teacher's guidance. For various reasons not all topics are suitable for students at this level. Topics that raise ethical concerns or are socially sensitive in nature should not be approved by the teacher. However, the topic should be one that seems interesting and worthwhile to the student.

Students must adhere to the psychology course ethical guidelines when undertaking any study. They must show tact and sensitivity, respect confidentiality and acknowledge all sources used.

As part of the topic selection and planning process students should go through the process of identifying, refining and defining their topic. It would be helpful for students to define the topic, aim, hypothesis and variables of their study.

The following are some examples of topics and approaches that have proved successful in the past. These should serve only as examples of how to define a topic, aim, independent variable, dependent variable and research hypothesis. Teachers and students are free to choose their own topics and are **not** limited to those listed here.

Topic	Primacy effect in attribution of performance—replication of “Patterns of performance and ability attribution: An unexpected primacy effect”, Edward E Jones <i>et al</i> (1968)
Aim	To investigate a primacy effect in performance and ability attribution
Independent variable	Order in which correct and incorrect answers are given by confederate (condition 1: confederate answers correctly at the start of a list of questions; condition 2: confederate answers correctly at the end of a list of questions)
Dependent variable	Participants’ rating of confederate’s intelligence
Research hypothesis	Assessments of intelligence are greater when a confederate answers correctly at the start of a list of questions than when a confederate answers correctly at the end of a list of questions.

Topic	Chameleon effect—“The Chameleon Effect as Social Glue: Evidence for the Evolutionary Significance of Nonconscious Mimicry”, Chartrand and Bargh (1999)
Aim	To investigate the occurrence of a chameleon effect in an interview situation
Independent variable	Presence/absence of foot-tapping and face-rubbing mannerisms in interviewer (condition 1: interviewer exhibits foot-tapping and face-rubbing mannerisms; condition 2: interviewer does not exhibit foot-tapping and face-rubbing mannerisms)
Dependent variable	Frequency of foot-tapping and face-rubbing mannerisms in participants/ interviewees
Research hypothesis	The frequency of participants’/interviewees’ foot-tapping and face-rubbing mannerisms will be greater when with an interviewer who taps their foot and rubs their face than with an interviewer who does not demonstrate these behaviours.

Topic	Central traits in impression formation—“Forming impressions of personality”, Asch (1946)
Aim	To investigate effects of particular adjectives on impression formation
Independent variable	Adjectives used in a description of a fictional person (condition 1: “warm” included in standardized description of fictional person; condition 2: “cold” included in standardized description of fictional person)
Dependent variable	Likeability ratings given by participants
Research hypothesis	Ratings of likeability are greater when “warm” is included in a list of adjectives pertaining to a fictional person than when “cold” is included.

Topic	Familiarity and liking—"Attitudinal Effects of Mere Exposure", Zajonc (1968)
Aim	To investigate the effect of familiarity on liking
Independent variable	Familiarity (condition 1: previous exposure to XXX; condition 2: no previous exposure to XXX)
Dependent variable	Liking ratings
Research hypothesis	Ratings of likeability are greater for familiar XXX than unfamiliar.

Topic	Social facilitation—"The dynamogenic factors in pace-making and competition", Triplett (1898)
Aim	To investigate the effect of co-actors on competitive performance of a task
Independent variable	The presence/absence of co-actors (condition 1: co-actors present; condition 2: co-actors absent)
Dependent variable	Time taken to reel in fishing line through a 4 m course
Research hypothesis	The time taken to reel in fishing line through a 4 m course is reduced by the presence of co-actors.

Topic	Odour sensation and memory—"The effects of olfactory stimulation on short-term memory", Deethardt (2007); "Odour sensation and memory", Trygg (1991)
Aim	To investigate the effect of olfactory stimulation on short-term memory of new information
Independent variable	Association of odours with listed words (condition 1: a different odour associated with each word on a list presented for memorization; condition 2: word list presented for memorization without associated odours)
Dependent variable	Rate of recall of words from word list
Research hypothesis	Rate of recall of a word list is greater when words are associated with odours at memorization.

Topic	Availability bias—"Judgment under uncertainty: heuristics and biases", Kahneman and Tversky (1974)
Aim	To investigate availability bias in judgments about lists of names
Independent variable	Familiarity of listed names (condition 1: list of 19 "famous" males; condition 2: list of 20 "non-famous" females)
Dependent variable	Response to question: "Which list was longer?" after trying to recall names on both lists
Research hypothesis	Participants judge a list of "famous" people longer than a slightly longer list of "non-famous" people.

This list is not exhaustive and many other examples of suitable experiments that could be replicated are available in psychology textbooks.

Examples of experiments that are **ethically unacceptable** for SL or HL internal assessment include, but are not limited to:

- conformity studies
- obedience studies
- animal research
- placebo experiments
- experiments involving ingestion (for example, food, drink, smoking, drugs)
- experiments involving deprivation (for example, sleep, food)
- experiments involving young children (teachers should observe local laws and guidelines in relation to the involvement of children in psychological research).

Students found to have carried out ethically unacceptable experiments will be awarded no marks for the internal assessment.

The use of pre-developed resources

The purpose of the internal assessment task is for students to gain experience planning, designing, conducting and reporting on an experimental study. While students are encouraged to adapt previously used materials for their own research, they should still have some hand in development, implementation and interpretation. There are now many commercial, free or public-domain tools available for use in research. The use of software, simulations or assessment packages must be carefully monitored. If the use of such resources does not allow the student to experience planning, designing, conducting or reporting their own study, then they should not be used.

The report

The work will be internally assessed by the teacher and externally moderated by the IB.

Every SL student **must** produce a written report using the following format.

Title page	<ul style="list-style-type: none">• Title• Student name and number• Subject and level• Date, month and year of submission• Number of words
Abstract	<ul style="list-style-type: none">• Statement of aim• Summary of methods• Summary of results• Conclusion

Introduction	<ul style="list-style-type: none"> • Aim of the study • Identification and explanation of study being replicated
Method (sub-section headings are in bold)	<ul style="list-style-type: none"> • Design: type and justification of experimental design, controls, ethical considerations including informed consent, identification of independent and dependent variables • Participants: characteristics of sample, sampling technique, allocation of participants to conditions • Materials: list of materials used, reference to copies in appendices • Procedures: described in sufficient detail to allow full replication
Results	<ul style="list-style-type: none"> • Statement of the measure(s) of central tendency, as appropriate • Statement of the measure(s) of dispersion, as appropriate • Justification of choice of descriptive statistic • Appropriate use of fully explained graphs and tables (may be computer generated)
Discussion	<ul style="list-style-type: none"> • Interpretation of descriptive statistics • Comparison of findings to the study being replicated • Identification of limitations of the student's research • Suggestions for modification to address limitations of the student's research • Conclusion
References	<ul style="list-style-type: none"> • Works cited within the report listed in a standard format
Appendices	<ul style="list-style-type: none"> • Raw data tables and calculations • Supplementary information • One copy of instrument(s) used • Copy of standardized instructions and debriefing notes • Copy of blank, informed consent form (participant and/or parent)
Words	1,000–1,500*
Marks	20

*The word count does not include supplementary information such as abstract, title page, references, section headings, parenthetical citations, graphs, charts and appendices.

Internal assessment criteria—SL

Simple experimental study

The SL experimental study is assessed against seven criteria that are related to the objectives for the psychology course and the sections of the report.

Criterion A	Introduction	2 marks
Criterion B	Method: Design	2 marks
Criterion C	Method: Participants	2 marks
Criterion D	Method: Procedure	2 marks
Criterion E	Results	4 marks
Criterion F	Discussion	6 marks
Criterion G	Presentation	2 marks
	Total	20 marks

A Introduction

Marks	Level descriptor
0	There is no relevant introduction. The study replicated is not identified. The aim of the student's study is not stated.
1	The study replicated is identified but not explained. The aim of the student's study is not clearly stated.
2	The study replicated is clearly identified and relevant details of the study are explained. The aim of the student's study is clearly stated.

B Method: Design

Marks	Level descriptor
0	The independent variable and dependent variable are not accurately identified. No appropriate experimental design is identified. There is no evidence of appropriate application of ethical guidelines, for example, there is no evidence that informed consent was obtained from participants or their parents.
1	The independent variable and dependent variable are accurately identified but are not operationalized. The experimental design is appropriate to the aim of the research but its selection is not appropriately justified. There is clear indication and documentation of how ethical guidelines were followed.
2	The independent variable and dependent variable are accurately identified and operationalized. The experimental design is appropriate to the aim and its use is appropriately justified. There is clear indication and documentation of how ethical guidelines were followed.

C Method: Participants

Marks	Level descriptor
0	No relevant characteristics of the participants are identified. No relevant sampling technique is identified or the sampling method is incorrectly identified.
1	Some characteristics of the participants are identified but not all are relevant. Some relevant participant characteristics have been omitted. The sample is selected using an appropriate method but the use of this method is not explained.
2	Relevant characteristics of the participants are identified. The sample is selected using an appropriate method and the use of this method is explained.

D Method: Procedure

Marks	Level descriptor
0	No relevant procedural information is included. The information provided does not allow replication. There are no details of how the ethical guidelines were applied.
1	The procedural information is relevant but not clearly described, so that the study is not easily replicable. Details of how the ethical guidelines were applied are included. Necessary materials have not been included and referenced in the appendices.
2	The procedural information is relevant and clearly described, so that the study is easily replicable. Details of how the ethical guidelines were applied are included. Necessary materials have been included and referenced in the appendices.

E Results

Marks	Level descriptor
0	There are no results or the results are irrelevant to the stated aim of the student's experimental study. Descriptive statistics have not been applied to the data. There is no graphing of data.
1–2	Results are stated and accurate and reflect the aim of the research. Descriptive statistics (one measure of central tendency and one measure of dispersion) are applied to the data, but their use is not explained. The graph of results is not accurate, is unclear or is not sufficiently related to the aim of the study. Results are not presented in both words and tabular form.
3–4	Results are clearly stated and accurate and reflect the aim of the research. Appropriate descriptive statistics (one measure of central tendency and one measure of dispersion) are applied to the data and their use is explained. The graph of results is accurate, clear and directly relevant to the aim of the study. Results are presented in both words and tabular form.

F Discussion

Marks	Level descriptor
0	There is no discussion or it is irrelevant to the aim of the research.
1–2	Discussion of the results is very superficial. The findings of the student's experimental study are not compared to those of the study being replicated. Limitations of the design and procedure are not accurately identified. No modifications are suggested and there is no conclusion.
3–4	Discussion of the results is not well developed. The findings of the student's experimental study are discussed with reference to the study being replicated. Some relevant limitations of the design and procedure have been identified, but a rigorous analysis of method is not achieved. Some modifications are suggested. The conclusion is appropriate.
5–6	Discussion of results is well developed (for example, differences in the results of calculations of central tendency and/or dispersion are explained). The findings of the student's experimental study are discussed with reference to the study being replicated. Limitations of the design and procedure are highly relevant and have been rigorously analysed. Modifications are suggested and ideas for further research are mentioned. The conclusion is appropriate.

G Presentation

Marks	Level descriptor
0	The report is not within the word limit of 1,000–1,500 words. Required sections of the report are missing, for example, no abstract is included. No references are provided. Appendices are missing or incomplete.
1	The report is within the word limit of 1,000–1,500 words. The report is complete but not in the required format. The reference for the study being replicated is cited but it is not presented using a standard method of listing references. Appendices are not labelled appropriately and/or are not referenced in the body of the report. The abstract is poorly written and does not include a summary overview of the student's experimental study, including the results.
2	The report is within the word limit of 1,000–1,500 words. The report is complete and in the required format. The reference for the study being replicated is cited using a standard method of listing references. Appendices are labelled appropriately and are referenced in the body of the report. The abstract is clearly written and includes a summary overview of the student's experimental study, including the results.

Internal assessment details—HL

Simple experimental study

Duration: 40 recommended teaching hours

Weighting: 20%

See the internal assessment details in “Internal assessment details—SL”.

HL students may undertake a replication or a modification of a published experimental study.

In addition to the internal assessment requirements made of SL students, HL students are required to:

- undertake more extensive background research related to their simple experimental study
- provide an operationalized experimental hypothesis and an operationalized null hypothesis
- apply an inferential statistical test to their data and interpret the result of the test.

The report

The work will be internally assessed by the teacher and externally moderated by the IB.

Every HL student **must** produce a written report using the following format.

Title page	<ul style="list-style-type: none"> • Title • Student name and number • Subject and level • Date, month and year of submission • Number of words
Abstract	<ul style="list-style-type: none"> • Statement of aim and hypotheses • Summary of methods • Summary of results • Conclusion
Introduction	<ul style="list-style-type: none"> • Aim of the study • Literature review (analysis of relevant background studies and theories) • Operationalized experimental hypothesis • Operationalized null hypothesis
Method (sub-section headings are in bold)	<ul style="list-style-type: none"> • Design: type and justification of experimental design, controls, ethical considerations including informed consent, identification of independent and dependent variables • Participants: characteristics of the sample, target population, sampling technique, allocation of participants to conditions • Materials: list of materials used, reference to copies in appendices • Procedures: described in sufficient detail to allow full replication

Results	<ul style="list-style-type: none"> • Statement of the measure(s) of central tendency, as appropriate • Statement of the measure(s) of dispersion, as appropriate • Justification of choice of descriptive statistic • Reporting of inferential statistics and justification for their use (calculations in appendix) • Statement of statistical significance • Appropriate use of fully explained graphs and tables (may be computer generated)
Discussion	<ul style="list-style-type: none"> • Interpretation of descriptive and inferential statistics • Comparison of findings to studies and theories reviewed in the introduction • Identification of limitations of the student's research • Suggestions for modification to address limitations of the student's research • Conclusion
References	<ul style="list-style-type: none"> • Works cited within the report listed in a standard format
Appendices	<ul style="list-style-type: none"> • Raw data tables and calculations • Supplementary information • One copy of instrument(s) used • Copy of standardized instructions and debriefing notes • Copy of blank, informed consent form (participant and/or parent)
Words	1,500–2,000*
Marks	28

*The word count does not include supplementary information such as abstract, title page, references, section headings, parenthetical citations, graphs, charts and appendices.

Internal assessment criteria—HL

Simple experimental study

The HL experimental study is assessed against nine criteria that are related to the objectives for the psychology course and the sections of the report.

Criterion A	Introduction	5 marks
Criterion B	Method: Design	2 marks
Criterion C	Method: Participants	2 marks
Criterion D	Method: Procedure	2 marks
Criterion E	Results: Descriptive	2 marks
Criterion F	Results: Inferential	3 marks
Criterion G	Discussion	8 marks
Criterion H	Citation of sources	2 marks
Criterion I	Report format	2 marks
	Total	28 marks

A Introduction

Marks	Level descriptor
0	There is no introduction or the background research presented is not made relevant to the experimental hypothesis. The aim of the study is not stated. No hypotheses are stated.
1–3	Background theories and/or studies are identified but are limited in number, not well explained and/or not highly relevant to the hypotheses. The aim of the study is clearly stated. The experimental and/or null hypotheses are stated but are unclear or not operationalized. The prediction made in the experimental hypothesis is not clearly justified by the background studies and/or theories.
4–5	Background theories and/or studies are adequately explained and highly relevant to the hypotheses. The aim of the study is clearly stated. The experimental and null hypotheses are appropriately stated and operationalized. The prediction made in the experimental hypothesis is justified by the background studies and/or theories.

B Method: Design

Marks	Level descriptor
0	The independent variable and dependent variable are not accurately identified. No appropriate experimental design is identified. There is no evidence of appropriate application of ethical guidelines, for example, there is no evidence that informed consent was obtained from participants or their parents.
1	The independent variable and dependent variable are accurately identified but are not operationalized. The experimental design is appropriate to the aim of the research but its selection has not been appropriately justified. There is clear indication and documentation of how ethical guidelines were followed.
2	The independent variable and dependent variable are accurately identified and operationalized. The experimental design is appropriate to the aim and its use is appropriately justified. There is clear indication and documentation of how ethical guidelines were followed.

C Method: Participants

Marks	Level descriptor
0	No relevant characteristics of the participants are identified. No relevant sampling technique is identified or the sampling method is incorrectly identified. The target population has not been identified.
1	Some characteristics of the participants are identified but not all are relevant. Some relevant participant characteristics have been omitted. The sample is selected using an appropriate method but the use of this method is not explained. The target population has been identified and is appropriate.
2	Relevant characteristics of the participants are identified. The sample is selected using an appropriate method and the use of this method is explained. The target population has been identified and is appropriate.

D Method: Procedure

Marks	Level descriptor
0	No relevant procedural information is included. The information provided does not allow replication. There are no details of how the ethical guidelines were applied.
1	The procedural information is relevant but not clearly described, so that the study is not easily replicable. Details of how the ethical guidelines were applied are included. Necessary materials have not been included and referenced in the appendices.
2	The procedural information is relevant and clearly described, so that the study is easily replicable. Details of how the ethical guidelines were applied are included. Necessary materials have been included and referenced in the appendices.

E Results: Descriptive

Marks	Level descriptor
0	There are no results or the results are irrelevant to the stated hypotheses of the student's experimental study. Relevant descriptive statistics have not been applied to the data. There is no graphing of data.
1	Results are stated and accurate and reflect the hypotheses of the research. Descriptive statistics (one measure of central tendency and one measure of dispersion) are applied to the data, but their use is not explained. The graph of results is not accurate, is unclear or is not sufficiently related to the hypotheses of the study. Results are not presented in both words and tabular form.
2	Results are clearly stated and accurate and reflect the hypotheses of the research. Appropriate descriptive statistics (one measure of central tendency and one measure of dispersion) are applied to the data and their use is explained. The graph of results is accurate, clear and directly relevant to the hypotheses of the study. Results are presented in both words and tabular form.

F Results: Inferential

Marks	Level descriptor
0	No appropriate inferential statistical test has been applied.
1	An appropriate inferential statistical test has been chosen, but not properly applied.
2	An appropriate inferential statistical test has been chosen and explicitly justified. Results of the inferential statistical test are not complete or may be poorly stated.
3	An appropriate inferential statistical test has been chosen and explicitly justified. Results of the inferential statistical test are accurately stated. The null hypothesis has been accepted or rejected appropriately according to the results of the statistical test. A statement of statistical significance is appropriate and clear.

G Discussion

Marks	Level descriptor
0	There is no discussion section, or the discussion of the results is irrelevant to the hypotheses.
1–2	Discussion of the results is very superficial. The findings of the student's experimental study are not compared to those of the study being replicated. Limitations of the design and procedure are not accurately identified. No modifications are suggested and there is no conclusion.

Marks	Level descriptor
3–5	Discussion of the results is not well developed or is incomplete (for example, discussion of either the descriptive or inferential statistics is missing). The findings of the student's experimental study are mentioned with reference to relevant background studies and/or theories. Some relevant limitations of the design and procedure have been identified, but a rigorous analysis of method is not achieved. Some modifications are suggested. The conclusion is appropriate.
6–8	Discussion of results is well developed and complete (for example, descriptive and inferential statistics are discussed). The findings of the student's experimental study are discussed with reference to relevant background studies and/or theories. Limitations of the design and procedure are highly relevant and have been rigorously analysed. Modifications are suggested and ideas for further research are mentioned. The conclusion is appropriate.

H Citation of sources

Marks	Level descriptor
0	Sources are not cited within the report. No references are provided, or no standard citation method is used.
1	The references are incomplete or a standard citation method is not used consistently.
2	All in-text citations and references are provided. A standard citation method is used consistently throughout the body of the report and in the references section.

I Report format

Marks	Level descriptor
0	The report is not within the word limit of 1,500–2,000 words. Required sections of the report are missing, for example, no abstract is included. Appendices are missing or incomplete.
1	The report is within the word limit of 1,500–2,000 words. The report is complete but not in the required format. Appendices are not labelled appropriately and/or are not referenced in the body of the report. The abstract is poorly written and does not include a summary overview of the student's experimental study, including the results.
2	The report is within the word limit of 1,500–2,000 words. The report is complete and in the required format. Appendices are labelled appropriately and are referenced in the body of the report. The abstract is clearly written and includes a summary overview of the student's experimental study, including the results.

Glossary of command terms

Command terms with definitions

Students should be familiar with the following key terms and phrases used in examination questions, which are to be understood as defined below. Although these terms will be used frequently in examination questions, other terms may be used to direct students to present an argument in a specific way.

These command terms are grouped under associated assessment objectives in the section “Assessment objectives in practice”.

Analyse	Break down in order to bring out the essential elements or structure.
Apply	Use an idea, equation, principle, theory or law in relation to a given problem or issue.
Compare	Give an account of the similarities between two (or more) items or situations, referring to both (all) of them throughout.
Compare and contrast	Give an account of similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.
Contrast	Give an account of the differences between two (or more) items or situations, referring to both (all) of them throughout.
Define	Give the precise meaning of a word, phrase, concept or physical quantity.
Describe	Give a detailed account.
Discuss	Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence.
Distinguish	Make clear the differences between two or more concepts or items.
Evaluate	Make an appraisal by weighing up the strengths and limitations.
Examine	Consider an argument or concept in a way that uncovers the assumptions and interrelationships of the issue.
Explain	Give a detailed account including reasons or causes.
Outline	Give a brief account or summary.
State	Give a specific name, value or other brief answer without explanation or calculation.
To what extent	Consider the merits or otherwise of an argument or concept. Opinions and conclusions should be presented clearly and supported with appropriate evidence and sound argument.

Glossary

Addiction	A persistent dependence on a behaviour or substance.
Altruism	Altruism refers to behaviour by an individual that increases the fitness of another individual while decreasing the fitness of the actor.
Behaviour	The activity of an organism including body movements, physiological and cognitive processes.
Covert observation	In covert observation the observed group may or may not be aware of the presence of the researcher but they are not made aware that their behaviour is being observed.
Empirical	A term used in relation to studies in which data has been gathered, recorded and analysed.
Etiology	The cause of a disease or abnormal condition.
Inductive analysis	Treatment of qualitative data in which theory and hypotheses are derived from the data rather than established before the data is gathered.
Informed consent	Informed consent is obtained only where participants are fully aware of the nature and aims of the study in which they are participating.
Narrative interview	Narrative interviews are used to obtain the stories people employ to interpret their lives and the world around them. It is the ways that people organize and make connections between events that are of interest to the narrative interviewer.
Overt observation	In overt observation the observed group is aware of the presence of the researcher and that their behaviour is being observed.
Postmodern transcription	A method of transcribing recorded interviews including the words, volume, pitch, speed, pauses, facial expressions, gestures and other non-verbal communication.
Reflexive	Reflexivity involves the researcher documenting his or her beliefs, attitudes, values, theoretical position and reactions to the object of study and assessing the likely impact of these on the collection and analysis of data.
Research	A term embracing theories and empirical studies within psychology.
Traditional transcription	A method of transcribing recorded interviews including the words only.