International Baccalaureate

International Baccalaureate

Africa/Europe/Middle East

Psychology

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Mission Statement

The International Baccalaureate Organization 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 IBO 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 di erences, can also be right.

November 2002

La Déclaration de Mission de L'IBO

L'Organisation du Baccalauréat International (IBO) a pour but de développer chez les jeunes la curiosité intellectuelle, les connaissances et la sensibilité nécessaires pour contribuer à bâtir un monde meilleur et plus paisible, dans un esprit d'entente mutuelle et de respect interculturel.

À cette n, l'IBO collabore avec des établissements scolaires, des gouvernements et des organisations internationales pour mettre au point des programmes d'éducation internationale stimulants et des méthodes d'évaluation rigoureuses.

Ces programmes encouragent les élèves de tout pays à apprendre activement tout au long de leur vie, à être empreints de compassion, et à comprendre que les autres, en étant di érents, puissent aussi être dans le vrai.

Novembre 2002

Declaración de Principos de IBO

La Organización del Bachillerato Internacional tiene como meta formar jóvenes solidarios, informados y ávidos de conocimiento, capaces de contribuir a crear un mundo mejor y más pací co, en el marco del entendimiento mutuo y el respeto intercultural.

En pos de este objetivo, la Organización del Bachillerato Internacional colabora con establecimientos escolares, gobiernos y organizaciones internacionales para crear y desarrollar programas de educación internacional exigentes y métodos de evaluación rigurosos.

Estos programas alientan a estudiantes del mundo entero a adoptar una actitud activa de aprendizaje durante toda su vida, a ser compasivos y a entender que otras personas, con sus diferencias, también pueden estar en lo cierto.

Noviembre 2002

Workbook contents

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First examinations 2011

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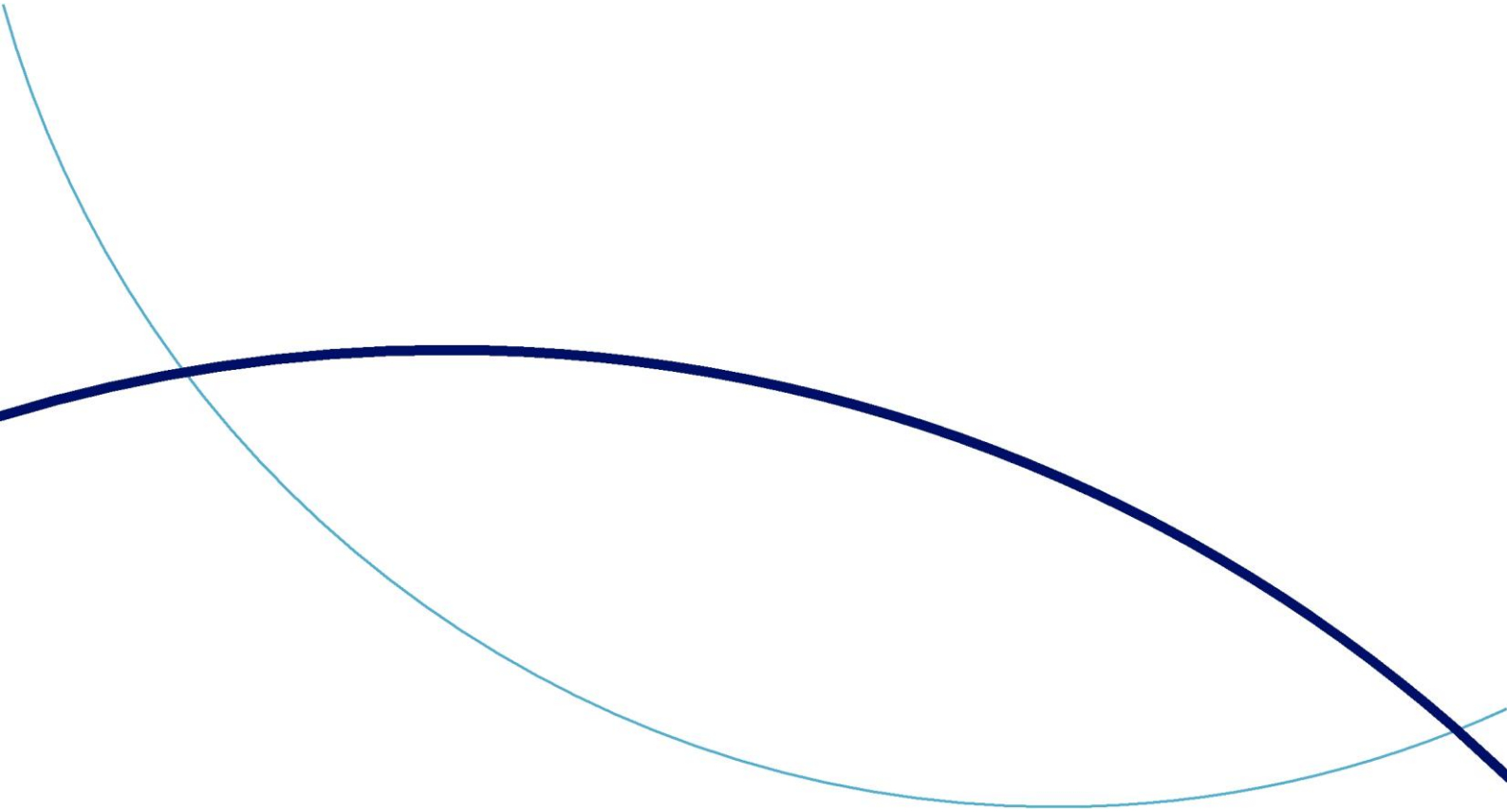

Diploma Programme
Psychology guide

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The International Baccalaureate (IB) offers three high quality and challenging educational programmes for a worldwide community of schools, aiming to create a better, more peaceful world.

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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.

Contents

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.

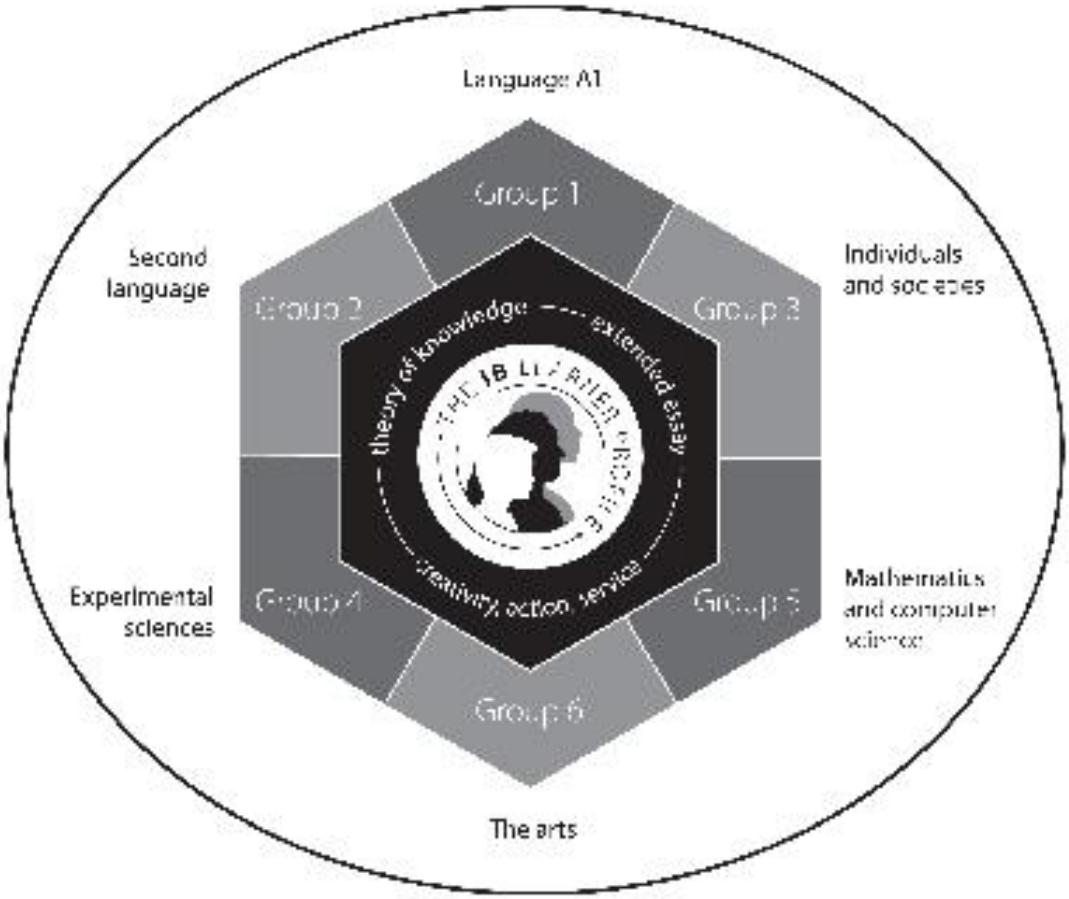
First examinations 2011

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) • The biological level of analysis • The cognitive level of analysis • The sociocultural level of analysis	90	90
Part 2: Options (SL/HL) • Abnormal psychology • Developmental psychology • Health psychology • Psychology of human relationships • Sport psychology	30	60
Part 3: Qualitative research methodology (HL only) • Qualitative research in psychology		50
Part 4: Simple experimental study (SL/HL) • 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.

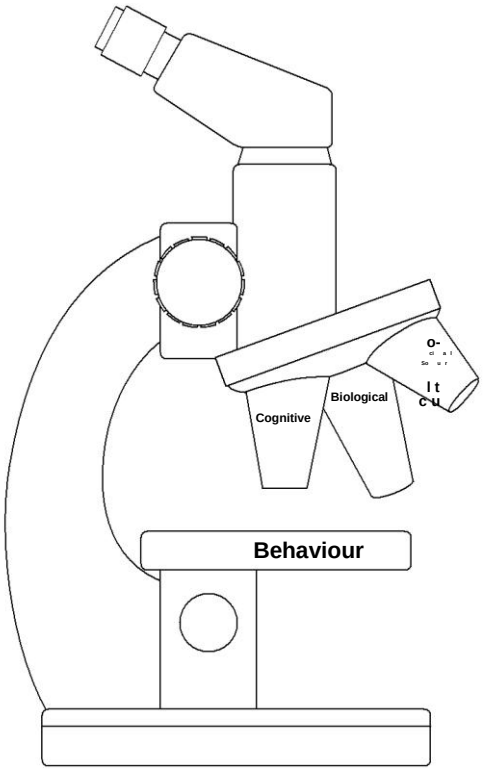


Figure 1

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, prosapagnosia, 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%**
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)	**50%**
Paper 2 (1 hour) **Fifteen** questions on part 2 of the syllabus. Students choose **one** question to answer in essay form. (22 marks)	**25%**
Internal assessment A report of a simple experimental study conducted by the student. (20 marks)	**25%**

Assessment outline—HL

First examinations 2011

Assessment component	Weighting
External assessment (4 hours)	**80%**
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)	**35%**
Paper 2 (2 hours) **Fifteen** questions on part 2 of the syllabus. Students choose **two** questions to answer in essay form. (44 marks)	**25%**
Paper 3 (1 hour) **Three** compulsory questions based on an unseen text, covering part 3 of the syllabus. (30 marks)	**20%**
Internal assessment A report of a simple experimental study conducted by the student. (28 marks)	**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. 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. 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 *et al* (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	• Title • Student name and number • Subject and level • Date, month and year of submission • Number of words
Abstract	• Statement of aim • Summary of methods • Summary of results • Conclusion

Introduction	• Aim of the study • Identification and explanation of study being replicated
Method (sub-section headings are in bold)	• **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	• 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	• 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	• Works cited within the report listed in a standard format
Appendices	• 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	• Title • Student name and number • Subject and level • Date, month and year of submission • Number of words
Abstract	• Statement of aim and hypotheses • Summary of methods • Summary of results • Conclusion
Introduction	• 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)	• **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	• 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	• 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	• Works cited within the report listed in a standard format
Appendices	• 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.

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Diploma Programme

Psychology subject outline

First examinations 2011

This document explains the major features of the course, and outlines the syllabus and assessment requirements.

More detailed information about the course can be obtained by referring to the guide for this subject, which is available on the subject page of the IB online curriculum centre (OCC) website (http://occ.ibo.org) and can also be purchased from the IB store (http://store.ibo.org).

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.

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.

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

Syllabus outline

Syllabus component	Teaching hours	
	SL	HL
Part 1: Core (SL/HL) • The biological level of analysis • The cognitive level of analysis • The sociocultural level of analysis	90	90
Part 2: Options (SL/HL) • Abnormal psychology • Developmental psychology • Health psychology • Psychology of human relationships • Sport psychology	30	60
Part 3: Qualitative research methodology (HL only) • Qualitative research in psychology		50
Part 4: Simple experimental study (SL/HL) • Introduction to experimental research methodology	30	40
Total teaching hours	**150**	**240**

Assessment outline—SL

First examinations 2011

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

Assessment outline—HL

First examinations 2011

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

NEWPSYCHOLOGYSYLLABUS

2009 for 1st examinations 2011

Workshop leaders' workbook

BOOK 1

The new syllabus

CONTENTS

Syllabus outline

Syllabus component	Teaching hours	
	SL	HL
Part 1: Core (SL/HL) o The biological level of analysis o The cognitive level of analysis o The sociocultural level of analysis	90	90
Part 2: Options (SL/HL) o Abnormal psychology o Developmental psychology o Health psychology o Psychology of human relationships o Sport psychology	30	60
Part 3: Qualitative research methodology (HL only) o Qualitative research in psychology	-	50
Part 4: IA - Simple experimental study (SL/HL) o Introduction to experimental research methodology	30	40
Total teaching hours	**150**	**240**

Aims and driving principles behind the new syllabus

The aims of the **psychology** course at SL and at HL are to:

- Develop an awareness of how psychological research can be applied for the benefit of human beings
- Ensure that ethical practices are upheld in psychological inquiry
- Develop an understanding of the biological, cognitive and sociocultural influences on human behaviour
- Develop an understanding of alternative explanations of behaviour
- Understand and use diverse methods of psychological inquiry.

Levels of Analysis vs Perspectives

Bob Keegan, Jan. 2008

The new IB psychology curriculum reflects the maturation of the field of psychology. In his book, *The Structure of Scientific Revolutions*, the influential twentieth century historian of science, Thomas Kuhn (1962), proposed that all sciences follow a similar course of development. The earliest phase in the development of a science is characterized by competition and disagreement – arguments about what content and even what methods should form the basis of the science. In Kuhn's terminology, this is the phase before the science has arrived at a "paradigm" – a set of common assumptions, beliefs and methods that will establish the research program and guide further development in the field. The "Perspectives" approach to teaching psychology accurately captures the development of psychology for most of its history with Psychodynamic, Behaviouristic, Cognitive, Humanistic, Biological and other points of view competing to become the dominant paradigm. There is evidence, however, to suggest that in recent years the science of psychology has found a paradigm, one based on an integration of approaches that previously were seen as separate or even competitive. This new paradigm is accurately reflected in the phrase "Biopsychosocial model". The new IB curriculum in psychology utilizes this model.

The Biopsychosocial model uses a "levels of analysis" approach. Knowledge derived from investigations into the biological, cognitive and sociocultural aspects of humans is synthesized in order to explain the complex psychological functioning of our species. The evolution in psychology toward a levels of analysis approach / biopsychosocial model can be seen in the following excerpts from recent publications:

In the first edition of *Psychological Science*, authors Michael Gazzaniga (a leading figure in cognitive neuroscience) and Todd Heatherton (a social psychologist) (2003, p. 12) wrote:

> Seven levels of analysis will be evident throughout this book … (1) the genetic level, (2) the neurochemical level, (3) the brain systems level, (4) the behavioral level, (5) the perceptual and cognitive level, (6) the individual level, and (7) the social and cultural level.

In the second edition of their text, (Gazzaniga & Heatherton, 2006, p. xxv), they comment on how their first edition was received:

> Instructors were especially enthusiastic about the levels-of-analysis approach to studying human behaviour, which has become the cutting-edge way to investigate behaviour in the fields of psychology and neuroscience.

They go on to explain an important clarifying revision in the second edition (p. xxvii):

> In the new edition, we have simplified our levels-of-analysis approach so that it now focuses on three broad levels of analysis: biological, individual, and social.

"Individual" in this quotation is synonymous with what the new IB psychology curriculum calls the "cognitive level of analysis".

The following appeared on the back cover and in advertisements for a 2005 edited textbook (Cacioppo & Berntson):

> *Social Neuroscience: Key Readings* illustrates the complementary nature of social, cognitive, and biological levels of analysis and how research integrating these levels can foster more comprehensive theories of the mechanisms underlying complex behaviour and the mind.

The excerpt below reprises the evolution of this new paradigm in psychology traced above and concludes with a clear example of the utility of this integrative approach to the subject matter of psychology (Huffman, 2004, p. xii):

> There are seven major perspectives in modern psychology: *biopsychology/neuroscience, cognitive, behavioural, sociocultural, evolutionary, humanistic,* and *psychoanalytic/psychodynamic.* As you will discover in the upcoming chapters, these seven perspectives are widely overlapping and somewhat inseparable. In response to this overlap, many psychologists (and this seventh edition of *Psychology in Action*) have adopted a **biopsychosocial model** [author's emphasis], which incorporates all seven perspectives. This model proposes that three major forces — biological (e.g., genetics, brain functions, neurotransmitters, and evolution), psychological (e.g., learning, thinking, emotion, personality, and motivation), and social (e.g., family, school, culture, ethnicity, social class, and politics) affect and are affected by one another. For example, feelings of depression are often influenced by genetics and neurotransmitters (biology), our learned responses and patterns of thinking (psychology), and our socioeconomic status and cultural views of emotion (social).

The new IB psychology curriculum pursues this "cutting edge" approach to the teaching and learning of modern psychology.

References

Cacioppo, J. T., & Berntson, G. G. (Eds.) (2005) *Social neuroscience: Key readings in social psychology.* New York: Psychology Press.

Gazzaniga, M. S. & Heatheron, T. F. (2003) *Psychological science: Mind, brain and behavior.* New York: W. W. Norton & Company, Inc.

Gazzaniga, M. S. & Heatheron, T. F. (2006) *Psychological science: Mind, brain and behaviour* (2nd Ed.). New York: W. W. Norton & Company, Inc.

Huffman, K. (2004) *Psychology in action* (7th Ed.). New York: John Wiley & Sons, Inc.

Kuhn, T. S. (1962) *The structure of scientific revolutions.* Chicago: The University of Chicago Press.

Key Changes Decided during Curriculum Review

- Areas of study are outlined in more detail
- HL Paper 3 will be based on an edited research study or abstract
- Applied options – Sport Psychology, Human Relationships
- Levels of analysis rather than perspectives
- Social Psychology in the core as Socio-cultural level of analysis
- Common core for HL and SL
- Remove delineation between learning and cognitive perspectives
- Simplified command terms
- Glossary of key terms
- 'Big Four' no longer part of the rubric for assessment
- Historical and cultural conditions no longer part of the syllabus
- More teaching hours allocated to the IA

Changes to course objectives

- Focus on principles, research, methods and ethics – providing a clearer structure throughout the course both in the core and options modules.
- The use of language/command terms has been split into hierarchical cognitive skills with more focus on demonstration and evaluation of knowledge with increasing cognitive skill.

1. Knowledge and Comprehension
2. Application and Analysis
3. Synthesis and Evaluation

Increasing Cognitive Demand

- The new marking bands are also grouped into these cognitive skills.

Assessment Changes

Current Course HL	New CourseHL
External Assessment: 4hours of exams Part 1 = 2hours Part 2 = 2hours Part 3 = 1 hour	**External Assessment:** Same
Weightings: Part1 = 30% Part2 = 30% Part3 = 20 % **Total EA = 80%**	**Weightings:** Part1 = 35% Part2 = 25% Part3 = 20% **TotalEA = 80%**
Exam Structure: Part 1 =3SAQs and 1 essay Part 2= 2 essays Part 3 = 3 SAQs	**Exam Structure:** Same
Internal Assessment: A simple experimental study ***20%***	**Internal Assessment:** A simple experimental study ***20%*** (Teaching hours increase from 30 to 40 hours)

Current CourseSL	New CourseSL
ExternalAssessment: 3 hours of exams Part 1 = 2 hours Part 2 = 1 hour	**External Assessment:** Same
Weightings: Part 1 = 50% Part 2 = 30% **Total EA = 80%**	**Weightings:** Part 1 = 50% ***Part 2 = 25%*** ***Total EA = 75%***
Exam Structure: Part 1 – 3 SAQs and 1 essay Part 2 – 1essay	**Exam Structure:** Same
Internal Assessment: A simple experimental study ***20%***	**Internal Assessment:** A simple experimental study **25%** (Teaching hours increase from 15 to 30)

Changes to Content

- Perspectives changed to Levels of Analysis
- Removal ofthe Learning Perspective – replaced with Socio Cultural Perspective
- Estimated teaching hours for Levels of Analysis has dropped to 90 for both SL and HL whereas previously HL received 100 hours for Perspectives
- Streamlined options
- Removal of research methodology for SL and the introduction of Qualitative Research Methods for HL. This has resulted in an increase in Estimated Teaching Hours for the Simple Experimental Study at SL – this increases from 15 to 30.

Assessment Outline

Assessment outline—SL

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

Assessment outline—HL

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

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,
- 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.

Assessment objectives and command terms

Assessment Objectives

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

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 socio-cultural levels of analysis
- Demonstrate knowledge and comprehension of one option at SL or two options at HL.

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

Synthesis and evaluation

- Evaluate psychological theories and empirical studies
- Discuss how biological, cognitive and socio-cultural levels of analysis can be used to explain behaviour
- Evaluate research methods used to investigate behaviour

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 report.

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 definitions

Below is a table of the command terms and definitions.

Activity

Using the learning objectives in the subject content of the guide, try to write exemplar questions using the command terms for the different topics in the guide.

Command terms with definitions		Examples - participant activity
AO1 Knowledge and understanding		
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.	
AO2 Application and analysis of knowledge and understanding		
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.	
AO3 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.
Justify	Give valid reasons or evidence to support an answer or conclusion.
To what extent	Consider the merits or otherwise of an argument or concept. Opinions and conclusions should be presented clearly and supported with empirical evidence and sound argument.

Planning the two‐year teaching cycle

Teaching strategies - schemes of work for the two years of the course

Year 1

Term	Topic	Content	SL (or SL and HL together)	HL

Year 2

Term	Topic	Content	SL (or SL and HL together)	HL

The Psychology Online Curriculum Centre (OCC)

The Psychology OCC provides a number of facilities for IBD Psychology teachers:-

1. **All IB Diploma Programme Psychology publications**

These publications are found on the Psychology home page. The Psychology publications include the following documents: - the subject Guide, Guidelines for supervising Psychology extended essays, Teacher Support Materials (TSM), Subject reports and many other useful publications. Teachers are strongly encouraged to familiarise themselves with all the Psychology documents.

The opportunity to share resources

On the left-hand side of the Psychology home page screen you can see *view resources* and *add resources.*

The view and add resources facility allows teachers to search and add resources by guide category and type of resource.

2. **A discussion forum for Psychology teachers around the world**

The discussion forum is by IB Diploma Psychology teachers for IB Diploma Psychology teachers and forms part of the Diploma Programme (DP) Psychology learning community.

On the left-hand side of the Psychology home page screen you can see *Forums: Psychology*

The discussion forum allows teachers to reply to a message that has already been created and to create a new topic for discussion.

This forum is moderated by the online faculty members

On the left-hand side of the Psychology home page screen you can see *Faculty member*

3. **News items related to the teaching of IBD Psychology**

News items can be viewed on the right-hand side of the Psychology home page screen.

Teachers are strongly encouraged to become an active participant of the Psychology OCC or at least follow the latest discussions, news items and new publications.

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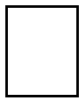

Psychology

Higher level and standard level

Specimen papers 1, 2 and 3

For first examinations in 2011

CONTENTS

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PSYCHOLOGY
HIGHER LEVEL and standard LEVEL
PAPER 1

SPECIMEN PAPER

2 hours

INSTRUCTIONS to candidates

- Do not turn over this examination paper until instructed to do so.
- Section A: answer all the questions.
- Section B: answer one question.

SECTION A

*Answer **all** questions in this section. Marks will be awarded for focused answers supported by relevant knowledge.*

Biological level of analysis

1. Explain how **one** study demonstrates localization of function in the brain. *[8 marks]*

Cognitive level of analysis

2. Outline **two** principles that define the cognitive level of analysis. *[8 marks]*

Sociocultural level of analysis

3. Explain **one** compliance technique. *[8 marks]*

SECTION B

*Answer **one** question in this section. Marks will be awarded for demonstration of knowledge and understanding (including the use of relevant psychological research), evidence of critical thinking (e.g. application, analysis, synthesis, evaluation), and organization of answers.*

4. To what extent does genetic inheritance influence behaviour? Use relevant research studies in your response. *[22 marks]*

5. Discuss the use of **one** research method (*e.g.* experiments, case studies) in the cognitive level of analysis. Use relevant research studies in your response. *[22 marks]*

6. Evaluate the role that **one** cultural dimension (*e.g.* individualism/collectivism, power distance) may have on behaviour. *[22 marks]*

SPEC/3/PSYCH/BP1/ENG/TZ0/XX/M

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MARKSCHEME

SPECIMEN PAPER

PSYCHOLOGY

Higher Level and Standard Level

Paper 1

8 pages

SECTION A

Biological level of analysis

1. Explain how *one* study demonstrates localization of function in the brain. ***[8 marks]***

Refer to the paper 1 section A markbands below when awarding marks.

Studies which could be used include, but are not limited to:

- Wernicke
- Broca
- Gazzaniga and Sperry
- Milner HM case study

More recent research is also relevant *e.g.* research using brain scanning.

Responses meriting the award of marks in the top bands should clearly explain a relevant study whereby the aim, method and findings are presented, displaying clear understanding of and support for localization of function through the chosen study.

Section A markbands

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1 to 3	There is an attempt to answer the question, but knowledge and understanding is limited, often inaccurate, or of marginal relevance to the question.
4 to 6	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.
7 to 8	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.

Responses should address just one study, and where more than one study is presented no further marks should be awarded.

Cognitive level of analysis

2. Outline *two* principles that define the cognitive level of analysis. ***[8 marks]***

Refer to the paper 1 section A markbands below when awarding marks.

In a broad sense these principles suggest the nature of basic psychological processes and they provide information that is important to consider critically the viewpoint of the level of analysis within psychology as a whole. There are a number of principles that are common to theorists from the cognitive level of analysis. Examples include the principle proposing that unobservable mental processes can explain observable behaviour; that models of psychological functions can be scientifically studied; or that cognitive processes actively organize and manipulate information. All of these would be appropriate choices.

Another relevant principle for the cognitive level of analysis is the principle that cognitive processes are influenced by social and cultural factors. According to Bartlett, memories are organized within the historical and cultural frameworks (which Bartlett called "schemata") of the individual, and the process of remembering involves the retrieval of information which has been unknowingly altered in order that it is compatible with pre-existing knowledge. Participants omitted information they regarded as irrelevant, changed the emphasis to points they considered to be significant, and rationalized the parts that did not make sense in order to make the story more comprehensible.

Section A markbands

Marks	**Level descriptor**
0	The answer does not reach a standard described by the descriptors below.
1 to 3	There is an attempt to answer the question, but knowledge and understanding is limited, often inaccurate, or of marginal relevance to the question.
4 to 6	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.
7 to 8	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.

Sociocultural level of analysis

3. Explain *one* compliance technique. ***[8 marks]***

Refer to the paper 1 section A markbands below when awarding marks.

Compliance techniques mentioned in the guide include: low-balling, foot-in-the-door, and reciprocity. Any one of these may be appropriate, as well as other relevant techniques such as door-in-the-face or ingratiation. The best examples should be supported by psychological research or theory, *e.g.* Cialdini.

Section A markbands

Marks	**Level descriptor**
0	The answer does not reach a standard described by the descriptors below.
1 to 3	There is an attempt to answer the question, but knowledge and understanding is limited, often inaccurate, or of marginal relevance to the question.
4 to 6	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.
7 to 8	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.

Anecdotal material will not be awarded marks.

Section B assessment criteria

A — Knowledge and comprehension

Marks	Level descriptor
	The answer does not reach a standard described by the descriptors below.
	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.
0	
1 to 3	
4 to 6	The answer demonstrates limited knowledge and understanding relevant to the question or uses relevant psychological research to limited effect in the response.
7 to 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 to 3	The answer goes beyond description but evidence of critical thinking is not linked to the requirements of the question.
4 to 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 to 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 to 2	The answer is organized or focused on the question. However, this is not sustained throughout the response.
3 to 4	The answer is well organized, well developed and focused on the question.

SECTION B

4. To what extent does genetic inheritance influence behaviour? Use relevant research studies in your response. ***[22 marks]***

Refer to the paper 1 section B assessment criteria when awarding marks.

The command term "to what extent" requires the candidate to consider the merits or otherwise of an argument regarding the influence of genetics on behaviour. The aim of the essay is to produce an informed conclusion, whereby opinions and judgments are presented clearly and supported with appropriate evidence and sound argument. Candidates may include issues regarding the methods used to investigate genetic influences, *i.e.* family resemblance correlations, molecular genetics, *etc*. The debate regarding how genes specifically express their influence on behaviour is also likely to be raised, including the impact of the environment on the genes themselves and/or the fact that some genes have a more direct effect than others, such as Huntingdon's disease.

Responses omitting relevant research studies will not attract marks.

5. Discuss the use of *one* research method (*e.g.* experiments, case studies) in the cognitive level of analysis. Use relevant research studies in your response. ***[22 marks]***

Refer to the paper 1 section B assessment criteria when awarding marks.

The methods of investigation undertaken by cognitive psychologists range from laboratory experiments to interviews in everyday situations. They have in common the aim of obtaining relevant information on mental processes used to acquire, store, retrieve and apply knowledge about the world.

The two examples provided in the question should hopefully prevent candidates from giving material that is not relevant to research methods. The experimental method should be well known but it needs to be presented as an explicit method for the cognitive level of analysis. Examples of research studies should be used to illustrate how the experimental method relates to the cognitive level of analysis. Experiments may be exemplified by the work of Bartlett, Bandura or Elizabeth Loftus. Discussion of the experimental method could be provided especially in terms of validity and reliability, sample choice and generalizability of findings, *etc*. Cultural, ethical and gender evaluation may provide useful arguments, as in, for example, gender variation in rates of susceptibility to biased questioning in eye-witness testimonies: Stern's study in 1904 provided evidence that women's eyewitness testimony was less accurate and less resistant to the influence of misleading information than men's; however, Stern's two groups were not comparable in age. Other studies by Bringmann and colleagues in 1986 did not replicate Stern's findings using comparable age groups.

The case study method is often used in the cognitive level of analysis as it may provide new and rich information about mediating processes which might otherwise not be discovered. For example, the case of S.B., a blind man given sight in adulthood, gave researchers a particularly detailed insight into the processes and experiences of perception, highlighting aspects of the experience which had not previously been suspected.

Other examples of case studies in the cognitive level of analysis are the case of Clive Wearing, or Luria's research on the exceptional memory of S.V.

Award high marks for clear discussion of the chosen examples of an appropriate research method. The presentation should include an evaluation that illustrates a balance of advantageous and disadvantageous aspects of the method employed.

Limited responses may try to bring general knowledge of research methods to this question without much understanding of their specific use for the cognitive level of analysis.

When presenting research studies candidates should focus more on information that is important to methodology, rather than just memorizing the details of what happened during the procedure or providing an explanation of the findings. The question requires candidates to be selective about the knowledge they offer. The abilities to filter content and provide focused responses are characteristic of responses earning highest marks.

6. Evaluate the role that *one* cultural dimension (*e.g.* individualism/collectivism, power distance) may have on behaviour. ***[22 marks]***

Refer to the paper 1 section B assessment criteria when awarding marks.

Cultural dimensions are descriptive continuums that help to describe some of the more commonly shared characteristics of individuals within a particular culture. The guide includes several that are based on the work of Geert Hofstede, including: individualism/collectivism, masculinity/femininity, and power distance. There are also non-Western dimensions such as Confucian Dynamism that have extended or modified this original work. Responses may clearly define each dimension so as to make intelligible the characteristics of each that make them different.

It should be noted that each of these dimensions is continuous with varying levels of each of the poles spread between. Responses earning higher marks should make clear that these are not each sets of polar opposites with no intermediary steps. Additionally, candidates should understand that there would be normal variation within a culture as to the extent to which and the manifestation of each dimension. Discussion of normal variance and distribution should be apparent in the higher scoring responses.

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PSYCHOLOGY
HIGHER LEVEL
PAPER 2

SPECIMEN PAPER

2 hours

INSTRUCTIONS to candidates

- Do not open this examination paper until instructed to do so.
- Answer two questions, each from a different option.

*Answer **two** questions, each from a different option.*

Each question is worth [22 marks]. Marks will be awarded for demonstration of knowledge and understanding (including the use of relevant psychological research), evidence of critical thinking (e.g. application, analysis, synthesis, evaluation), and organization of answers.

Abnormal psychology

1. "There are controversies surrounding the concept of abnormality."

With reference to this statement, discuss the concepts of normality and abnormality.

2. Describe the symptoms and prevalence of **one** psychological disorder.

Discuss cultural and/or gender variations in the prevalence of **one** psychological disorder.

3. Discuss how

- biological, **or**
- cognitive, **or**
- socio-cultural

factors influence psychological disorders.

Developmental psychology

4. Discuss potential effects of deprivation **or** trauma in childhood on later development.

5. Define *resilience*.

Describe and evaluate **one** strategy to build resilience.

6. Outline physical changes in adolescence.

Discuss how such physical changes during adolescence relate to development of identity.

Health psychology

7. Discuss **two** aspects of stress (physiological, psychological, or social).

8. Outline **two** factors related to the development of substance abuse **or** addictive behaviour.

Evaluate **one** prevention strategy for **either** substance abuse **or** addictive behaviour.

9. Discuss health promotion strategies and their effectiveness.

Psychology of human relationships

10. Evaluate **two** research studies investigating the role of communication in maintaining relationships.

11. Discuss **one** strategy for reducing violence that addresses biological **or** cognitive **or** sociocultural factors.

12. Examine **one** short-term and **one** long-term effect of exposure to violence.

Sport psychology

13. To what extent do biological factors influence behaviour in sport?

14. Describe **one** reason why an athlete might use drugs in sport.

Discuss effects of using drugs in sport.

15. Evaluate **one** theory of motivation in sport.

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PSYCHOLOGY
STANDARD LEVEL
PAPER 2

SPECIMEN PAPER

1 hour

INSTRUCTIONS to candidates

- Do not open this examination paper until instructed to do so.
- Answer one question.

*Answer **one** question.*

Each question is worth [22 marks]. Marks will be awarded for demonstration of knowledge and understanding (including the use of relevant psychological research), evidence of critical thinking (e.g. application, analysis, synthesis, evaluation), and organization of answers.

Abnormal psychology

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Discuss effects of using drugs in sport.

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SPEC/3/PSYCH/BP2/ENG/TZ0/XX/M

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MARKSCHEME

SPECIMEN PAPER

PSYCHOLOGY

Higher Level and Standard Level

Paper 2

16 pages

Paper 2 assessment criteria

A — Knowledge and comprehension

Marks	Level descriptor
	The answer does not reach a standard described by the descriptors below.
	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.
0	
1 to 3	
4 to 6	The answer demonstrates limited knowledge and understanding relevant to the question or uses relevant psychological research to limited effect in the response.
7 to 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 to 3	The answer goes beyond description but evidence of critical thinking is not linked to the requirements of the question.
4 to 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 to 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 to 2	The answer is organized or focused on the question. However, this is not sustained throughout the response.
3 to 4	The answer is well organized, well developed and focused on the question.

Abnormal psychology

1. "There are controversies surrounding the concept of abnormality."

With reference to this statement, discuss the concepts of normality and abnormality.

Refer to the paper 2 assessment criteria when awarding marks.

The use of different concepts of abnormality tends to mirror dominant cultural standards, social values and political views as well as scientific knowledge. Popular conceptions of normality and abnormality may include the following: the mental health criterion, abnormality as personal distress, the statistical criterion, abnormality as mental illness, *etc*. Also, the psychoanalytic, learning, cognitive and/or humanistic notion of the concept of abnormality may be discussed. Currently there is a tendency towards integration of different explanations offered by different levels of analysis in order to provide a satisfactory explanation of abnormality.

Viewed conceptually, abnormality involves three aspects: diagnosis, understanding the cause of the problem and therapy to treat the problem. These three elements are closely intertwined in theory and practice, making it hard to assess one element independently of the others. These different approaches have their own interpretation of the origins of abnormality and currently the primary way of evaluating these various explanations is by examining the efficacy of the therapies proposed by these explanations.

Candidates may refer to cross-cultural issues, gender biases and research findings when examining how to define abnormality – *e.g.* research on cross-cultural differences in concepts of abnormality, labeling and marginalization as well as gender bias in certain psychological disorders.

2. Describe the symptoms and prevalence of *one* psychological disorder.

Discuss cultural and/or gender variations in the prevalence of *one* psychological disorder.

Refer to the paper 2 assessment criteria when awarding marks.

A clear account of both symptoms and the prevalence for one psychological disorder should be provided. Since the option is focusing on three groups of disorders (anxiety, affective disorders, eating disorders) candidates should choose one psychological disorder from any of these groups.

Diagnosis is often based on deviation from social norms (cultural standards of acceptable behaviour). For example, among some cultural groups, perceiving visions or voices of religious figures might be part of normal religious experience on some occasions and aberrant social functioning on other occasions. The interaction between clinician and patient is rife with possibilities for miscommunication and misunderstanding when they are from different cultures. Responses may refer to a range of types of psychological disorders which may be unique to a particular culture. For example, the Chinese Classificatory system offers "neurasthenia" – a psychological disorder that is not present in DSM or ICD. On the other hand, depression and anxiety disorders are not extensively diagnosed there. In past research, there has been an effort to fit culture-bound syndromes into variants of DSM diagnoses. Rather than assume that DSM diagnostic entities or culture-bound syndromes are the basic patterns of illness, current investigators in cultural psychiatry are interested in examining how the social, cultural, and biological contexts interact to shape illnesses and reactions to them.

Gender differences occur particularly in the rates of common mental disorders – depression, anxiety and somatic complaints. Unipolar depression, predicted to be the second leading cause of global disability burden by 2020, is twice as common in women. Also, depression, anxiety, somatic symptoms and high rates of comorbidity are significantly related to interconnected and co-occurrent risk factors such as gender based roles, stressors and negative life experiences and events. Gender bias occurs in the treatment of psychological disorders. Doctors are more likely to diagnose depression in women compared with men.
Gender differences also exist in patterns of help-seeking for psychological disorder.

3. Discuss how

biological, *or*
cognitive, *or*
socio-cultural

factors influence psychological disorders.

Refer to the paper 2 assessment criteria when awarding marks.

Candidates can mention the following biological factors in abnormality: role of genes, biochemistry of the nervous system, injury or brain damage. Biological explanations of abnormality share certain assumptions: abnormal behavior results from an underlying physical condition, such as damage to the brain or malfunction of neural processes. This explanation implies that treatment should be aimed at controlling the underlying disease by changing the individual's biochemistry or removing toxic substances. Also, the strongest support for the relevance of biological factors comes from psychopharmacology. Currently a large and growing range of drugs have been developed to deal with many forms of psychological disorders. Although these drugs are beneficial, it is not clear if they address the root of such disorders or simply mask the symptoms.

Some cognitive factors in abnormality are symbolic mediation of conditioning (*e.g.* observational learning) and the influence of faulty cognitions. In certain disorders these cognitive factors are believed to play a direct causal role in dysfunctional behaviour. For example irrational beliefs about personal vulnerability are believed to put people at risk of anxiety. In other disorders cognitive factors may not be the cause of the disorder, but are themselves the results of neurological factors.

Socio-cultural factors in abnormality that could be presented are: effects of urban/rural dwelling, gender and minority status on state of mind. Social factors may partially cause or trigger a predisposition to a psychological disorder (*e.g.* depression is linked to poor family relationships). Also, the actual process of diagnosis is rooted in social processes.

No single approach can explain the etiology of all psychological disorders, nor can it offer a complete therapy. For this reason, there is growing support for the biopsychosocial approach, which, as the name implies, takes account of biological, psychological, and social factors in the etiology and treatment of psychological disorders.

Developmental psychology

4. Discuss potential effects of deprivation *or* trauma in childhood on later development.

Refer to the paper 2 assessment criteria when awarding marks.

The focus here may be on the consequences of deprivation of contacts and affection during the critical period of attachment in reference to research such as Robertson and Bowlby's study (1952) on short-term effects or Cockett and Tripp's study (1994) on long-term attachment deprivation effects. However, it would also be appropriate to focus on the consequences of trauma such as childhood physical, emotional or sexual abuse including prolonged or extreme neglect or interactions that are experienced as psychological "attacks".

Whichever approach is selected, answers should describe **and** evaluate the effects of such experiences on child development and should refer to appropriate psychological research. For instance, according to Bowlby (1951), maternal deprivation may cause physical, mental and emotional growth retardation. However, studies such as Rutter's (1981) showed that the consequences of deprivation vary with the severity and duration of the depriving experience, the age of the child at which the deprivation occurs and the adequacy of restitutive measures. The impact of traumas is also uneven, depending on children's history, their environment, risk factors and protective factors. For instance, adaptation to a trauma may cause a loss of part of child personality, emotional freezing, psychogenic amnesia, sleeping and eating disorders. However, how severe these symptoms are depends on the person, the type of trauma involved and the emotional support the child receives from others. According to Tedeschi and Calhoun (2004) trauma experiences may even have positive aspects, leading to growth emerging from the struggle with trauma. Responses referring to resilience in the face of trauma or deprivation are also relevant.

Higher band answers should offer a thorough and clear description of potential effects of deprivation or trauma on child development with reference to appropriate research and should present an evaluative judgment on this issue.

Middle band answers may present a limited portrait of the effects of deprivation or trauma with occasional reference to appropriate research or may offer an accurate and clear description of these effects without reference to appropriate psychological research. The evaluation may be appropriate but limited or only implicitly linked to the question.

Lower band answers may present a minimal description of the effects of deprivation or trauma on child development with little or no reference to psychological research. There may be an attempt to present an evaluation that is of marginal relevance.

5. Define *resilience*.

Describe and evaluate *one* strategy to build resilience.

Refer to the paper 2 assessment criteria when awarding marks.

Answers should provide a clear definition of "resilience", for example: resilience is the ability to overcome adversity. There are many definitions of resilience: clear and relevant definitions should be accepted. Many studies, such as Cyrulnik's (1999) show that an important factor in resilience is having caring and supportive relationships within the family. Support from people outside the family can also be decisive in building resilience. In addition, environmental factors such as good nutrition and education can play an important role. Several additional factors are also associated with resilience such as the capacity to make realistic plans and take steps to carry them out, or skills in communication and problem solving.

All of these are factors that people can develop in themselves and several strategies for building resilience may be discussed. For instance, learning to think positively and in perspective means children cannot only cope with problems and setbacks, but they also have opportunities to learn how to build strengths that protect and promote well-being. Some social programs for youth have shown to promote resilience such as Head Start or the Big Brothers Big Sisters Programme. Programmes dealing with parental education and food programmes are also relevant to building resilience in developed and developing countries. Whichever strategy is described, an evaluation of it should be offered. Relevant evaluation may highlight that resilience is a complex concept and that it is important to put forward multiple ways of promoting it. Developing resilience is a personal journey and people do not all react the same to traumatic and stressful life events. A child's ability to build resilience is also dependent on their age and stage of development: babies and toddlers have limited physical and emotional competence compared with eight year olds. Some variation may reflect cultural differences: a person's culture might have an impact on how he or she communicates feelings and deals with adversity. Furthermore, being resilient does not guarantee that young people will always have happy and productive lives.

6. Outline physical changes in adolescence.

Discuss how such physical changes during adolescence relate to development of identity.

Refer to the paper 2 assessment criteria when awarding marks.

Answers should give a clear outline of the physical changes in adolescence such as rapid growth in height and weight, changes in body proportions and form and attainment of sexual maturity. The main points may be summarized with respect to primary and secondary sexual characteristics.

Responses should then, discuss how these physical changes have psychological ramifications and contribute to a new sense of self. Relevant content may recall that adolescents are preoccupied with their bodies and develop individual images of what their bodies are like. They find themselves the unwitting inhabitants of new adultlike bodies. However, it is hard to generalize about the psychological effects of physical changes because they depend on the timing of puberty, they differ in boys and girls and they depend on how the adolescent and other people in his or her world interpret the accompanying changes as well as the culture of the adolescent. Furthermore, some researchers such as Block (1992) have expressed doubt that puberty's effects on development are as strong as once believed. In brief, answers should highlight that adolescent development of identity is influenced by an interaction of biological, cognitive and social factors rather than being dominated by biology. The culture is also a strong determinant in conceptualisations of self perception and body shapes *e.g.* The Cultural Ideal Hypothesis indicates that there are gender differences in coming to terms with your body when you reach adolescence.

Health psychology

7. Discuss *two* aspects of stress (physiological, psychological, or social).

Refer to the paper 2 assessment criteria when awarding marks.

Many aspects of stress may be used. Responses can include causes of stress, measurement of stress, the effects of stress and coping with stress. The quantity of relevant studies available is substantial, but the application of its findings or criticism of its methods still needs to be made explicit by the candidate. Responses can focus on the interaction of physiological aspects with psychological aspects, *e.g.* The Transactional Model of Stress (Lazarus), Models of Hardiness. Each aspect could also be discussed separately, aspects do not need to be inter-related.

Physiological aspects could include increase in stress hormones: adrenaline, cortisol and the effect of these hormones on the body. Psychological aspects could include ways in which these physiological aspects are interpreted by the individual, *e.g.* cognitive appraisal. Social aspects of stress could include the role of social support in dealing with stress and could also include stressful relationships creating stress and lifestyle factors, *e.g.* living in big cities, poverty and unemployment. Cultured stress could relate to pressure on the individual to succeed, gender roles.

8. Outline *two* factors related to the development of substance abuse *or* addictive behaviour.

Evaluate *one* prevention strategy for *either* substance abuse *or* addictive behaviour.

Refer to the paper 2 assessment criteria when awarding marks.

Factors related to development of substance abuse or addictive behaviour could include parental or peer influence, culture, genetic factors, social factors. Factors could include those to do with alcohol, tobacco or other drugs that may have been prescribed originally for a medical condition or where drugs have been taken for recreation or stimulation; drugs may also include those taken to enhance sport performance such as the anabolic steroids taken by weight lifters to increase muscle bulk. Addictive behavior could also include gambling, shopping, internet addiction.

Research studies have focused on prevention strategies, particularly on alcohol and tobacco. The task for the candidate is not merely to identify the prevention strategy but also to evaluate the extent to which such strategy is effective.

9. Discuss health promotion strategies and their effectiveness.

Refer to the paper 2 assessment criteria when awarding marks.

Health promotion strategies take many forms and examiners should be flexible in the way that they interpret this term. Health promotion strategies can be seen in the major initiatives taken by governments on matters such as disease prevention, including improvements to the environment. But promotion strategies may also occur in less explicit ways such as health warnings on cigarette packets, or the list of ingredients on food packaging. Whichever examples are taken it is imperative that candidates relate their selection to psychological research.

The psychological research that is presented needs to be discussed in terms of effectiveness for health promotion. For example, health promotion that deals with monitoring and subsequent treatment of breast cancer in women has been highly successful in many developed cultures. Promotions targeting obesity, *e.g.* promoting healthy food and exercise, have been set up in many countries: success of these promotions depends upon factors such as social support, environment. Health promotion strategies' work to raise issues associated with prostate cancer in men has had a much lower impact on the health of men, and this factor is common to all cultures.

Psychology of human relationships

10. Evaluate *two* research studies investigating the role of communication in maintaining relationships.

Refer to the paper 2 assessment criteria when awarding marks.

The command term "evaluate" requires candidates to make an appraisal of something by weighing up the strengths and the limitations: in this case, two research studies which investigate the role of communication in maintaining relationships. This could be Tannen (1990) which deals with gender differences in communication or Bradbury & Fincham (1992) who studied attributions made by men and women in relationships and how these were related to behaviour.

Communication in relationships is important both in terms of maintaining and break-up. A good answer may deal with issues in relation to, for example, non-verbal communication, gender or cultural differences in communication patterns which could affect a relationship. It could also be attributional style or the value of disclosure for maintaining a relationship. It is possible to use research addressing a number of different relationships but it will most likely be friendship or a love relationship between partners or spouses since these are the most commonly addressed in psychology text books. No matter the choice, the answer should clearly identify and evaluate **two** relevant research studies to gain high marks and the research studies included in the answer should explicitly focus on the role of communication in maintaining a relationship.

Evaluation relates to critical thinking and could include an examination of the evidence to evaluate a theory; evaluation related to methodology, gender or culture is equally relevant and a good answer could include some of these considerations in relation to the role of communication in maintaining relationships. There is a cultural bias in the study of human relationships in that most research has been conducted in the West. However, there may be research that takes a cross-cultural or cultural approach that can be used for comparison in the evaluation.

11. Discuss *one* strategy for reducing violence that addresses biological *or* cognitive *or* sociocultural factors.

Refer to the paper 2 assessment criteria when awarding marks.

The command term "discuss" requires candidates to offer a considered and balanced review including different arguments or factors backed up by appropriate evidence to support the argument.

There are many ways to address this question depending on what has been studied in the course. A response may address different causes of violent behaviour such as sociocultural factors as an introduction in order to lay the ground for a strategy for reducing violence but the focus in this question is on a method to reduce violence.

One sort of violence that could be used in a response could be bullying but many other sorts of violence could be used, for example mob violence or school violence. Candidates may also have studied violence in the community or refer to local programmes that are backed up by research. Examples of such strategies could be gun control and censorship of television to restrict violent scenes, which have been applied successfully in Jamaica according to Diner & Crandell (1979). There are also many research studies on how to reduce bullying and many schools have adopted anti-bullying measures based on these. One strategy to reduce bullying is teaching social skills. This has proven effective in terms of reducing the likelihood of a person being either the source of or the target of bullying (Toch, 1980). Aronson (1979) introduced the "jigsaw classroom" to teach cooperative learning and positive social interactions to reduce violence and bullying. These strategies address sociocultural factors and teach children how to interact in a positive way. Candidates could also include Olweus (1972) who is the father of anti-bullying programmes. Another strategy which is often used in combination with social skills training is teaching ways to be aware of other person's feelings, *i.e.* empathy training (*e.g.* Feshbach & Feshbach, 1982). Recently computer games have been used to do the same (for example, Figueiredo *et al.* 2007). These strategies address cognitive factors in that they aim to change "violent thinking" and encouraging "empathic thinking".

The response is required to discuss the chosen method which means that it is not only a description of it. There should be a balanced and reasoned argument as to why a specific strategy is chosen to reduce violence and this must be backed up by evidence.

12. Examine *one* short-term and *one* long-term effect of exposure to violence.

Refer to the paper 2 assessment criteria when awarding marks.

Responses will probably focus on how an individual reacts to violence short-term and long-term but it could also be groups of people, for example a case study of survivors of genocide or community violence. Depending on the focus, a response could address different causes of violent behaviour such as bullying, street gangs or genocide and this introduction will lay the ground for describing the effects of exposure to violence. The response needs to take both one short-term and one long-term effect into consideration.

If the candidate has chosen to deal with genocide a possible short-term consequence could be immediate stress reactions and shock whereas long-term consequences could be post-traumatic stress disorder (PTSD) and depression. Since survivors of genocide have often lost their relatives there are issues of not only losing social support but also losing trust in other people. If the candidate has studied domestic violence, there could be a focus on physical and psychological effects of being the victim of violence. It is likely that short-term consequences could deal with

stress reactions and long-term effects could deal with depression and effects on self-esteem. Suicide attempts may also be likely consequences of domestic violence and it has been found that battered women are at a greater risk for suicide attempts in both Caucasian women, where 25 percent of the suicide attempts were linked to prior domestic violence, and for African American women, where it was up to 50 percent of the suicide attempts that were preceded by domestic violence (according to Fischbach & Herbert, 1997).

Another sort of violence that could be used in a response could be bullying, which is also likely to be known to students because of school programmes to prevent bullying. A response may address the short-term effects of victimization.

Sport psychology

13. To what extent do biological factors influence behaviour in sport?

Refer to the paper 2 assessment criteria when awarding marks.

An argument as to what extent biological factors may influence behaviour in sport can be made from any topic area in the guide, or from any other relevant area of sport psychology. Arousal, anxiety, injury, drug use and burnout may all be made relevant in response to this question. In all cases, the argument should provide a response as to how much of an influence biological factors have on behaviour in sport. Responses may include reference to some sort of discussion or standpoint on how other factors (possibly cognitive or sociocultural) may also influence sport behaviour and/or performance. Behaviour may be interpreted to include starting to participate in sport, continuing participation, training and skill development, competition and/or ending participation.

14. Describe *one* reason why an athlete might use drugs in sport.

Discuss effects of using drugs in sport.

Refer to the paper 2 assessment criteria when awarding marks.

The justification for use of drugs in sport is very personal and unique to each athlete. Research has shown that there are a number of reasons why an individual might use drugs in sport. These include, but are not limited to: stress relief from the pressure of competition, performance enhancement, and socialization/relaxation. Responses are likely to address the use of performance enhancing drugs such as anabolic-androgenic steroids, stimulants, endurance-enhancing chemicals (Shermer, 2008). There are many high profile cases of athletes using drugs and while these may be brought in to the response, they should only serve as examples of a larger argument the candidate is trying to make. Anecdotal evidence should not be awarded marks.

There may be short term positive effects of the use of drugs in sport *e.g.* performance enhancement, stress relief. Long-term effects are often negative such as the negative physical and psychological effects of anabolic stereoids *e.g.* the case of East German shot put champion Heidi Krieger.

Cases of sports people and the consequences of use of drugs can be used as relevant supportive evidence.

15. Evaluate *one* theory of motivation in sport.

Refer to the paper 2 assessment criteria when awarding marks.

Various theories of motivation have been investigated in sport. Discussion of extrinsic and intrinsic motivational theories could be made relevant to this question if it focuses on the impact of extrinsic and intrinsic motivation on sport behaviour or performance. More specific theories such as self-efficacy theories relating to goal-setting, achievement motivation and cognitive evaluation theory (Deci, 1975) could also be included in a response to this question.

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PSYCHOLOGY
HIGHER LEVEL
PAPER 3

SPECIMEN PAPER

1 hour

INSTRUCTIONS to candidates

- Do not open this examination paper until instructed to do so.
- Read the passage carefully and then answer all the questions.

The stimulus material below is based on a research article.

Anxiety is frequently experienced by athletes before they take part in a competitive event. Research findings by Hanton and Jones (1999) show that in swimming competitions, boys perceived these anxieties negatively. The boys felt sick, tired or nervous just before their race. However when Hanton and Jones used semi-structured interviews to investigate the anxieties expressed by ten elite male swimmers, aged between 19 and 27 years, they found very different views were expressed now they were adults, compared to how they felt as children.

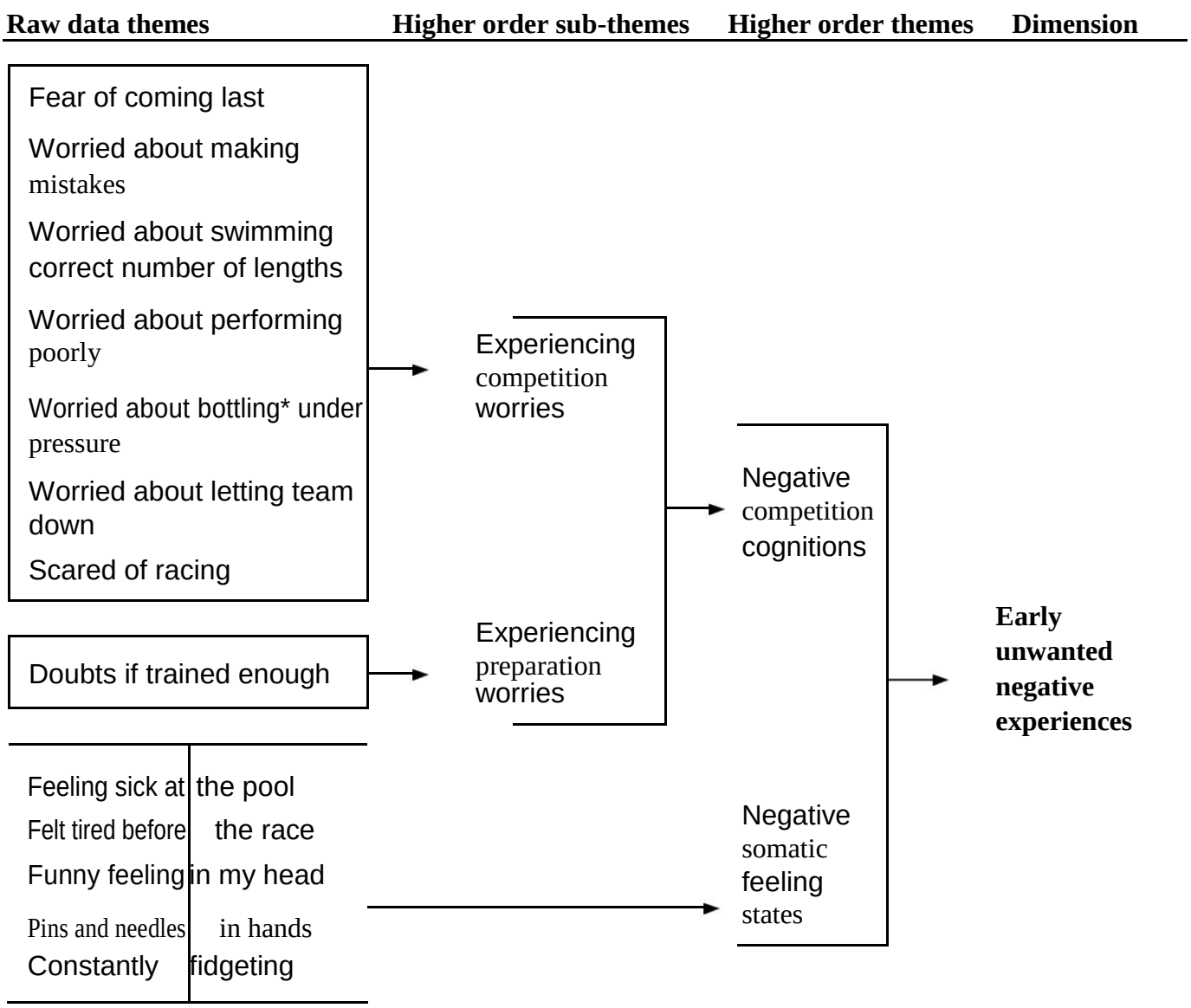
These older swimmers recalled how they had felt as boys, when they were entered into swimming competitions. Several of the feelings they had are listed in the first column in Figure 1. These were regarded as early unwanted feelings at that time, but now as adults they had gradually been able to adapt their unwanted or negative feelings into something far more positive and helpful to their swimming performances. The swimmers had learned to use imagery, self-talk and other positive strategies to enhance their performance.

Hanton and Jones used inductive content analysis with the interview transcripts obtained from the adult swimmers. They listed the raw data from the ten transcripts into themes that had similar meanings, as shown in Figure 1.

In summary what the researchers did was to:

- Read and re-read the transcripts several times
- Identify raw data themes and list them into groups shown in the first column of Figure 1
- Draw out (or induce) meanings from the themes and name these, as shown in the second column of Figure 1. These are called higher order sub-themes
- Decide on a further refinement of the second column themes in order to turn these into higher order themes
- Identify the “dimension” – a final phrase that is the “essence” of the preceding columns.

Figure 1 — Inductive content analysis: early unwanted negative experiences



[Source: adapted, with permission, from S. Hanton and G. Jones, 1999, "The acquisition and development of cognitive skills and strategies: Making the butterflies fly in formation.*The*" *Sport Psychologist*, 13(1), 1–21]

* Bottling: lacking the courage to do something

*Answer **all** of the following three questions.*

1. The study outlined above uses the phrase "inductive content analysis". Explain the advantages and disadvantages of using this research strategy in the context of this specific study. *[10 marks]*

2. Just ten elite swimmers were used in this research. To what extent could the findings of the research be generalized from this study? *[10 marks]*

3. Interviews are a major research factor in this study. Discuss ways in which you, as a researcher in this study, would prepare for the interviews and the post interview information that you would give to each of the ten participants. *[10 marks]*

SPEC/3/PSYCH/HP3/ENG/TZ0/XX/M

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MARKSCHEME

SPECIMEN PAPER

PSYCHOLOGY

Higher Level

Paper 3

5 pages

Paper 3 markbands

Marks	Level descriptor
0	The answer does not reach a standard described by the descriptors below.
1 to 3	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.
4 to 7	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.
8 to 10	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.

1. The study outlined above uses the phrase "inductive content analysis". Explain the advantages and disadvantages of using this research strategy in the context of this specific study. ***[10 marks]***

Refer to the paper 3 markbands when awarding marks.

Inductive content analysis arrives at meanings that are **drawn out** of the data that is provided by the interviewee. It differs markedly from a deductive approach where the researcher is likely to have a more prepared idea of what is to be expected from the interviewee.

Advantages of the inductive method include the concept that since the raw data comes directly from the interviewee it is likely to be more accurate and dependable than observations made by the researchers. The interviewees, in this case, identify what their specific anxieties were as boys just before a swimming competition, *e.g.* they were "… worried about performing poorly, or had doubts if they had trained enough, or had pins and needles in hands."

Disadvantages could include the notion that since the answers depended upon memories from several years previously, when the athletes were boys, it may be that they lacked accuracy. It may also be that answers were provided in a way that the swimmers thought that the researchers would like to hear. Also since a major task for the researchers is to interpret the responses produced by the interviewees, then such interpretation may itself be inaccurate.

There are several other advantages and disadvantages that candidates may explain and these could earn up to full marks, provided they are relevant. Examiners should use their own judgements on the qualities of these answers. Marks should not be awarded to answers that focus on quantitative content analysis since this is irrelevant in answering a question on inductive content analysis.

2. Just ten elite swimmers were used in this research. To what extent could the findings of the research be generalized from this study? ***[10 marks]***

Refer to the paper 3 markbands when awarding marks.

Although the number of swimmers in the sample was small, sufficient data has been produced to make some limited generalization possible. The sample indicates that the swimmers were all males, aged between 19 and 27, and that they had competed at an elite level. Their responses were sufficiently similar for the researchers to identify raw data themes that were common to their swimmers.

The extent to which generalization occurs needs to be justified by the candidate. For example it would be legitimate to claim that findings from this study could be applied to the population of elite swimmers from which the sample was selected. The sample and this population would have similar characteristics.

Candidates may well provide other relevant arguments for the extent to which generalizations are possible and these could be awarded high marks. No marks should be awarded where the candidate claims that no way of generalization is possible since the numbers involved are too small, or the claim that it is only when verbal responses are converted to numbers that generalization can occur.

3. Interviews are a major research factor in this study. Discuss ways in which you, as a researcher in this study, would prepare for the interviews and the post interview information that you would give to each of the ten participants. ***[10 marks]***

Refer to the paper 3 markbands when awarding marks.

Interviews need to be prepared in several ways. In this case the interviewer should research ways in which other elite swimmers prepare themselves for swimming competitions, what their motives are for competing, what their feelings are now compared to what their pre-race feelings were as boys. This type of information helps to equip the researchers to frame suitable open questions and to anticipate responses from interviewees.

Other research preparation should include wording a clear aim for the interview, consideration of ethical issues, checking on audio equipment to record the interview, piloting of the interview questions, anticipation of potential responses and a follow-up question that would be needed. The subsequent ownership of the recording and transcript should also be made clear and a document signed to this effect.

Post interview considerations should include thanks to the interviewees, an invitation to listen to the audio recording and to read the transcript should they so wish. The interviewees should also be allowed to make amendments to their own comments or to have them deleted or have additions made to them.

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2009 for 1st examinations 2011

Workshop leaders' workbook

BOOK4

Extended EssaysandTheory of Knowledge

CONTENTS

Psychology & TOK.

General requirements for the extended essay

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?

General requirements for the extended essay

The General regulations: Diploma Programme states that, in addition to subject requirements, the IB diploma has additional requirements that include the completion and submission of an extended essay in a subject available for this purpose. These general regulations also state that schools must comply with the details and procedures in the Vade Mecum (the procedures manual for Diploma Programme coordinators and teachers), which gives detailed information about the administration of this diploma requirement.

The requirement

Every IB diploma student must submit an extended essay. Extended essays may only be submitted by students in the “diploma” or “retake” categories. Students in the “retake” category may submit either a new extended essay for assessment, registered in the same or a different subject, or a revised extended essay.

Supervision

It is the school’s responsibility to ensure that each student submitting an extended essay is supervised by a teacher at the school where the student is registered for Diploma Programme examinations. The teacher must have appropriate qualifications and/or experience in the subject chosen by the student, and must be familiar with the Diploma Programme. The teacher who is supervising a student’s work on his or her extended essay, known as “the supervisor”, must not be related to the student.

Language in which the extended essay is written

Extended essays submitted in a group 1 or group 2 language must be written in that language, with the exception of Latin and classical Greek. Extended essays for subjects in groups 3 to 6, and in Latin and classical Greek, must be written in English, French or Spanish.

Academic honesty

The student is ultimately responsible for ensuring that his or her extended essay is authentic, with the work or ideas of others fully and correctly acknowledged. Additionally, it is the responsibility of a supervisor to confirm that, for each student he or she has supervised, to the best of his or her knowledge, the version of the extended essay submitted for assessment is the authentic work of the student.

Both plagiarism and collusion are forms of malpractice that incur a penalty. The same piece of work, or two versions of the same work, cannot be submitted to meet the requirements of both the extended essay and another assessment component of a subject contributing to the diploma or an additional certificate.

Choice of subject

The Diploma Programme subject chosen for the extended essay does not have to be one of the subjects being studied by the student for his or her diploma. The list of available subjects, including groups 1 and 2, is given in the Vade Mecum. Extended essays cannot be submitted in theory of knowledge, school-based syllabuses and pilot subjects, with exceptions for the latter two categories listed in the Vade Mecum.

Subject specific guidelines – psychology

Overview

An extended essay in psychology provides students with an opportunity to investigate an area within the field of psychology that is based upon personal interest, and which may well go beyond the Diploma Programme psychology course. Students are able to pursue actively a research question that will develop their analytical and communication skills, and their understanding of behaviour. At the same time, the extended essay aims to introduce students to the excitement of academic discovery.

The current *Psychology guide* defines the nature of the subject as “the systematic study of behaviour and experience”. Students should have a well-developed understanding of what falls within the scope of psychology when they are developing their topic. Psychology involves studying the behaviour of human as well as non-human animals. It has its own specialist terms, methods and literature. It is essential for students undertaking an extended essay in psychology to have a reasonable understanding of the subject and its methodologies. Psychology is not a “residual” category for essays that do not fit into any other extended essay subject. Students must choose topics that lend themselves to psychological investigation and analysis, and must carefully consider their choice of topic in terms of the assessment criteria.

Choice of topic

An extended essay in psychology allows students to investigate a topic of personal interest in a systematic manner. The essay should be based on a well-focused research question that the student attempts to answer throughout the course of the essay. The essay should be considered more of an investigative, analytical argument than a research hypothesis to be uncovered by use of research methods in a formal psychological study. Data collection and research methods, such as experiments, surveys, observations and case studies, are not appropriate for a psychology extended essay, and should not form part of the student's project.

Psychology is a broad field that has many subsets and specialties, providing a wide range of possible topics. Past experience strongly suggests that personal interest plays an important role in the success of an essay and it is recommended that students consider their own personal interests, such as sport or child development, as a starting point in the process. After selecting a field of interest, students can then consider areas of investigation within that field in order to narrow the scope of their essay and research question. For example, a student might be highly interested in commercial aviation. Many large commercial airlines employ psychologists to investigate pilot performance and factors such as stress or emergency management. A research question that may follow from this could be “To what extent has research on stress with airline pilots improved airline safety standards?”.

The topic selected need not be from the current *Psychology guide*. In fact, some of the most interesting, engaging and successful extended essays are not necessarily based solely on material learned as part of the psychology course. Essays confined to the guide often produce descriptive, dispassionate accounts of classic psychological research. Supervisors do not need to have detailed knowledge of the student's topic: this is a less important factor in topic selection than availability of resources, student interest and the scope of the essay.

Topics that generally fall within the area labelled as “pop psychology” or “self-help” are usually not appropriate for the extended essay. As noted in the definition, psychology is a systematic study.

Psychologists conduct research studies and develop theories in their attempt to understand behaviour and experience. Psychology extended essays must be supported with careful and appropriate citation
of relevant theories and/or studies within psychology. This implies that the best resources are academic and psychological research journals and texts. Anecdotal support or references from popular publications do not form an appropriate base from which to develop an extended essay in psychology. Additionally, popular topics such as eating disorders, dysfunctional behaviour (such as schizophrenia and depression) and forensic psychology pose a challenge to students unless they have a tightly focused research question.

These are very ambitious topics that need far more time and experience than students have at their disposal. The research question must be focused and provide direction for a psychological argument, issue or topic. Topics that are general in nature inevitably lead to a descriptive and superficial recounting of what can be found in many resources, rather than the development of an argument that attempts to answer a specific question. A more focused question leads to a more tightly developed essay that makes appropriate use of psychological research as the basis for a reasoned argument. While the research question does not need to be phrased as a question, to encourage focus within the essay, it is often helpful to the student if the research question is thought about as an actual question itself. In this way, students can ask themselves “Have I answered this question?”. It is also appropriate for the title to be phrased similarly to the research question, which, again, refocuses the development of the essay.

The choice of topic is best described as a logical process that starts with a field of psychology that is of personal interest to the student. This choice may be further refined to a topic of study within the broader field. From this decision, a research question is developed that may best be constructed in the form of a question, followed by a statement of intent that indicates the approach that is going to be used in answering the question. In this way, the approach to the topic chosen may be even further clarified. Some examples of this could be the following.

Student interests Football: "Choking" under pressure during an important match

Field of psychology: Sport psychology
Topic: Arousal and athletic performance
Research question: What levels of psychological arousal are most effective for players in team sports?

Approach: Arousal levels and their effects on athletic performance have been subjected to many studies. One of several comparative approaches could be used, for example, qualitative and quantitative methods, collectivist and individualist cultures, male and female. These approaches could include reference to gender, methods, ethics or culture. It is suggested that students consider the advantages of confining their research to one specific sport for which they have enthusiasm and, preferably, personal experience in performing.

Student interests Perception, culture, web site design

Field of psychology: Cognitive psychology
Topic: Cultural differences in perception and eye movement patterns
Research question: How can findings from psychological research on perception differences between Asians and Americans be applied to web site design?

Approach: Research must be conducted from secondary sources to establish the extent of perceptual differences that are claimed to exist between the two cultures. How are findings from relevant studies applied to strategies that involve visual perception and eye movement patterns, and what industries use this information? Specifically, how do international web site designers interpret these findings in designing their web sites?

Student interests Physiotherapy: Recovering from injury
Field of psychology: Learning

Topic: Learning physical skills

Research question: To what extent does immediate feedback, employing digitized moving images of the self, help in the learning process in developing a physical skill?

Approach: The focus is on re-educating the leg muscles of a patient learning to walk again while recovering from a chronic leg injury. By focusing on one of these examples or similar physical actions, the student may consider the advantages of digitized software that allows the patient to have immediate feedback on their movement. On a split screen, this action can be compared to that of a perfect model. The movement can also be compared in a similar way with “stickmen” images on a four-way split screen. The student might consider how this learning method compares to traditional coaching or training, and consider ethical implications. The methodologies used to interpret the efficacy of each learning strategy could be evaluated.

The choice of topic is crucial for achieving a high mark for the extended essay. Choosing the topic needs a period of thoughtful reflection where consideration is given, even at this early stage, to the potential argument, analysis and evaluation that may develop over the course of writing the essay. Topics that do not lend themselves well to analysis, evaluation or debate are unlikely to be the best choices for a student.

Treatment of Topic

Students submitting extended essays in psychology must be fully aware that the discipline has its own unique terms, methods, ethical standards and evaluative commentary. Students should not attempt to prepare an extended essay in psychology if they have not studied the subject formally. The type of knowledge and analytical skills required for a psychology extended essay are best developed through direct learning experiences derived from the Diploma Programme psychology course. Schools where psychology is not taught must be aware that students who submit extended essays in psychology with no formal exposure to the subject risk earning very low marks.

Subject specific skills

Specific reference to relevant psychology concepts, theories and studies must be integrated throughout each extended essay; these form the basis for the development of an argument in response to the research question. Essays that take a common sense or anecdotal approach will not earn high marks. Students should incorporate relevant psychological research, and demonstrate critical awareness and understanding of the material. Analysis should go beyond description or recitation of published material and include original analysis by the student.

An important skill that is developed throughout the psychology course is that of evaluative commentary and argument. One of the aims of all group 3 subjects is that students develop an understanding of the contestable nature of the content, as well as a toleration of

uncertainty, that often comes from studying the behaviour of individuals and societies. Extended essays submitted in psychology should also demonstrate such understanding. Research and claims should be carefully evaluated to develop a well-rounded understanding of the topic being investigated. When students make assertions in their extended essays, these should always be supported by evidence that is drawn from psychological theories
or studies. The *Psychology guide* includes a framework for evaluation that trains students to address cultural, ethical, gender or methodological considerations that may affect the interpretation of behaviour resulting from a particular study or theory. Comparative analysis might also be an evaluative strategy relevant for inclusion in an extended essay. Students should keep these considerations in mind when selecting a topic, defining a research question and developing an argument.
The IBO has published a set of ethical guidelines for the internal assessment component of the psychology course. While the requirements of a psychology extended essay are very different from those of the internal assessment, the ethical guidelines also apply to this project. Students and supervisors share the responsibility of ensuring that the extended essay does not breach established ethical guidelines. Many topics within psychology are sensitive and personal in nature, and careful consideration should be given to all possible ethical issues before students embark on the process of developing their essay. Frequent reference to the assessment criteria by both the supervisor and the student will help keep a sharper focus on the essay.

Interpreting the Assessment Criteria

Criterion A: research question

The research question may be written in the form of a question, proposition or statement. It should be focused on a topic that is clearly relevant to psychology, deals with behaviour and is able to be addressed consistently throughout the extended essay.

Criterion B: introduction

This section should place the research question in the context of existing knowledge and understanding of the topic. The student's personal experience or views should not appear in this section. Previous psychological studies that can be related to the research question should be considered. The studies that are introduced here may be generally supportive but they are unlikely to answer the research question in an entirely satisfactory manner. It is part of the student's task to identify strengths, weaknesses and omissions of past work, and to show how his or her essay could help to resolve some of the problems that have been identified.

Criterion C: investigation

There is a wide range of resources available for questions that are likely to be raised in extended essays related to psychology. These include textbooks, academic journals, films, television, radio, newspapers and Internet-based sources. Film, television, radio, newspapers and Internet-based sources should be treated with considerable caution since the material they contain may be neither accurate nor valid. The essay should present findings and theories from these sources in an evaluative context and students should not necessarily accept their findings at face value. A healthy and informed scepticism should be maintained towards material from film, television, radio, newspapers and Internet-based sources, until authoritative judgment allows their findings or theories to become accepted. Although the argument presented in the essay may be supported by the student's own observations, the presentation or analysis of such material should be used for illustrative purposes only and should form no more than a very minor part of the evidence used.

Criterion D: knowledge and understanding of the topic studied

Evidence and findings from empirical studies and their related theories should be an integral part of extended essays for psychology. Such material may refer to human or non-human animals and their associated behaviours. Where appropriate, students should draw on cultural, ethical, gender and methodological considerations; they should show how these aspects may affect the interpretation of the research question that is the focus of the essay.

Criterion E: reasoned argument

The research question should be the central focus of the argument as it is developed throughout the essay. As the argument is constructed, it often creates conflict between varying theories and findings from studies. The student should explain and analyse these different views and marshal those essential points that support the argument that is being advanced. It is the task of the student to persuade the reader of the reasons for, and validity of, his or her view. This is best accomplished by using a logical approach where successive salient points are built up, one upon the other.

Criterion F: application of analytical and evaluative skills appropriate to the subject

Demanding cognitive effort is needed to apply analytical and evaluative factors created by the student. The analysis and evaluation need to be covered in depth since these will lead to the crux of the argument. There is also an opportunity for the student to use reflexivity—a consideration of his or her own experiences and views that have contributed to the methods used in the investigation and the interpretation of points that have arisen.

Criterion G: use of language appropriate to the subject

Psychology is a subject that uses its terminology in a specific manner and students are expected to show this in their essays. Students who have not studied psychology as a specific part of an academic course are strongly urged to become thoroughly acquainted with the language used by psychologists and how it is applied within the discipline.

Criterion H: conclusion

The conclusion is a synthesis of the argument that has preceded it. It is the end point of a logical process that has been established by employing a succession of psychological studies and theories to justify the case that has been presented.

Criterion I: formal presentation

This criterion relates to the extent to which the essay conforms to academic standards about the way in which research papers should be presented. The presentation of essays that omit a bibliography or that do not give references for quotations is deemed unacceptable (level 0). Essays that omit one of the required elements—title page, table of contents, page numbers—are deemed no better than satisfactory (maximum level 2), while essays that omit two of them are deemed poor at best (maximum level 1).

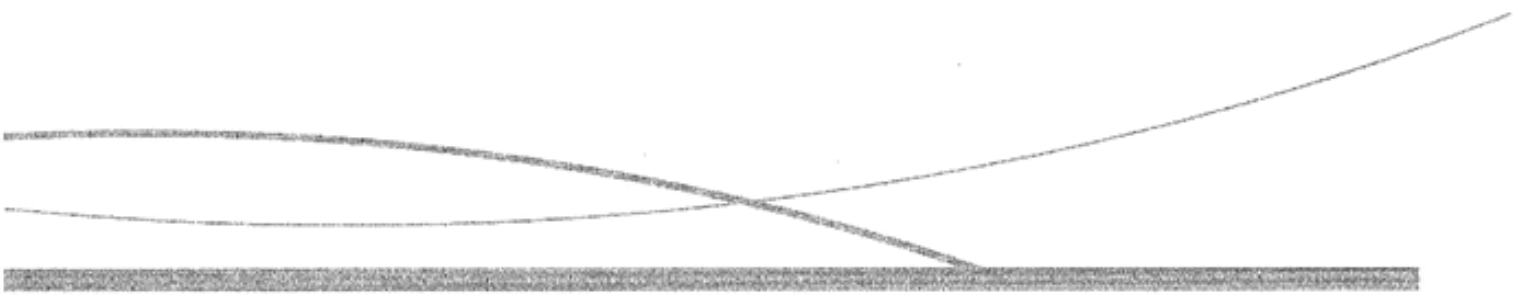
Criterion J: abstract

The abstract is judged on the clarity with which it presents an overview of the research and the essay, not on the quality of the research question itself, nor on the quality of argument or the conclusions.

Criterion K: holistic judgment

Qualities that are rewarded under this criterion include intellectual initiative, insight, and breadth and depth of understanding. Ways of demonstrating such qualities include:
· choice of a relevant research question that extends the student's thinking but is also feasible within the time available
· location and judicious use of resources
· analysis and evaluation of psychological material to produce salient points for the argument · use of a reflexive approach that involves the views and imagination of the student to make a unique contribution to understanding the topic.

Good titles for extended essays



Good titles for extended essays

Good titles:

Suggested by John Crane and participants on the OCC Forum

- What do we know about the relationship between stress and physiological illness and can we use that knowledge to cope with stress?
- To what extent does psychology provide valid explanations for altruistic behaviour?
- What effect do autistic siblings have on their non-autistic siblings
- Is it possible to determine what causes autism?
- Which interventions are most efficient in helping autistic children towards a better daily functioning?
- The difficulties of finding specific genetic factors that can predict a risk for Autism
- To what extent does psychology provide valid explanations for altruistic behaviour?
- A comparison of the effectiveness of individualized counselling and family counselling in the treatment ofanorexia
- What are the effects of the disruption of the circadian cycle by jetlag and how can the effects be avoided?
- The extent to which biological (or socio-cultural) factors explain the origin of homosexuality
- To what extent do parents' discipline style influence the temperament of the children?
- Montessori schools: based on a humanistic approach to education are they also in line with cognitive theory?
- To what extent has Criminal Profiling improved investigation methods in cases of homicide?
- To what extent are the causes of anorexia the result of cultural factors?
- To what extent is Schizophrenia no longer a viable Psychological construct?
- Is hypnosis an effective treatment for pain relief?
- An evaluation of the effectiveness of subliminal advertising on buying habits

An Investigation of Biological Approaches to Understanding Love

Subject: Psychology

Word Count:3,982

Abstract

This essay investigated the research question: **Can love be explained by biological factors alone?** Most psychologists agree on a distinction between romantic and companionate love. Romantic love is defined as "*an intense physiological arousal*"[1], and the aim of this essay was to research the biological factors involved in romantic love in order to discuss whether a biological approach is sufficient to explain love as it is experienced by humans.

By presenting and analysing empirical evidences such as the one provided by Bartels and Zeki (2000), which indicates a biological correlate of love, the thesis that love can, at least to some extent, be explained by biological factors was to some extent supported. Further evidence was found in the relationship between the hormone oxytocin, the neurotransmitters dopamine and serotonin, and behaviours that are characteristic to being in love. Moreover, an evolutionary theory of love proposed by Fisher (1994) was evaluated by considering the evidence that it relies on.

Considering the reductionist approach in focusing on biological factors alone in human love, the essay looked into cultural and social limitations and how love is viewed in other societies. It was concluded that, at present time, biological factors can still not completely account for the complex behaviours associated with being in love. In addition, the evolutionary theory of love does not seem to account for all styles of love, such as companionate love, since not all relationships dissolve with time as would be predicted by the evolutionary approach. Thus, it seems that love cannot be explained by biological factors alone.

[1] Berscheid and Walster (1978) in: Gross, R. (2001), p. 403

Contents

Introduction

"Doubt that the stars are fire; Doubt that the sun doth move; Doubt truth to be a liar; But never doubt I love." claimed Shakespeare over four centuries ago. The emotions expressed by Shakespeare, or his professed doubtless love, are not uncommon. Anthropological and cross-cultural researchers have indicated that the cocktail of emotions that has been baptized as 'love' is a universal phenomenon, deeply embedded in the human brain[1].

The topic of love has, however, only in the 1960's, been promoted from a frivolous subject to a topic "worthy" of scientific study. One of the main reasons for it having been largely ignored was that love was considered to be too elusive for psychologists to study. It did not seem as though it could be subjected to systematic measurement and analysis[2]. Furthermore, in western societies where love is given such vital importance, as is expressed in the common saying that "love makes the world go round", few individuals are willing to probe and investigate such an aggrandized subject (Fisher 1994).

Nevertheless, the importance of studying a topic like love within scientific psychology is evident because it seems to be a universal phenomenon which can motivate people not only to live together for a lifetime but also to thoughtless and obsessive behaviours that they would not do otherwise. Love can be the cause of uncontrollable impulses, of a fulfilling and satisfying life, or even of depression and suicidal behaviour. According to Berscheid (1985)[3], when asked "What is necessary for your happiness?" most people answer that, before anything else, one must have satisfying relationships with friends, family and romantic partners. Thus, considering that love can be such an important component in most people's lives, investigating this subject could offer a clearer perspective on the role of love in social bonds and relationships.

One of the recent scientific approaches to the study of love is based on evolutionary psychology. This approach attempts to explain psychological behavior, such as love, as gradual adaptations to environmental challenges, that is, as the results of natural selection. Evolutionary anthropologist Helen Fisher (1994) proposes that

[1] Jankowiak and Fisher, H. (1992) in: Fisher, H. (2004), p. 3
[2] Berscheid (1988) in: Sternberg, R. and Weis, K. (2006), p. 3
[3] In: Gross, R. (2001), p. 402

romantic love is a universal human feeling, produced by specific chemicals and networks in the brain. Moreover, her evolutionary theory of love suggests that love evolved as a mating strategy to enable individuals to focus their mating energy on specific others, with the intention of sustaining pair-bonds between a couple of individuals long enough for them to bear and rear a child for a period of about four years. Fisher's theory thus predicts that love is bound to fade, a factor which has, to some extent, been supported by empirical studies.

Implications of evolutionary explanations of love would, however, determine that all romantic relationships are bound to end once the male/female bond is no longer necessary for the rearing of a child. Yet it is well known that this is not the case. Examples of enduring relationships are everywhere, as people dedicate themselves to a significant other for decades, sometimes even a lifetime. In addition, one would expect that if love is a mechanism deeply embedded in our brain structure, all individuals would love in the same manner. Still, this is not always the case, as different societies sometimes view love in different ways. This leads to cultural and social limitations which, in turn, raises the question which is investigated in this essay: *Can romantic love be explained by biological factors alone?*

"How are we ever going to explain in terms of chemistry and physics so important a biological phenomenon as love?" already pondered Albert Einstein. It is by evaluating and analyzing the proposed evidence for Fisher's theory that this essay attempts to argue that love can actually be treated as a scientific topic and thus be explained, to some extent, in terms of physiology and evolutionary processes.

Defining Love

According to psychologists, studying the topic of love implies taking into consideration many types of love. One can love a sister, a friend, a partner, or even a particular flavour of ice cream. Thus social psychologists have attempted to define and distinguish between this wide variety of interpersonal attitudes and feelings in order to be able to investigate the different conceptualisations of love.

When referring to the feeling directed to one's lover, most psychologists agree on a distinction between companionate love and romantic love. While companionate love is defined as "friendly affection and deep attachment to someone", romantic love refers to "a state of intense absorption in another…A state of intense physiological arousal"[1]. Unlike companionate love, which can be directed to multiple people who are significant in one's life, romantic love tends to have only one target at a time. Ideally, passionate love eventually develops into companionate love, which is more enduring and stable.

According to Fisher, romantic love begins as an individual starts to regard another individual as special and unique: "*The lover then focuses his/her attention on the beloved, aggrandizing the beloved's worthy traits and overlooking or minimizing his/her flaws. Lovers experience extreme energy, hyperactivity, sleeplessness, impulsivity, euphoria, and mood swings.*[2]" Sympathetic nervous system reactions when in the company of the loved one, including sweating and a pounding heart, are not uncommon. Romantic love is also involuntary and difficult to control[3]. Considering that this essay intends to examine love from a biological perspective, and that it is romantic love that consists of 'a state of intense physiological arousal'[4], this is the type of love which will be primarily referred to in this paper.

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[1] Berscheid and Walster (1978) In: Gross, R. (2001), p. 403
[2] In: Sternberg, R. and Weis, K. (2006), p. 88
[3] Tennov (1979); Hatfield and Sprecher (1986); Harris (1995) in: Sternberg, R. and Weis, K. (2006), p.88
[4] Berscheid and Walster (1978) in: Gross, R. (2001), p. 403

Love from a Biological Perspective

According to Jankowiak and Fisher (1992), love is universal. In a survey of 166 cultures, anthropologists found evidence of romantic love in 147, almost 90 percent of them. In the remaining 19 societies, it is believed that the scientists have simply failed to properly examine this aspect of people's lives[1]. If love - in terms of biological factors- is independent of culture, then it should be possible to generalize it to all of our species.

Oxytocin, also known as "the cuddling hormone", is extremely significant to the bonding process experienced by humans. It is produced in the hypothalamus as well as in the ovaries and testes and is released into the blood during several activities, all of which facilitate bonding and attachment.[2] For instance, oxytocin is released during orgasm[3], which explains the connection and intimacy people feel with their partners after sex. Some of the characteristic feelings of those experiencing romantic love, such as increased respiration when seeing one's loved one, may also be explained by the role oxytocin plays in parasympathetic autonomic functions.[4] The fact that this hormone can account for some of the typical behaviours that are attributed to romantic love serves as support that some biological basis of love can be established.

Similarly, other symptoms of romantic love could be explained by low levels of a neurotransmitter called serotonin. Marazziti, D. et al. (1999[5]) compared the levels of serotonin in the blood of sixty individuals. Twenty were men and women who had recently fallen in love, twenty suffered from obsessive-compulsive disorder (OCD) and another twenty were used as the control group, meaning they were neither in love nor had OCD. Results showed that the group of participants in-love and the group of participants which suffered from OCD had significantly lower levels of serotonin than the control group. The researchers interpreted these findings as an indication that the low levels of serotonin could be responsible for the one behaviour that the participants with OCD and those in-love shared: obsessive thinking. Thus, low levels of serotonin could explain why romantic love leads to countless hours of daydreaming, fantasizing and obsessively thinking about one's romantic partner. It should, however, be noted

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[1] In: Fisher, H. (2004), p. 3
[2] Esch, Tobias, Stefano, George B. (2005) p.177
[3] Young, Wang, Insel (1998) in: Fisher, H. (2004), p.89
[4] Esch, Tobias, Stefano, George B. (2005) p. 179)
[5] In: Fisher, H. (2004), p.54

that in such a study only correlations can be established. Since no cause-effect relationship was identified, it is not possible to claim that the neurotransmitter is what *causes* the obsessive behaviour in patients with OCD and individuals in love. Nonetheless, the results do indicate a correlation between low levels of serotonin and a behaviour which is characteristic of individuals in love. This study does, therefore, support Fisher's biological theory of love by illustrating a biological basis for an aspect of romantic love.

The relationship between biological factors and love is further supported by a brain scanning study conducted by Bartels and Zeki (2000). Their study involved using fMRI to observe the brain areas that were activated when seventeen men and women who reported being "truly, deeply, and madly in love" looked at pictures of their loved ones. The obtained brain images were then compared to the activity produced while viewing pictures of three friends of similar age, sex, and duration of friendship as their partners. Results showed activation in a region of the dorsal caudate nucleus and the ventral tegmental area. The ventral tegmental area (VTA) is considered to be part of the pleasure, or reward, system of the brain. It is also responsible for a significant production of dopamine, a neurotransmitter which accounts for hyperactivity, loss of appetite, a pounding heart and accelerated breathing, symptoms not unfamiliar to those in love. Also, dopamine causes a feel-good state which corresponds to that warm-and-fuzzy sensation that is often associated with being in love[1]. The researchers interpreted these results as an indication that there could be a localisation of function of love in the brain.

Bartel's and Zeiki's findings are corroborated by similar research which also intended to investigate the biology of romantic love in humans[2]. The same procedure used by Bartels and Zeki was adopted and similar results were obtained: the most significant brain activity that took place upon seeing the picture of the loved one occurred in the ventral tegmental area and the dorsal tail of the caudate nucleus of the study subjects, as had been the case in Bartel's and Zeki's study.

The fact that the findings of both studies corroborate each other increases the validity of the results. Still, considering the small number of participants in both cases, it could be questioned how representative of the whole population such results really are. Furthermore, scanner studies can have certain disadvantages. For instance, fMRI

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[1] Colle and Wise (1988); Post, Weiss, and Pert (1988) in: Fisher, H. (2004), p. 52
[2] Aron, Fisher, Mashek, Strong, Li, and Brown (2005)

scans can only determine *where* task-related activity is occurring in the brain, yet it cannot establish any cause-effect relationships because it does not say *how* or *why* that area is active. In addition, the brain areas that "light up" during an fMRI scan, indicating task-related brain activity, may represent a number of different functions making it harder to tell exactly what kind of brain activity is being represented on the scan. For example, although Bartels and Zeki interpreted the activity in the dorsal caudate nucleus to be due to its high concentration of dopamine receptors, the caudate nucleus is also believed to have a function in learning and memory. It could be possible, therefore, that the activation in the caudate nucleus was merely due to the fact that the participants were asked to use their memory, by thinking about their romantic partners, during the experiment. Considering these shortcomings of using fMRI scanners, and that both studies relied on these scans, methodological limitations to the findings might emerge which could question the interpretation of results.

Love from an Evolutionary Perspective

Considering that love is universal, and that some biological correlates have now been proposed, it is logical to wonder if there may have been an evolutionary purpose for romantic love. Neuroscientists have found genetic evidence which indicates signs of ancestral monogamy. Insel et al. (1998)[1] discovered that prairie wolves, creatures that form life-long pair-bonds with a spouse, carry an extra gene that controls the distribution of vasopressin receptors in the brain. Finding it curious that the mountain wolf, a closely related species, did not possess this extra piece of DNA, Insel investigated the purpose of this particular gene. This was done by removing this part of the DNA from prairie wolf genes and inserting it into some highly 'promiscuous' male mice. Results showed that these mice began to form close monogamous relationships with particular females. This was taken as evidence that at least one gene that codes for monogamous behaviours is embedded in the DNA of some animal species and, consequently, as an indication of a biological basis for monogamy.

Although, as tends to be the case when dealing with animal research, it is highly questionable whether such results can be seen as representative, or even comparable, to human behaviour, it should be noted that humans have a similar gene that also codes for the activities of vasopressin. Furthermore, as is well accepted by Darwin's theory of

[1] In: Fisher, H. (2004), p. 132

natural selection, adaptation occurs as individuals that carry the most favourable heritable traits in a particular environment have a greater survival chance, and therefore have a greater chance of spreading their genes. Thus if our ancestors were faced with the challenge of protecting and feeding themselves whilst still needing to provide for their young, male/female pair-bonding was the ideal solution for them. It would be reasonable to argue, therefore, that individuals who formed close relationships with a mate and divided the necessary chores, had a much greater chance of survival, as had their children. Consequently, the individuals who carried this vasopressin related gene would have had a greater ease of establishing such a pair-bond, leading to a greater chance of survival and, ultimately, to a greater chance of spreading this particular gene[1].

Fisher's theory also proposed that love evolved with the purpose of pair-bonding to an individual only long enough to support the rearing of a child. This would imply that love is bound to fade as the child's dependence on its parents wanes, and that a universal pattern should exist in the duration of love relationships that result in procreation.

According to Elaine Hatfield, a psychology professor who has conducted extensive research on love psychology, "Passionate love provides a high, like drugs, and you can't stay high forever."[2] Hatfield (1981)[3] illustrated this in a study which aimed to compare the levels of passionate love in new and old couples. The sample consisted of 953 dating couples, newlyweds and older women who had been married for an average of 33 years. Individuals were asked to rate how much passionate love they felt for their partner on a scale with responses such as "none at all" and "a tremendous amount". Results showed that the daters and the newly weds claimed to feel "a great deal" of passionate love for their companions. The group of older women, however, declared that they only felt "some" passionate love for their husbands. This seems to indicate that passionate love decreases over time.

However, as is often the case when using self-reported data, the reliability of Hatfield's results could be questioned. Participants could simply be lying, trying to describe their relationships in a more positive light or even just trying to answer in a way they thought might be "expected" of them. Such extraneous variables pose

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[1] Fisher, H. (2004) p.132
[2] In: Meyers, F. (2007) p.44
[3] In: Meyers, F. (2007) p.44

limitations on the interpretability of the results, and raise questions about the reliability of the data.

Further support for the claim that love is bound to fade comes from the high divorce rates all over the world. In a cross-cultural comparative study, Fisher (1994) analysed data from the demographic yearbooks of the United Nations on 62 available industrial and agricultural societies for all obtainable years between 1947 and 1989. Her findings indicate that divorces exhibit a skewed distribution, illustrating a divorce peak during and around the fourth year. Basically, people tend to divorce around four years after marriage. This period of four years is, in fact, also the traditional period between human successive births.[1] This seems to support Fisher's theory because if the purpose of romantic love is to attach individuals to a romantic partner only long enough for the rearing of a single child, it would be logical to assume that this romantic attachment would no longer be necessary after the child rearing process.

Marriage and, consequently, divorce, may not be the most reliable measure of romantic love. For instance, followers of the Church of Jesus Christ, or Mormons, experience a very strong social pressure to stay married because their religion abhors divorce. In Islamic societies, the right of divorce is given to the man only, except in very exceptional cases. Divorce rates are, therefore, not a reliable method of measuring the end of romantic love. This, in turn, presents limitations to Fisher's argument in the sense that if some societies do not have a favourable attitude to divorce, it may not be possible to say if some couples are still together due to cultural restrictions or due to a loving relationship. Moreover, polygamy is a common practice in Mormon societies. Considering that Fisher's evolutionary theory claims that love developed in order to focus mating energy on *one* particular individual, this cultural practice directly contradicts the given theory.

[1] In: Fisher, H. (1994) p.63

Cultural and social limitations in the biological approach to love

It is, perhaps, too reductionist to claim that love is caused by a series of biological processes, and that we *only* love because those of our ancestors who pursued monogamy had a better chance of rearing and protecting their children. One could argue that, although empirical studies suggest that romantic love is bound to fade, life-long marriages are still the rule in many places. Thus if love comes from our brain and physiology, how is it that some people claim to be in love even after decades of marriage?

At this point one must return to the proposed distinction between companionate and romantic love. It is romantic love which typically has only one target and is characterized by emotional extremes, physiological arousal, and sexual attraction. The fMRI studies conducted both by Fisher (2005) and by Bartels and Zeki (2000) focused on this style of love since it observed mainly the physiological arousal. Thus the evidence put forth by empirical studies indicating that love is bound to fade measures only romantic love. This would imply that only romantic love can be explained by a biological approach.

It is possible, of course, that environmental circumstances significantly contribute to one's romantic receptiveness. Novel situations, for instance, can stimulate romantic feelings, as is illustrated by Dutton and Aron's classic "creaky bridge" experiment which tested the effect of exciting experiences on feelings of attraction[1]. Men were asked to cross one of two walking bridges; one was a suspension bridge which wobbled and swayed 230 feet above river rapids, while the other one was a steady, low bridge. In the middle of each bridge stood a beautiful woman which would, casually, give each passing man her telephone number. Results showed that significantly more men that had walked the wobbly bridge called the beautiful young woman afterwards. This was interpreted to indicate that exciting things may lead to spontaneous attraction. However, this may simply be due to the fact that dangerous situations raise adrenaline levels, a stimulant closely related to dopamine, which in turn is believed to be directly related to the development of romantic feelings[2]. This could mean, therefore, that these stimulated romantic feelings are in fact biologically caused and not due to the social situation.

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[1] Dutton and Aron, (1974) in: Fisher, H. (2004), p. 193
[2] Fisher, H. (2004) p.193

As to cultural conditions, Hsu (1985)[1], an anthropologist, contrasted Western and Chinese values concerning romantic love and claimed that cultural differences between these two societies have a critical impact on how people view love. While the concept of romantic love fits in well with a North American cultural perspective, it does not fit as neatly into Chinese culture, where it is expected to consider not just one's personal feelings, but also one's obligations to others. Other, more recent, cross-cultural researchers have also supported the claim that romantic love is less valued in traditional cultures with strong, extended family ties[2].

Based on such comparisons, Goode (1959) and Rosenblatt (1967)[3] proposed that romantic love would be common only in modern, industrialized countries. The emerging evidence, on the other hand, suggests that men and women from a variety of cultures, be it individualist or collectivist, are just as romantic as those from Western societies. For instance, Sprecher et al (1994)[4] interviewed 1,667 individuals in the United States, Russia, and Japan. Results showed that in all three societies, the majority of the young people were currently in love. Furthermore, another study conducted by Hatfield and Rapson (1996)[5] found that men and women from Europe, Japan, and the Philippines seemed to love with equal passion. These finding indicate that although there may be cultural differences as to how romantic love is regarded in different societies, there are no cultural variations in people's susceptibility to love.

Proximity, exposure and familiarity, are some of the key factors believed to determine the person with whom we fall in love. In line with the behaviourist perspective, the more positive rewards someone provides us with, the more we should be attracted to that individual[6]. Even though these are all social and cultural factors, they do not oppose the evolutionary theory in the sense that they do not explain or account for the origin of love. As Fisher (1994) puts it, culture plays a crucial role in *whom* you find attractive, *when* and *where* you court, *how* you pursue a potential partner and *how many* people stay together. On the other hand, the theory that the answer to *why* we fall in love in the first place is rooted in biology is an interesting one, and the evidence presented has lent some credibility to. Cultural features do not teach individuals what to feel as one falls in love, and it is the brain/body physiology that

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[1] In: Sternberg, R, Weis, K. (2006), p.277
[2] Simmons, Von Kolke, and Shimizu, (1986) in: Sternberg, R, Weis, K. (2006), p.277
[3] In: Sternberg, R, Weis, K. (2006), p.278
[4] In: Sternberg, R, Weis, K. (2006), p.278
[5] In: Sternberg, R, Weis, K. (2006), p.278
[6] Clore and Byrne (1974); Lott and Lott, (1974) in: Gross, R. (2001), p. 406

accounts for the elation of the emotions that we associate with 'being in love'.

Conclusion

In conclusion, empirical evidence seems to indicate that biological correlates for love can be established; meaning that certain behaviours which are characteristic of individuals in love can be explained by biological factors. The study conducted by Jankowiak and Fisher (1992[1]) which indicates that love is a cross-cultural phenomenon also provides strong support for the biological approach to love because it implies that since love is universal it cannot have originated from cultural or social factors.

As to Fisher's (1994) evolutionary theory which proposes that love is a commitment device that evolved to create male/female bonds that would last long enough to raise a child, the supporting evidence is more limited. Animal research has shed some light on the possibility of a gene coding for monogamous relationships, and such findings are strongly in line with the evolutionary theory of love because it would explain, in terms of natural selection, how love has come to be 'implanted' in human physiology. Nevertheless, the fact that polygamy is encouraged in some societies and that marriage rates might not be a reliable method to measure romantic love shows that some weaknesses to the evolutionary approach to love can be found. Thus, more scientific studies in this field are necessary to investigate the role of evolution in the development of love.

Comparisons between Western and Eastern cultures have shown that people view love differently in these societies. These cultural limitations to love do not, however, dispute the fact that some 'symptoms' of love can be explained by biological processes. Yet since biology, today, can still not account for all the aspects of love, it must be said that biological factors can only explain love to some extent. It is highly likely that love has taken such an aggrandized position in today's world that humans now put much more meaning into such an experience than simply wanting find a mate to secure the environment for a child. Even though romantic love seems to fade with time, some couples stay married for life. Further research into the origin and duration of companionate love, as opposed to the focus on romantic love, could, therefore, provide more answers to the extent to which biological factors influence love.

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[1] In: Fisher, H. (2004), p. 3

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Extended Essay

The relationship between the mind and the body in stress

Can an individual's mind possibly have an influence on the health via changes in the immune system?

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Abstract

This essay investigated the research question: **Can the mind possibly have an influence on the health via changes in the immune system?**

This paper accepted the definition of stress developed by Lazarus and Folkmann (1984), stress is *"a transaction between people and the environment and stress involves an interaction between the stressor and distress."* The model of stress accepted for this investigation, was the transactional model of stress, as individuals are not regarded as passive responders to stressors. The paper included a number of empirical studies such as case studies by Sweeny (1995) and Cohen et al. (1996) who suggested that stress has an effect on the functioning of the immune system. Strategies of coping such as biofeedback, mindfulness-based stress reduction and social support, investigated by Miller (1968), Jacob et al (1977) and Kiecolt-Glaser et al (1984), was included since research in this area also suggests a link between the mind and the functioning of the immune system.

The conclusion was that, it is rather difficult to establish a clear link between stress and the functioning of the immune system. However; despite the limitations of the empirical research, there seems to be evidence for a link between the mind and the functioning of the immune system. This field is worthy of further investigation as understanding the link between the mind and the functioning of the immune system may be applicable for prevention and treatment of various illnesses.

Contents

Introduction

Within in the medical model, the mind has largely been ignored and particularly the idea that the mind can affect the course of the illness. This is based on the assumption that treatment of a disease only requires elimination of organisms which trigger the illness.[1] However, in recent years the role of the mind in illness has emerged within the field of psychoneuroimmunology. The relationship between the mind and the body is perhaps one of the oldest debates, originally a philosophical issue, and is now again being discussed within psychology- particularly within health psychology. Within health psychology the mind-body relationship may be particularly interesting in stress. New research suggests that stress may have a remarkable impact on the functioning of the body's immune system. This has revealed a possible relationship between psychological factors, stress, and physiological responses, the functioning of the body's immune system. Stress is common within our modern society and therefore it is necessary to investigate whether the state of an individual's mind, when stressed, can influence the functioning of the body's immune system. If there is a relationship between the state of the mind and the functioning of the immune system, this knowledge may be applicable within medicine for prevention and treatment of stress related illnesses.

Psychologists regard stress as a more complex factor than that encountered in the definition of physicists. Physicists define stress as *"the pressure or force which is exerted onto the body.* [2] Within psychology, stress has been defined in a variety of ways. However, the most widely acknowledged definition of stress is that developed by Lazarus and Folkmann (1984)[3] who were among the first to depart from an entirely physiological definition of stress. According to the researchers, stress is *"a transaction between people and the environment and stress involves an interaction between the stressor and distress."* [4] According to Lazarus (1975)[5] the degree to which a stressor can be regarded as harmful, solely depends on an individuals' appraisal of the situation. In other words, in stress, an individuals' state of mind may influence the body. This was termed coping.

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[1] Sternberg & Gold (1997).
[2] Gross, R. & McIlveen, R. (1996) Page 169
[3] ibid. Page 169
[4] Ogden, J. (2000) Page 232
[5] ibid. Page 236

The earliest models of stress regarded individuals as passive responders to external stressors. Even though they gave insight into the physiological mechanisms associated with stress, the models can be regarded as reductionist approaches. A more complete picture is offered by the transactional model of stress because the individual's appraisal of the situation is taken in to account. This suggests that if the individual does not appraise the situation as being stressful, the body will not elicit a stress response. It was originally believed that the immune system was autonomous and did not interact with other systems within the body.[6] However, empirical research suggests a link between the state of the mind, stress, and the functioning of the immune system. This is the reason for examining the possible link between the mind and the body in stress as it relates to the research question; **can the mind possibly have an influence on the health via changes in the immune system?**

Stressors

According to Gross (2001) causes of stress don't exist objectively and according to Lazarus (1975)[7] individuals differ in what they perceive as a stressor. However, there have been attempts to identify types of events or experiences that most people find are likely to exceed their ability to handle the required demands involved in the situation.[8]

One such attempt is the focus of life changes. Life changes refer to illness, sex difficulties, death of a relative et cetera. After examination of 5000 patient records, Holmes and Rahe (1967)[9] conducted a list of 43 life events, with variation in degree of seriousness, which seemed to have arrayed in the months preceding the onset of their illnesses.[10] For this study, the researchers devised the *"Social Readjustment Rating Scale,"* (SRRS) consisting of the 43 life events with varying severity. With the SRRS, the researchers aimed at measuring severity of *stressful* life changes on a scale from one to one hundred life changing units (LCU). On the SRRS, the death of a spouse was rated 100 LCU whilst change in sleeping habits counted as 16 LCU. Since the SRRS is based on fixed numbers of units for each life event, the scale can be criticized for lack in validity. A number of studies which have applied the SRRS suggest that there is a link between LCU and subsequent illness;[11] however,

[6] Ogden, J. (2000) Page 243
[7] ibid. Page 236
[8] Gross, R. (2001) Page 171
[9] ibid. Page 173
[10] ibid. Page 171
[11] ibid. Page 172

the SRRS can be criticized for not being a complete approach to an individual's response when faced with a stressor. According to Lazarus' (1975)[12] appraisal theory, a certain situation which might be appraised as stressful to one individual might not be perceived as stressful to another individual, this suggests that a clear link cannot be drawn between specific life changes and progression of an illness. However, the SRRS reveals a possible link between stress and the subsequent illness. Despite the limitations of the model, it is useful to have a picture of possible stressors.

Models of stress

The *fight or flight* model, developed by Cannon (1932)[13], is one of the earliest models of stress. According to the model, the sympathetic branch of the Autonomous Nervous System is activated in the presence of a stressor; this stimulates the adrenal medulla to secrete high levels of adrenaline and noradrenaline. The hormones prepare the organism for *fight* or *flight* by increasing the heart rate, blood flow and sugar levels. This physiological arousal is highly appropriate in preparing the organism to fight, defend itself, or escape the situation by means of flight. The model assumes that stress is the result of instinctive physiological arousal of the body when responding to a stressor. Evolution has prepared organisms, by means of activation of the Sympathetic Nervous System, to *fight* or *flight* in situations where the organism is faced with a dangerous situation such as a predator.

Selye (1956)[14] developed a model of stress which focuses on the body's physiological arousal in stress. The model is called the *General Adaption Syndrome* (GAS) and was developed in 1956. The model consists of three main stages, the "alarm" stage, the "resistance" stage and the "exhaustion" stage. In the "alarm" stage is the *fight or flight* stage with an association of sympathetic changes preparing the organism for the stressor. If the organism is incapable of *fight* or *flight,* in the situation, and the stressor becomes prolonged, the organism enters the resistance stage. The resistance stage deals with coping and reversing the effects of the alarm stage.[15] The organism enters the exhaustion stage when it is continuously exposed to stress and unable to show further

[12] Ogden, J. (2000) Page 236
[13] ibid. Page 236
[14] ibid. Page 232
[15] ibid Page 232

resistance. It is at the exhaustion stage, that the drastic bodily changes enhance the development of disorders such as, *psychophysiological* disorders and high blood pressure.

Cannon's fight-or-flight and Selye's general adaptation syndrome are both models which give insight into understanding how stressors affect physiological behaviour. However, both models describe stress as a simple stimulus-response association and regard individuals as automatic responders to their external environment. The models allow a limited role for psychological factors to be involved when individuals respond to stressors. However, it is considered reductionist today. There are also gender considerations in relation to the classic models of stress. Researchers from UCLA analyzed data from numerous behavioral studies of both humans and animals and concluded that women do not 'fight-or-flight' but rather they cope with stress by "Tending and Befriending."[16] Tending refers to taking care of oneself and others whilst befriending refers to establishing social networks in order to reduce stress. It is assumed that this is an evolutionary response passed on from our ancestors. On the other hand, the researchers suggested that men respond to stressors by the *fight* or *flight*, they either confront stressors or flee from it. The findings suggest that there are, to some extent, gender differences in coping with stress hence this demonstrates a limitation to the models as stress responses are regarded as automatic mechanisms and the individuals are regarded as passive responders with no gender considerations.

Another model of stress is the transactional model of stress introduced by Lazarus (1975)[17]. According to Lazarus, whether a stimulus can be interpreted as stress, depends on the individual's perception of the stimuli. Lazarus claimed that individuals have the ability of interacting with stressors instead of passively responding to them and thereby the psychological aspect was introduced to the study of stress. The transactional model suggests that there is a transaction between individuals and their external world and that a stimulus is a stressor if the individual appraises a stimulus to be potentially stressful.[18] According to Lazarus there are two forms of cognitive appraisal, primary and secondary. Lazarus defined primary appraisal as the individuals' initial appraisal of the event whilst secondary appraisal involves the individual's evaluation of the pros and cons of their different coping skills, appraisal the individual itself.[19] This model allows for

[16] Taylor, S. et al. (2000)
[17] Ogden, J. (2000) Page 236
[18] ibid. Page 236
[19] ibid. Page 236

the existence of a link between the state of the mind and the response elicited by the body, hence if the individual does not appraise a certain event as being stressful, the body will not respond i.e. activation of the Autonomous Nervous System will not proceed. Hence the model acknowledges that there is a link between the state of an individual's mind and the stress response.

An experiment conducted by Speisman et al. (1964)[20], suggests that the psychological state of the individual could play a role on their stress response. The aim of the experiment was to investigate how different situations are appraised by individuals. The participants were shown a film concerning an initiation ceremony which involved unpleasant genital surgery in three different conditions. In each condition a different soundtrack was played. The first condition, the trauma condition, contained a soundtrack which emphasized the pain concerning the surgery. The second condition contained a soundtrack focusing on the happiness concerning the event and the last condition contained a soundtrack which gave an anthropological interpretation of the event. Thereby, via the different soundtracks, the experiment manipulated the participant's appraisal of the situation and was thereby able to measure the effect of the appraisal on the participant's stress response. The results showed that the first condition, the trauma condition, was reported as being the most stressful. Even though this was a lab study and can be criticized for ecological validity, the study indicates that it is an individuals' interpretation, appraisal, which elicits stress, not the event itself.[21]

According to Mason (1975)[22] stress response requires awareness of the stressor to some degree. Mason reported that unconscious dying patients showed less signs of physiological stress than those patients who were conscious and he suggests that the conscious patients were able to appraise their situation whilst the unconscious patients were not. This suggests that appraisal is related to an individual's stress response.[23] The study conducted by Speisman (1964)[24] and the study conducted by Mason (1975) both support the transactional model of stress and thereby shed light on the possible relationship between the mind and the body in stress.

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[20] Ogden, J. (2000) Page 237
[21] ibid. Page 237
[22] ibid. Page 237
[23] ibid. Page 237
[24] ibid. Page 237

Possible link between the mind and the body in relation to the immune system

When the body is faced with a threatening situation, such as illness, there is an automatic activation of the immune system. Illness can be considered a stressful event and therefore the stress following illness has implications for health. According to Sternberg and Gold (1997)[25], the immune system is an elegant and finely tuned cascade of cellular events aimed at ridding the body of foreign substances, bacteria and viruses and thereby maintaining the body's internal state, called homeostasis.[26] Psychoneuroimmunology is a new field of psychology and medicine which is based on the assumption that an individual's mind can influence their immune system via the nervous system.[27] If psychological factors are capable of causing change in an individual's immune system, it opens up the possibility of a relationship between the state of an individuals mind and the functioning of the body's immune system.

A case study by Sweeny (1995)[28], suggests that stress may have an effect on the functioning of the immune system. The aim of the study was to discover whether stress influenced the time taken for a wound to heal. The participants, which had agreed to take part in the study where a small skin biopsy was performed on their arms, were split into two groups. After the skin biopsy, the participants in one of the groups were exposed to stress, the stressed group, whilst the participants in the other group were not, the non-stressed group. The results showed that compared to the non-stressed group, it took nine more days for the wounds, of the participants in the stressed group, to heal. As the wounds of participants in the stressed group took a significantly longer time to heal compared to the non-stressed group, it implies that the immune systems of the participants in the stress group were not functioning optimally. The results of this study suggest that there could indeed be a link between the state of the mind, i.e. the degree of experienced stress, and the functioning of the immune system. As this study was a case study, only a small sample of people participated and they are not representative of a larger group so it is difficult to generalize the findings. However, similar findings from other studies could corroborate with the findings. Overall

[25] Sternberg & Gold (1997)
[26] ibid.
[27] Ogden, J. (2000) Page 243
[28] Gross, R. & McIlveen, R. (1996) Page 145

the study indicates that stress influenced the time taken for wounds to heal and this can be taken as evidence that there is a link between stress and the functioning of the immune system.

Another case study (Cohen et al. (1996))[29] also corroborates the idea that stress influences the functioning of the immune system. The voluntary participants were asked to fill in questionnaires on stress and life events. The participants were then given nasal drops which contained mild cold virus. After taking blood samples from the participants and examining these, the researchers found that stress had increased the risks of being infected by respiratory illness. This study and the study conducted by Sweeney (1995)[30] both give insight into the relationship between stress and the functioning of the immune system. However, it is also necessary to point out that these studies were both correlational and therefore a clear cause and effect relationship cannot be deduced. Another limitation of the correlational study is that it is difficult to control for extraneous variables which might have affected the results of the study. Despite the fact that these studies were correlational; they both demonstrated a possible between the mind, when stressed, and the functioning of the immune system.

A study which demonstrates that there is to a large extent a relationship between the state of the mind and the functioning of the immune system is the case study by Greer et al. (1979). Greer studied women who had been diagnosed with breast cancer and had had mastectomies. The researchers found that women who reacted to their situation by *denying*, " I am being treated for a lump, but it's not serious," or by reacting to their situation with a *fighting spirit*, "this is not going to get me," were to a large extent more likely to be free from cancer five year later compared to the women with a fatalistic approach, "I feel an illness is God's will.." and women who showed a "giving up" attitude, "well there is no hope with cancer is there?."[31] This means that having an *optimistic explanatory style* may be associated with better functioning of the immune system. No direct link between the state of the mind and the functioning of the immune system can be deduced from this study; however, it demonstrates a possible link between the the mind and functioning of the immune system.

[29] Gross, R. & Mellveen, R. (1996) Page 145
[30] ibid. Page 145
[31] Gross, R. (2001) Page 177

Another study which suggests a relationship between the mind and the body in stress is the case study by Walker.[32] Walker reports that the immune system of women with breast cancer, who apply different psychological techniques during treatment, works more optimally than women who solely receive medical treatment. The study lasted nine months and a group of women were receiving medical treatment such as standard surgery, chemotherapy and radiotherapy were to visualise their white blood cells fighting the cancer cells. The results showed that the women who applied psychological techniques such as visualisation, had a greater number of mature T-cells, activated T-cells, cells carrying T-receptors and higher levels of lymphokines compared to the control group, which consisted of women with breast cancer who only received medical treatment.[33] T-cells are a type of white blood cell which are highly essential in attacking malignant cells and which are killer cells that help prevent the spreading of the disease.[34] Thereby, the results of this study demonstrate a relationship between the mind and the functioning of the immune system in stress.

One might wonder how this can come about. However, within the healing arts, illnesses have sometimes been cured by application of apparently inert treatments for the various conditions. This is known as the placebo effect. A placebo is an inert substance which can cause relief of symptoms and it has no specific or real pharmacological action of a drug.[35] The placebo has an effect if the individual *believes* that the intervention will be effective. Therefore, a patient's belief may itself be the mechanism for explaining the placebo effect. As placebos can have an effect directly, via physiological change, or indirectly, via behavioural change, it becomes parallel with theories concerning stress. This challenges the traditional biomedical approach to health and illness which ignore psychological factors to a large extent. Responses to stress can perhaps be understood as something similar to placebos and if an individual's status of health can be influenced by expectations and beliefs, then the mind and the body can be seen as interacting. This can be seen as support that there is an interaction between the mind and the body, for example in illness, which is a condition of stress. If the individual is able to appraise the stressor in a way which enables perceived control, this may reduce stress responses and enhance the functioning of the body's immune system.

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[32] Norton, C. (2000a) Page 12
[33] Gross, R. (2001) Page 177
[34] ibid. Page 177
[35] Ogden, J. (2000) Page 272

Biofeedback, Mindfulness-based stress reduction and social support

Previously the Automatic Nervous System was regarded as an automatic part of the body's response system to stress. It was also considered impossible to control this system. However, this has been challenged by the study conducted by Miller (1968)[36] who investigated whether it is possible to control the ANS via biofeedback. In Biofeedback therapy, individuals can in fact achieve some mind-body integration. On electric monitors, individuals are trained to exert control over vital bodily processes e.g. respiration, heart rate and muscular tension. By observing and monitoring shifts in the bodily symptoms, the individuals learn how to adapt as well as modify their mental and emotional responses in order to alleviate specific symptoms and regulate the health conditions. It seems that biofeedback is effective, but it is not really known why.[37] From the findings, Miller concluded that it is possible for the individual to achieve harmony within the body since it seems that we are capable of supporting the body's immune system.

Another method of coping with stress is mindfulness-based stress reduction. The primary focus of this method is to teach people to meditate and apply techniques in order to become more aware of their thoughts and feelings and when necessary, how to change their relationship to their thoughts and feelings. After repeated practice, mindfulness develops people's ability to step back from negative thinking patterns and feelings during stressful situations.[38] To relax is a state of deep rest where no physical movements are present and the mind is in a state of tranquillity. According to the study conducted by Jacob et al. (1977),[39] meditation and progressive relaxation were found to be beneficial in reduction of blood pressure, one of the great causes of various illnesses. This research suggests that the mind can in fact influence physical health. From this field of coping with stress, it suggests not only, that it is possible to influence the functioning of the body's internal organs, by means of cognitions and alteration of the state of the mind, but also that the state of the mind may influence the functioning of the body's mechanisms for maintaining homeostasis, a balanced internal state.

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[36] Gross, R. & McIlveen, R. (1996) Page 175
[37] Gross, R. (2001) Page 169
[38] Bishop, S. (2002)
[39] Gross, R. & McIlveen, R. (1996) Page 175

In a study conducted by Kiecolt-Glaser et al (1984)[40], blood samples from medical students were analyzed one month before and on the first day of the final examination. The students were also asked to complete scales of life events, bodily symptoms and adequacy of interpersonal contacts. After analyzing the blood samples, for indication of the immune systems functioning, the researchers found that there had been a significant decrease in the amount of natural killer cell activity. The results indicate that high stress may diminish the effectiveness of the functioning of the immune system. The researchers also found that the students having high scores in stressful life events and loneliness scores had significantly lower natural killer cell counts than did the participants with low scores. These findings indicate that the state of the mind, psychological stress, influences the functioning of the immune system and that giving social support or other means of psychological help can modify effects of stress. Social support seems to play a crucial role in the stress and coping process.[41] According to the transactional model of stress, social support seems to be one of the factors that influence the cognitive appraisal of stressful encounters.[42] Social support may therefore help change the state of the mind, enhancing the functioning of the immune system. This study can be seen as evidence for a possible link between the mind and the functioning of the immune system.

Conclusion

In conclusion, it seems from evidence that **an individual's mind can have an influence on the health via changes in the immune system.** The link between stress and the functioning of the immune system is not fully understood, however, the research suggests that the link is present. It is not suggested that a simple shift in mental states will automatically translate into an optimal functioning of the immune system. However, despite the limitations of the empirical research, there seems to be evidence for the idea that the state of an individual's mind can have an effect on functioning of the immune system.

Biofeedback, mindfulness-based stress reduction and social support are coping methods which seem to be effective in reducing stress, i.e. altering the mind, and bringing about changes in the immune system. The placebo effect also investigates a link between the mind and the body in treating illnesses. Even though the mind and the body seem to be interacting, upon completing this

[40] Gross, R. & McIlveen, R. (1996) Page 95
[41] Schwarzer, R. & Knoll, N. (2007)
[42] Schwarzer, R. & Knoll, N. (2007)

investigation, it became clear that it is rather difficult to establish a clear link between stress and the functioning of the immune system. It is also difficult to measure changes in the immune system and hence this is a limitation. However, it is an important field, worthy of investigation, as the research suggests that not only can the mind reduce the functioning of the immune system but once an individual is ill, the mind can influence recovery. The link between the state of an individual's mind and the functioning of the immune system can be an effective, as well as a necessary tool for prevention as well as treatment of various illnesses.

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