

Syllabus content: Core

The approaches to understanding behaviour are laid out in topics. The content for each topic is detailed in the middle column, with explanatory notes in the dropdown boxes. Guidance for the content is in the dropdown boxes in the right-hand column.

The approaches to behaviour are compulsory for SL and HL students (except for the HL extension, which is for HL students only).

The core will be assessed in paper 1 of the external assessment, but it also forms the foundation for teaching and learning in the options.

The approaches to research are for both SL and HL students. They are organized to reflect the considerations made when reading or preparing a piece of research. Only HL students will be formally assessed on the approaches to research in paper 3.

Biological approach to understanding behaviour

The biological approach to understanding behaviour is largely an investigation into correlations. Do areas of the brain correlate with behaviour? When changes take place in the brain do changes take place in behaviour or is the reverse the case? Could an individual's behaviour be predicted from their genes? Is human behaviour subject to natural selection?

The relationship between biology and behaviour is a complex one of mutual causality. The technology available to investigate this relationship is becoming ever more sophisticated, while the ethics of this line of inquiry are increasingly an area for public debate.

The biological approach to behaviour looks at:

- the brain and behaviour (SL and HL)
- hormones and pheromones and behaviour (SL and HL)
- genetics and behaviour (SL and HL)
- the role of animal research in understanding human behavior (HL only).

Relevant to all the topics are:

- the contribution of research methods used in the biological approach to understanding human behaviour
- ethical considerations in the investigation of the biological approach to understanding human behaviour.

Topic	Content	Guidance
The brain and behaviour	Techniques used to study the brain in relation to behaviour	Areas of the human brain related to behaviour

Topic	Content	Guidance
	<p>The choice of techniques used to correlate the brain with behaviour is based on a variety of factors including opportunity, available technology and costs. An awareness of these limitations as well as the strengths of these different techniques is important when evaluating the contribution they have made to understanding behaviour.</p>	<p>An awareness of where the regions of the brain referred to in the research are helps to contextualize learning.</p>
	<p>Localization</p>	<p>Methods used to study the brain</p>
	<p>Students should understand the concept of localization and how the function of different parts of the brain is determined as well as the limitations of this model.</p>	<p>fMRI, MRI, EEG, CAT, PET are the most frequent techniques used to investigate the relationship between the brain and behaviour in current research, but observations from autopsy, stroke and accident victims have all contributed to understanding of the brain and behaviour. One or more examples of a technological technique used to understand the brain and behaviour can be used.</p>
	<p>Neuroplasticity</p>	<p>Neural transmission</p>
	<p>The development of neural networks through repetition and neural pruning is both genetic and subject to environmental influences. Neural networks can change developmentally, over time or after injury. This is termed neuroplasticity.</p>	<p>It is sufficient for students to know that nerve impulses travel along neurons until they reach a synapse. The details of how this is achieved are not required.</p> <p>Neurotransmitters</p>

Topic	Content	Guidance
	<p>Neurotransmitters and their effect on behaviour</p> <p>The effect of neurotransmitters on human behaviour can be explained using an appropriate example. Neurotransmitters allow the impulse to cross a synapse (excitatory) or stop the impulse and prevent it from crossing a synapse (inhibitory). Neurotransmitters are themselves affected by agonists which amplify their effect and antagonists which reduce their effect.</p> <p>As a result, neurons working together can produce a large variety of effects resulting in a complex repertoire of behaviours. As a result any claim of cause and effect should be treated with caution.</p>	<p>Neurotransmitters mediate the events at the synapse. There are many neurotransmitters in the human brain. Serotonin and dopamine are two of the better known. Many hormones can also act as neurotransmitters, for example, adrenaline and oxytocin. One or more examples can be used to illustrate the effect of neurotransmitters.</p> <p>Neural networks</p> <p>Neural networks in the brain develop by the making and breaking of synaptic connections between neurons.</p>

Topic	Content	Guidance
Hormones and pheromones and behaviour	<p>Hormones and behaviour</p> <p>The effect of a hormone on human behaviour can be examined using one or more examples.</p> <p>Pheromones and behaviour</p> <p>There is increasing evidence that pheromones may play a role in human behaviour, however, none are conclusive. A discussion on the effect of pheromones on behaviour is a useful exercise in critical thinking.</p>	<p>Hormones</p> <p>Hormones are chemicals released by specific glands in the body to regulate medium- and long-term changes in the body. Some hormones, for example, adrenaline, also act as neurotransmitters and can produce instantaneous effects on mood and attention. One or more examples can be used to study hormonal effects on behaviour.</p> <p>Pheromones</p> <p>The arguments for and against the influence of pheromones on human behaviour can be assessed critically using one or more examples.</p>

Topic	Content	Guidance
Genetics and behaviour	Genes and behaviour	Nature of the gene
	The evidence for links between genes and certain types of behaviour requires critical evaluation in the light of environmental factors.	Genes are made up of DNA which provides the blueprint for the structure and function of the human body. This could include behaviour. An individual's genome refers to all the genes that individual possesses.
	Genetic similarities	The link between genes and behaviour can be studied using one or more examples.
	Genetic similarity is referred to as relatedness. The greater the genetic similarities between two individuals or a group of individuals the higher the degree of relatedness. An awareness of the degree of relatedness between MZ and DZ twins, siblings, parents and children, and parents and adopted children provides a critical perspective in evaluating twin or kinship studies.	Gene regulation and gene expression
	Evolutionary explanations for behaviour	Not all genes an individual possesses are expressed at all times. Genes can be switched on and off. This is gene regulation resulting in differential gene expression. Therefore, having a gene for a particular behaviour does not necessarily mean that an individual will exhibit that behaviour.

Topic	Content	Guidance
	<p>If genes code for behaviour as well as physical traits, then behaviour is subject to evolutionary pressures in the same way that physical traits are subject to evolutionary pressures.</p>	<p>Factors that affect gene expression</p> <p>Genes are switched on and off by signals from inside and outside the body. Internal signals include the presence of hormones or other chemicals, or indeed other genes. Hormones are frequently produced as a result of environmental events and work by altering gene expression. There are countless environmental events that also affect gene expression. The signal activates special proteins that can promote or block the expression of a gene. Genes are constantly being switched on and off.</p> <p>Sometimes genes are permanently switched off. This is mostly achieved by methylation of the DNA molecule as part of the developmental process. This effect on genes is sometimes referred to as epigenetics as there is no alteration in the actual structure of the DNA. Mutations occur when there is an actual alteration of the DNA.</p> <p>Survival of the fittest and natural selection</p>

Topic	Content	Guidance
		<p>Competition for scarce resources, like food or mates, leads to the promotion of favourable traits. These traits may be physical or behavioural. Whatever their nature, they are regarded as favourable traits as they allow the individual to acquire sufficient resources in order to survive and reproduce. When the individual reproduces, it passes these traits on to the next generation. The more they reproduce, the more individuals will have the trait in the next generation. This is survival of the fittest by natural selection. Genetics and environmental challenges are therefore both important in the success of specific traits and behaviour. Evolutionary explanations for behaviour can be studied using one or more examples.</p>

<p>HL only The role of animal research in understanding human behaviour</p>	<p>The role of animal research in understanding human behaviour For all three topics in the biological approach, and with reference to research studies, HL students should study the following.</p> <ul style="list-style-type: none"> • The value of animal models in psychology research. • Whether animal research can provide insight into human behaviour. • Ethical considerations in animal research.
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Cognitive approach to understanding behaviour

The cognitive approach to understanding behaviour looks at:

- cognitive processing (SL and HL)
- reliability of cognitive processes (SL and HL)
- emotion and cognition (SL and HL)
- cognitive processing in the digital world (HL only).

Relevant to all the topics are:

- the contribution of research methods used in the cognitive approach to understanding human behaviour