Prep: Reductionism and Holism

Short Answer Questions: 25 marks

Read the source below and then answer the question that follows.

*Dr Kirsten and Dr Evagora both study people with depression. Dr Evagora carries out experimental research to investigate the brain chemistry of people with depression. Dr Kirsten carries out unstructured interviews with people with depression to find out about their symptoms and various aspects of their lives, including their general behaviour and their relationships.*

1. Referring to the source above, explain what is meant by holism and reductionism. [4]
2. Explain why most psychologists prefer reductionist explanations of human behaviour. [3]
3. Explain what psychologists mean by ‘levels of explanation’. [2]
4. Identify which area / perspective in psychology is the most reductionist. [1]
5. Outline how one core study supports the view that behaviour is reductionist [4]
6. Explain one limitation of reductionism in psychology. [3]
7. Identify which area / perspective in psychology is the most holistic. [1]
8. Outline how one core study supports the view that behaviour is holistic [4]
9. Explain one limitation of holism in psychology. [3]

Voluntary Stretch and Challenge

1. Discuss the reductionism v holism debate in Psychology. Support your answer with reference to Core Studies. [15]

Summary of the debate

**Reductionism**

* Argues that all psychological phenomenon can be reduced to simple parts.
* Supports deterministic views and claims that behaviour is predictable as it is determined by one factor.
* Any explanation of behaviour at its simplest level can be deemed reductionist.

**Strengths**

* Scientific – can test individual parts
* Can explain some behaviours
* Treatments can be developed

**Weaknesses**

* Lacks ecological validity
* Doesn’t explain why all behaviours develop in the first place
* Other factors are important, e.g. social factors in mental health treatment

**Holism**

* Refers to any approach or study that looks at the whole picture/ individual rather than breaking it down into components.
* When studying individuals you would look at the whole person to gain an understanding about anything that may impact on their behaviour not just specific parts.

**Strengths**

* Looks at everything that may impact on behaviour.
* Considers more than one cause.
* Allows for a detailed all round analysis.

**Weaknesses**

* Does not allow for detailed study into one area.
* Non- scientific.
* Does not explain mental illness adequately.
* Over complicates behaviours which may have a simple explanation

Defining the Positions in the Debate

**Reductionism** is the belief that human behaviour is best explained by **breaking it down** into smaller constituent parts. Therefore it studies **underlying elements**.

It is based on the idea of **parsimony**: that all behaviour should be explained using the most basic (lowest level) principles i.e. the simplest and easiest explanations.

Socio-cultural level

Psychological level

Physical level

Physiological level

Levels of explanation

This is the idea that there are different ways of viewing the same phenomena in psychology, where some are more reductionist than others. These explanations vary from those at a **lower or fundamental level** focusing on basic components or units to those at a **higher more holistic multivariable level.**

Increasingly

reductionist

Socio-cultural level – this focuses on cultural explanations as well as social explanations of how our social groups affect our behaviour. Therefore, it is about societal constructs and how the individual is a social being, and how these factors influence behaviour.

Example

Psychological level – this focuses on psychological explanations of behaviour (e.g. the cognitive approach). Therefore, it is involves looking at the individual person and how what is going on in their head (i.e. cognitions) affects behaviour.

Example

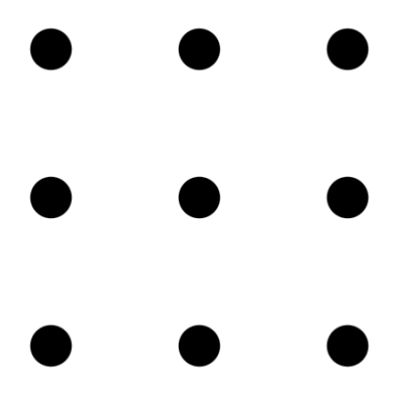
Physical level – this focuses on observable behaviour that can physically be measured as explanations of behaviour.

Example

Physiological level – this focuses on biological explanations of how hormones, genes, neurochemistry, neurophysiology and evolution affect our behaviour.

Example

**Applied Question**: Dave is 24. Over the last 3 months he has been having visions of aliens walking round him when he goes to work. His speech has become rambling and often his friends cannot tell what he is saying. A few weeks ago Dave was told his old college friend had died and in response he laughed. He has stopped showering regularly and believes that his water system has been poisoned. He has lost a lot of weight as he no longer bothers to cook. How would each of the levels of explanation, explain Dave’s Sz? (3 marks)

**Holism** is an argument or theory which proposes that it only makes sense to study an **indivisible system** rather than its constituent parts. This is because behaviour and experience can only be understood by analysing a person or behaviour as a **whole** i.e. how various components ‘interact’. Therefore, the focus is always on the **whole system or person**.

The assumption is that ‘the whole is greater than the sum of its parts’ (Aristotle).

Reducing reductionism and holism

Your challenge is to reduce the definitions below to simpler and simpler explanations.

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| Reductionism is where you break down a behaviour into its constituent parts and analyse the relative contribution that factor makes. This approach to investigating behaviour assumes that parsimony, the scientific principle, should be used and that all behaviour should be explained using the simplest possible explanation. | Holism is where you assume that the ‘whole is greater than the sum of its parts’ and that in order to understand behaviour you should consider how different factors at each level contribute to behaviour, rather than trying to reduce these further. This position in the debate suggests that behaviour is too complex to be broken down. |

20 words

10 key words

3 key words

## Recognising reductionism

What do the terms reductionism and holism mean?

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| Reductionism | Holism |

Using the definitions for each position in the debate annotate the following core study summaries to identify which side of the debate they favour.

Raine et al (1997) researched the differences in brain activity of two groups to try to identify the cause of criminal behaviour, in this case murder. By using PET scans rather accurate images of the brain function of a group of murderers were gathered and compared to a group of controls.

This research explained that anti-social behaviours can be reduced to brain abnormalities and these can determine behavioural responses. Raine et al found that there were differences in the activation in the cerebral cortex and further to this that there were differences in activity in the subcortical areas.

Whilst Raine et al concluded that their research supported prior findings and suggested that the violent behaviour observed was due to a difference in brain function they also caution readers that they do not know what causes the brain differences and do not remove responsibility from the individuals for their behaviour.

Gould (1982) carried out a review article about the history of intelligence. Previous research has suggested that intelligence is innate and Gould wanted to investigate the validity of this claim further. Whilst this piece of research was not empirical, rather a review of previous research, it aimed to question the objectivity in intelligence testing and the biases that exist in order to challenge the implications that had been created by previous intelligence research.

The evidence of intelligence being innate was found to be flawed by Gould as it appeared from Yerkes intelligence testing that cultural bias invalidated any measure of intelligence Yerkes claimed to have.

Gould highlighted the problematic nature of reducing intelligence to a score and the dangers of ignoring other important contributing factors such as culture and language.

Maguire et al (2000) carried out a quantitative piece of research using correlational analyses to understand the relationship between the structure of the brain and the ability to navigate.

Taxi drivers brains were scanned using an MRI and the images produced were then accurately analysed to identify any relationship there may be. Maguire suggested that the ability to navigate around London may be directly attributed to the grey matter in the hippocampi within the brain.

The implications of this study are very interesting as it may suggest that your brain enables you to perform a job more effectively due to specific neural connections that exist.

## Evidence based judgements

Aristotle claimed that ‘The whole is more than the sum of its parts.’ and many psychologists agree with this statement, believing that human behaviour can only be understood by looking at the interaction between a number of contributing factors as they work together, rather than focusing on the mechanisms of specific factors isolated from human experience.

Use the following information about the cause of offending behaviour to discuss this statement.

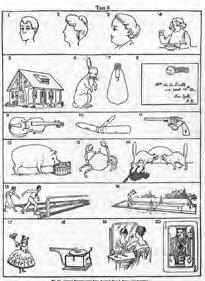
|  |
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| Many people believe that one of the most important contributing factors to offending behaviour is a person’s upbringing. Farrington (2006) found that most chronic offenders have a convicted parent, delinquent siblings and disrupted families. Farrington believed offenders have several risk factors that predisposed individuals to criminality in later life.  On the other hand cognitive psychologists have found evidence to suggest that offenders rationalise their own behaviour differently and that specific cognitive thinking patterns contribute to the criminal personality. Yochelson and Samenow (1976) found that non-physiological explanations were able to offer opportunities to adjust the behaviour of criminals to change their offending behaviour to more prosocial behaviour.  Biological psychologists also try to find ways to reduce offending behaviour by identifying very specific biological mechanisms that cause criminality. Researchers such as Brunner et al (1993) study the hereditary nature of such behaviour and try to isolate genetic abnormalities crime may be attributed to. Brunner et al found that a disturbance in a gene responsible for the production of MAOA was linked with aggressive behaviour although not every member of the family studied showed such antisocial and criminal behaviour. |

1. What reductionist explanations exist for criminality?

1. Is the evidence conclusive? Why?

1. Do the individual explanations account for all criminal behaviour and all instances?

1. Do you agree with Aristotle’s claim? Why?

Ignorance is bliss

In the 1900’s the question of what caused intelligence was fiercely debated and researchers gathered data to suggest differing explanations. To understand what causes intelligence many researchers use intelligence tests to isolate particular variables that may contribute to a person’s IQ.

A reductionist approach has been taken by researchers such as Binet and Simon (1904), who tried to identify children who were not as intelligent and therefore not able to benefit from ordinary schooling due to their innate inferiority in terms of intelligence.

Yerkes wanted to further the understanding of intelligence and show that psychology really was a science by providing quantifiable and reductionist evidence that intelligence was inherited. Yerkes used army recruits to evidence his ideas and these American recruits included white Americans’, ‘negroes’ and European immigrants.

Yerkes found that the average mental age of white, American, adult males was shockingly low and Yerkes decreed that the country was ‘a nation of morons’. This led many eugenicists to suggest that so-called ‘Negroes’ and the feeble-minded has been interbreeding and lowering the overall intelligence; thus supporting Yerkes belief that genetics alone causes intelligence.

Questions:

1. What reductionist explanation did Yerkes suggest about intelligence?
2. What are the implications of using this reductionist explanation?
3. What other factors may contribute to the intelligence level recorded on the intelligence tests?

1. What do more recent theories of intelligence suggest about the complexity of a sufficient explanation? What implications do these have?

Examples of Reductionism and Holism

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| Reductionism | Holism |
| Loftus and Palmer (eyewitness testimony) | Milgram (obedience) |
| Grant (context-dependent memory) | Piliavin (subway Samaritan) |
| Bandura (transmission of aggression) | Levine (cross-cultural altruism) |
| Chaney (Funhaler) | Kohlberg (moral development) |
| Sperry (split brain) | Lee (lying and truth-telling) |
| Freud (little Hans) | Casey (delay of gratification) |
| Baron Cohen (autism in adults) | Blakemore and Cooper (early visual experience) |
| Hancock (language of psychopaths) | Maguire (taxi drivers) |
| Social area | Gould (bias in IQ testing) |
| Biological area | Individual differences area |
| Cognitive area | Developmental area |
| Behaviourist perspective |  |
| Psychodynamic perspective |  |

Colour code the areas, perspectives and their Core Studies.

Applying the Debate to the Areas and Perspectives

|  |  |
| --- | --- |
| Area / Perspective | Is it reductionist or holistic? Why? |
| Social area |  |
| Cognitive area |  |
| Developmental area |  |
| Biological area |  |
| Individual differences area |  |
| Behaviourist perspective |  |
| Psychodynamic perspective |  |



Harvey Weinstein trial hears from expert on unreliable memories

**Elizabeth Loftus says ‘post-event information’ can colour recollections and ‘emotion is not a guarantee’ memory is authentic**

Fri 7 Feb 2020

[](https://www.theguardian.com/film/2020/feb/07/harvey-weinstein-trial-unreliable-memories-elizabeth-loftus#img-1)Lawyers for Harvey Weinstein turned on Friday to an expert known for studying false, repressed and unreliable memories who has worked on behalf of clients including the serial kiler Ted Bundy.

Weinstein’s fate in his rape trial in New York City largely hinges on what his accusers remember about alleged sexual assaults years ago. Testimony from Elizabeth Loftus, a cognitive psychologist, often helps undermine people who say they are victims.

As memories fade, she said, people become more vulnerable to “post-event information” including media reports that can distort what they remember. They also can distort their own memories with inferences and guesses about past events.

False memories “can be experienced with a great deal of detail, a great deal of emotion, even though they’re false”, she said. “The emotion is not a guarantee you’re dealing with an authentic memory.”

Loftus, 75, took the witness stand a day after prosecutors rested their case. Loftus was on the stand for about an hour, her testimony curtailed by a ruling barring her from testifying about memories specific to sexual interactions. She testified that she was not asked to evaluate any of the accusers or their testimony.

Loftus is the co-author of the 1994 book The Myth of Repressed Memory: False Memories and Allegation of Sexual Abuse. In another book, Witness for the Defense, Loftus wrote that in her work for Bundy she seized on “leading and suggestive questions” by investigators and “hesitations and uncertainties on the part of the victim” as signs of muddled memories. On the stand on Friday, she sounded a similar note, telling jurors interactions with law enforcement “can lead people to want to produce details”.

1. Describe 1 principle of the Cognitive area and explain how it relates to this article. [4]
2. Explain why this article shows the reductionist view. [2]

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| **POINT** | **EXAMPLE** | **EXPLAIN** | **ELABORATE/HOWEVER** |
| FOR HOLISM: Some areas of psychology have really benefited from a holistic explanation. | For example, in studying the biological (most reductionist) causes for behaviours like depression have led to successful treatment options like drug therapy. | This therefore is a weakness because, a reductionist explanation means that other important explanations are ignored and underplayed. | This shows that the holistic explanation (higher-level explanations), provide necessary understanding of behaviour that could be missed, with a more reductionist viewpoint. |
| AGAINST HOLISM:  Holistic explanations tend not to lend themselves to scientific rigour and testing. | For example, explanations that operate at the level of the neurotransmitter or gene do not include any analysis of the social context in which a behaviour occurs. | This gives psychology more scientific credibility, placing it on equal terms with the natural sciences as single variables (i.e. causes) for behaviour can be isolated and studied. | This can lead to issues, for example in mental illness it could lead to a reoccurrence of the disorder because the other influencing factors haven’t been considered. |
| FOR REDUCTIONISM: To create operationalised variables it is necessary to break target behaviours down into their parts. | For example, there are aspects of human social behaviour that only emerge when consideration is given to the social context in which they arose. | Higher level holistic explanations present a practical dilemma for researchers. If a behaviour (e.g. like depression) is affected by multiple factors, then how do you study it and how do you establish which is the most important influencing factor. | However, the operationalised variables may result in something measurable but it doesn’t mean it then applies to real life. It may lack validity. |
| FOR REDUCTIONISM:  Reductionism has had many practical applications | For example, Humanistic Psychology (which supports Holism) is criticised for its lack of scientific, empirical evidence. | This is a substantial benefit due to the reduction in use of asylums and institutionalisation and so therefore, drugs are seen as a more humane way to treating mental illness. | This leads to a lack of evidence to support holistic viewpoints and so for a subject striving to be accepted a science, Psychologists often prefer a reductionist view. |
| AGAINST REDUCTIONISM:  Reductionist explanations are over simplified | For example, in behaviourist approach they were able to show how complex learning could be broken down into simple stimulus-response relationships. | This includes the effects of conformity and the deindividuation shown by the guards when in Zimbardo’s mock prison, which only become apparent when you examine them in the context they arose in - mock prison. | However, drug treatments have variable successes. So, it is possible that there would be more success if a holistic approach and treatment had been done. |

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Applying the Debate to the Areas and Perspectives

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| --- | --- |
| Area / Perspective | Is it reductionist or holistic? Why? |
| Social area | Behaviour is due to social factors in the environment. Looking at the behaviour of individuals in a social setting often requires a more holistic explanation. |
| Cognitive area | Reasonably reductionist in its approach as it assumes the human mind is like a machine and specific inputs cause specific responses that are highly predictable. Information is processed and this affects behaviour observed. |
| Developmental area | Individuals broadly develop through stages and must achieve one stage to move on to the next. This area is reductionist as behaviour is reduced to basic components but also holistic because that behaviour can be complex with many interacting factors leading to behaviour. |
| Biological area | Highly reductionist. Physiological mechanisms cause behaviour such as genes, hormonal levels and brain function. |
| Individual differences area | All behaviour is unique and that behaviour is the result of an individual’s personal characteristics and interactions with the environment and others around them. This area is holistic in its nature and often uses a variety of methods of investigation. |
| Behaviourist perspective | All behaviour is a result of a stimulus-response mechanism. This is environmental reductionism; it is highly reductionist and assumes behaviour is highly predictable as all behaviour is the result of experiences that can be measured. |
| Psychodynamic perspective | Relatively reductionist. The unconscious is the cause of all behaviour and all actions can be reduced to the interaction between the id, ego and superego. However the area lacks quantifiable methods to investigate behaviour clearly. |

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| Behaviour is due to social factors in the environment. Looking at the behaviour of individuals in a social setting often requires a more holistic explanation. |
| Highly reductionist. Physiological mechanisms cause behaviour such as genes, hormonal levels and brain function. |
| Individuals broadly develop through stages and must achieve one stage to move on to the next. This area is reductionist as behaviour is reduced to basic components but also holistic because that behaviour can be complex with many interacting factors leading to behaviour. |
| Reasonably reductionist in its approach as it assumes the human mind is like a machine and specific inputs cause specific responses that are highly predictable. Information is processed and this affects behaviour observed. |
| Relatively reductionist. The unconscious is the cause of all behaviour and all actions can be reduced to the interaction between the id, ego and superego. However, the area lacks quantifiable methods to investigate behaviour clearly. |

Low levels of serotonin or high levels of dopamine.

Having obsessive thoughts about germs.

Biological explanations of how hormones, genes, neurochemistry, neurophysiology and evolution affect our behaviour.

Focuses on observable behaviour that can physically be measured as explanations of behaviour.

Psychological explanations of behaviour (e.g. the cognitive approach)

Learning to associate hand washing with reduced anxiety, leading to further hand washing.

Repetitive hand washing would be considered odd or irrational by most of society.

**Physiological level**

**Physical level**

**Psychological level**

Cultural and social explanations of how our social groups affect our behaviour.

**Socio-cultural context level**

Low levels of serotonin or high levels of dopamine.

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**Physiological level**

**Physical level**

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**Socio-cultural context level**