

## ANOMALISTIC PSYCHOLOGY PAST PAPER QUESTIONS (and mark scheme)

### **1. Outline two methodological issues involved in the study of psychokinesis. (4 marks)**

Psychokinesis refers to the disputed ability to move objects by the mind. PK was initially accessed via eye only (macro PK) then later by the ability to influence the fall of dice. Latterly, it has been superseded by micro PK in which technology is used.

Problems associated with any of these methods of studying PK including:

- bias/sleight of hand in dice rolling studies
- experimenter bias in recording macro PK results
- lack of validity of micro PK studies
- problems of replication in all of the above.

Example: Experimenters could be biased in recording results (1 mark) as they could overestimate the distance an object has moved (2 marks).

### **2. Most people have several dreams each night, and a small number of these dreams come true a week or so later.**

***Former American president, Abraham Lincoln, is believed to have dreamt of his assassination, two weeks before it happened. Some people interpret dreams coming true as evidence for the paranormal. However, others assume that probability or coincidence can explain this anomalous experience.***

***Explain why some people see dreams which later come true as evidence for the paranormal, whereas other people do not. Use your knowledge of probability judgements and/or coincidence in your answer. (10 marks)***

- Candidates are required to explain why some people interpret dreams coming true as evidence for the paranormal, whereas others interpret this as a coincidence or arising from statistical probability.
- This requires application of knowledge about coincidence/probability to the example given in the scenario. This example used (dreams coming true) is sometimes known as pre-cognition or clairvoyance.
- Paranormal believers interpret events like dreams coming true as evidence for clairvoyance. They tend to see patterns between random associations, rather than using explanations based on probability or coincidence.
- Candidates could legitimately consider what is known about paranormal believers (i.e. why some people appear to be prone to paranormal explanations) referring to relevant personality factors such as fantasy processes, sensation seeking and extraversion.
- Non-believers in the paranormal recognise that events occur coincidentally and explain them in relation to probability. A probability judgment refers to a judgment of how likely an event is to happen. As most people have several dreams each night and many of these are

vague or poorly remembered, it is quite probable that some of these will relate to daily events (Wiseman 2011).

- Refer to relevant studies of probability mis-judgments for example, Esgate and Groome (2001) found that disasters are often reported on the news and disaster dreams are common, making the two likely to co-occur but this is not necessary.
- Other examples to demonstrate probability and coincidence such as three lottery winners coming from the same small town.
- The law of truly large numbers (Diaconis and Mosteller 1989) argues that unusual events are likely to happen when there are lots of opportunities for that event (i.e. lots of dreams).
- Coincidence refers to the co-occurrence of two events entirely by chance, in this case the dream and the event.

### **3. Discuss what research has shown about psychic healing. (4 marks + 6 marks)**

AO1 credit is awarded for findings and conclusions of research into psychic healing.

Focus on studies which have looked for the existence of healing and/or the factors associated with belief in psychic healing.

Some studies have demonstrated significant benefits from psychic healing, whereas others have shown a lack of benefit:

- Krieger (2000) found higher haemoglobin levels in a group who had received psychic healing than a control group.
- Bener's (2000) meta-analysis identified positive effects in 197 studies of psychic healers.
- Keller et al (1986) double blind trial found significant benefits to tension headaches.

Credit can also be gained from description of possible mechanisms underlying possible effects, e.g. Tang (1998) suggests that psychic healing increases relaxation and activates self-healing.

AO2/AO3 credit is awarded for commentary and evaluation on what research has shown about psychic healing. E.g.

- contradictory findings of studies on healing
- lack of controlled, double blind trials
- use of small volunteer samples
- ethical issues (e.g. vulnerability, exploitation of those seeking healing).

***Identical twins often report that they share a special connection with each other. Many twins claim that this connection extends to the ability to read each other's minds. A study was carried out to test this claim. One member of the twin pair was asked to choose a picture from four images and think about this picture. Their twin partner had to guess which picture they had chosen. The twins were in the same room but separated by a screen.***

**4. What criticisms would a scientist make of this study of paranormal cognition? [4 marks]**

AO2 credit is awarded for application of knowledge about methodological issues related to the study of paranormal cognition (ESP) to the scenario.

Methodological flaws include:

- Sensory leakage: the twins are in the same room separated by a screen, so information could be transmitted by normal means (eg changes in breathing rate)
- Ineffective randomisation: the selection of the target image is done by the sender rather than randomly. Selection could relate to the senders interests, hence the receiver who knows them well could guess which image they would choose
- If the images are passed from the sender to the receiver manually (i.e. on paper), the target images could have a bent corner or mark on the picture.

**5. Explain how this study would need to be changed to make it more scientific. You should refer to the criticisms that you identified in your answer to question 1 2. [6 marks]**

AO2 credit is awarded for application of knowledge about methodological issues and scientific method to redesign the study described.

Students are instructed to approach this by tackling the flaws they have identified and explaining how these could be put right; other relevant improvements can also receive credit.

- Sensory leakage could be controlled by having the sender and receiver kept in separate rooms which are unconnected and electro magnetically shielded. Alternatively sensory deprivation could be used
- The target image should be randomly selected from the set of images and the sender told which image which to transmit. Images should be non-meaningful
- Use of manual selection of images could be replaced with computer selection of images (sensory shielding)
- Participants should be randomly allocated to roles of sender and receiver.

**6. Outline one explanation for superstitious behaviour. [4 marks]**

AO1 credit is awarded for one explanation of superstitious behaviour.

Relevant explanations include:

- Behavioural: accidental pairing of a behaviour with a positive outcome leads to the two being incorrectly linked (eg Skinner 1948)
- The need for control/illusion of control in stressful situations (Malinowski 1948, Watson et al 2007)
- Magical thinking: attempts to influence an outcome in a test/ competition
- Type 1 and Type 2 errors: it is better to assume two unrelated events are linked (Type 1 error) than to miss a genuine link (Type 2).

**7. Discuss research into out of body experiences. [4 marks + 6 marks]**

AO1 credit is awarded for research into OBEs. As research refers to theories/explanations or studies students can approach this question in two different ways. They can present explanations as AO1 and support from research studies as AO2 (the examiners report says this is the best way). Alternatively, they can present research studies as AO1 with methodological evaluation as AO2.

Explanations of OBEs include:

- Neuroscience: Problems in the neural pathway from the pre frontal cortex to the temporo-parietal junction: Stimulation of the temporal lobe of the brain (Blanke)
- Cognitive: OBEs result from disruption of visual self-perception or a shift to a bird's eye view (Blackmore 1987)
- The sleep hypothesis (Palmer, 1978, McCreery 2006): OBEs occur during a hypnogogic state
- Belief in OBEs is associated with personality characteristics such as fantasy proneness.

Research studies:

- Blanke et al (2005) produced OBEs artificially through stimulating the angular gyrus. This supports the claim of a biological underpinning to the OBE
- Easton et al (2009): identified difficulties in locating the self in space in an OBE sample
- Ehrsson: OBEs can be induced through disrupting sense of visual perception. Both of the above studies demonstrate scientific testing of OBEs in controlled conditions. These are far from the usual conditions in which OBEs are reported but have some advantages over case study evidence which provides little information about causes of OBE's. Both involve relatively small samples.

**8. Outline two differences between science and pseudoscience. (4 marks)**

AO1 credit is awarded for an explanation of two differences between science and pseudoscience.

Pseudoscience actually means 'false science'.

Pseudoscientific explanations can be difficult to identify because they are presented as being scientific even though they do not meet the criteria for true science.

Likely material includes:

- Scientific findings are subjected to peer review before publication. Results of pseudoscience are published without peer review often in newspapers
- Science requires that experiments should be replicable but the results of many pseudoscientific studies cannot be replicated
- In science, hypotheses are formulated then data is gathered to test the hypothesis. In pseudoscience, data is collected first then explanations are formulated to fit observations
- In science, key terms are defined precisely but in pseudoscience, specialist terms (eg 'aura') are used vaguely and not clearly operationalised.

- 9. *Magical thinking is a common type of anomalistic experience. Estate agents have great difficulty selling houses where a murder or other tragedy has occurred, even when the asking price is below what the house is worth. Workers in dangerous occupations, such as deep-sea fishermen, often engage in elaborate rituals before going to sea.***

***How would a psychologist explain the examples of magical thinking shown in the extract above? (10 marks)***

This question asks students to apply their knowledge about the causes (explanations) of magical thinking to the examples given in the stem.

Magical thinking refers to a type of reasoning in which causal relationships are found between events and/or objects which are not logically related, and it is intrinsically linked to superstitious behaviour.

The first example of magical thinking in the scenario involves a causal relationship being made between an inanimate object (for example, a house) and the person who has been contact with it.

- One of the most fundamental explanations of magical thinking is the law of contagion proposed originally by James Frazer. This is the idea that an object which has been in contact with a person comes to possess the 'essence' of that individual. This would help to explain why people are unwilling to buy houses where a tragedy has happened. The law of contagion has been demonstrated experimentally (eg Nemeroff and Rozin 1994).

Magical thinking occurs in the second example when a causal relationship is made between a ritual and benefit or protection of some sort (illusion of connection).

- Reduction of anxiety: magical thinking is prevalent in times and places of uncertainty and danger. Malinowski argued that magical thinking helps people reduce their anxiety, to cope with uncertainty and gives a sense of control over an unpredictable world. This would help to explain why people in dangerous occupations (such as deep sea fishing) are likely to resort to magical thinking. It has been demonstrated that magical thinking is more prevalent in war zones (Keinan 1994). It has also been demonstrated experimentally with pre-operative patients awaiting major surgery (Shrimali and Broota 1987).

There are other explanations of magical thinking which could be applied here, for example magical thinking is more prevalent in some cultures than others, especially those where war is common (Blaisdell and Denniston 2002). Other psychological explanations of magical thinking can gain credit.

***10. Discuss one or more explanations of psychic mediumship. (4 marks + 6 marks)***

Psychic mediumship refers to the process in which a medium contacts a deceased person, on behalf of a 'sitter', generally in a trance state.

AO1 credit is awarded for one or more explanations of psychic mediumship.

There are a range of explanations for psychic mediumship. Generally, biological explanations seek underlying physiological correlates of trance states whereas cognitive explanations focus on the cognitive tendencies of believers and the techniques used by mediums to convince them:

- Biological explanations focus on mediumship as an altered state of consciousness and explore the psychophysiology behind trance states. Emphasis is placed on the role played by the limbic system in the trance like state

- Personality/mental health explanations: some researchers argue that mediumship an extreme form of dissociative identity disorder, eg Braude (1995)

- Cognitive explanations focus on the ways that believers interpret the information provided by psychic mediums. They assume that believers find connections between unrelated events and see patterns where none really exist. This is sometimes known as the tendency to make the Type I error (eg Brugger, 2001)

- Roe (1991) focusses on strategies employed by mediums (often called cold reading) to convince sitters about the validity of information provided to them.

AO2 credit is awarded for evaluation of the explanation(s) of psychic mediumship presented as AO1. This is likely to be in the form of supporting or contradictory evidence and commentary on methodological issues associated with the investigation of mediumship.

- There is some evidence to support the claim that mediumship is an altered state of consciousness, eg Winkelman (2000) argues that the trance state is characterised by a shift toward right hemispheric dominance, along with a dominance of the parasympathetic nervous system

- Studies show that biological indicators are not consistent across mediums

- Cognitive explanations point to the prevalence of 'Barnum' statements used by mediums which can apply to most people

- Roe (1991) has provided extensive evidence of the hierarchy of strategies used by mediums including cold reading (using non-verbal information) and warm reading (direct 'fishing' for information)

- Studies comparing DID and mediumship have found superficial similarities only: generally mediums display good mental health, in contrast to those suffering from DID (Riesel, 2003).

There are some impressive scientific trials of mediumship, for example Beischel and Schwartz (2007) which demonstrated mediumship using a triple blind procedure. Students can use studies of this nature to argue for clear evidence for mediumship. However, anecdotal accounts of famous mediums are unlikely to gain marks above rudimentary.

### ***11. Describe one way in which researchers have studied psychokinesis. (4 marks)***

PK refers to the supposed ability to move an object by mental intention alone (a definition of PK is not creditworthy nor are descriptions of Ganzfeld).

Most likely answers include:

- Dice-rolling: attempts are made to affect the roll of a dice by thought alone (eg Rhine with his dice-rolling machine). Answers could include issues of hit-rates and significance, and the risks of artefact (eg natural biases in the manufacture of dice that may emerge statistically after many rolls). Candidates could focus on a particular study, for example the Radin and Ferrari (1991) meta-analysis of 2.5 million dice throws since the 1930's.

- Random number generator (RNG) or a random event generator (REG): these use radioactive decay, electronic noise or computer algorithms to generate random events. Participants are asked to bias the output.

Some candidates may take a broader view and outline either micro-PK (very small effects which are detected statistically) or macro-PK (large scale and detectable with the naked eye). This is acceptable.

DMILS (Direct Mental Interaction with Living Systems) is a form of PK where one person tries to influence a biological system from a distance (eg the biological system of another person). Research into DMILS has included psychic healing, so an informed candidate could make material on psychic healing relevant here.

**12. Harry had a dream last night about his aunt Susan. She emigrated to Canada years ago and he has not heard from her for three years. This morning, he received a letter from his aunt saying that she was going to visit. He thinks that he might have psychic powers.**

**How might psychologists explain Harry's experience? Use your knowledge of the psychology of coincidence in your answer. (4 marks)**

The anomalistic experience in the scenario is a dream which coincidentally comes true.

Psychological explanations are based around the idea that humans have a deep-seated need to seek causality. This leads us to see causes for random events which are the product of chance.

Basically, people have a poor understanding of probability.

Some of the more likely answers include:

- Intellectual ability: people who believe in psychic abilities often have reduced intellectual ability and do not appreciate the role of coincidence.
- Probability misjudgement: people who believe in the paranormal are poorer at estimating chance and coincidence than non-believers. It seems likely from his ready attribution of psychic ability that Harry was already a believer therefore less likely to understand the role of coincidence in his experience.
- The law of truly large numbers: with a large enough sample, the most improbable things happen. Because we all dream at night, this is a sufficiently large sample to ensure that at some point someone's dream will appear to come true. Since people believe that extreme events are unlikely to happen causality is misattributed to something paranormal.
- Subjective validation: this is a cognitive bias in which people tend to remember the affirming 'hits' and overlook the far more frequent 'misses'. It could explain Harry's behaviour, as it suggests that he will not remember all the dreams which did not come true but is now very focused on one coincidental event to confirm something that is already part of his belief system

**13. Discuss how Harry's anomalous experience can be explained by personality factors. (6 marks)**

This is a complex area, but several personality characteristics have been related to aspects of paranormal belief eg:

- Locus of control may be related to certain kinds of paranormal belief, eg an external locus of control is associated with more superstitious belief and behaviour. Some aspects of paranormal belief do not seem to be related to locus of control at all however, so examiners should watch for over-arching claims from candidates that internal/external locus of control is related to paranormal belief and mark accordingly for accuracy. To gain credit candidates need to refer to aspects of psychic powers that are linked to locus of control
- Extroversion – introversion: extroverts tend to perform better than introverts on ESP tasks.
- Neuroticism – significant correlations between neuroticism and superstition have been found (eg Wiseman 2004) but other studies (eg MacDonald 2000) have contradicted this.
- Sensation seeking personality traits: paranormal belief offers a source of excitement. Some research suggests that people with greater paranormal belief are more likely to score high on measures of sensation-seeking.
- Creativity and fantasy proneness: Research has indicated a positive correlation with paranormal belief.

Other research suggests that highly artistic people tend to have a greater belief in the paranormal and score higher on tests of ESP.

It is legitimate for candidates to argue that methodological and theoretical problems with this kind of research limit the extent to which personality factors help us understand why Harry believes he has psychic powers.

#### ***14. Outline and evaluate research into out-of-body experience and/or near-death experience. (4 marks + 6 marks)***

Candidates could legitimately focus on theories/explanations of NDE/OBE's as AO1 and research studies as AO2/AO3 OR research studies as AO1 and evaluation of these as AO2/AO3 OR a combination of these approaches

Candidates are required to outline research into OBE's and/or NDE's. They can elect to consider either or both

##### Psychological approaches

- Ring (1980) carried out semi-structured interviews of 102 people who had been near death and identified a NDE 'core experience': feelings of deep peace and well-being, sense of separation from the body, entering darkness/passing through a tunnel, seeing 'the light', entering the light/beautiful garden.
- There are many methodological problems with such research and it is likely that this will form the core of any evaluation, although contrasting neurological explanations could also be used effectively.

##### Neurological approaches

- Candidates may present a range of neurological explanations of OBE/NDE phenomena. For example, the release of endorphins when near death are claimed to bring about the reported feelings of euphoria and peace. Other neurological explanations include cortical anoxia to explain 'light at the end of the tunnel'. Abnormal activity within the temporal lobes could produce symptoms of flashbacks.

- Blanke et al (2004) found that OBE's can be produced by direct stimulation of a part of the brain called the angular gyrus. Weak stimulation of right angular gyrus made a patient feel she was 'sinking into the bed' or 'falling from a height', whilst stronger stimulation caused an OBE where reports were of seeing oneself lying in the bed or floating a couple of metres above.
- Ehrsson (2007) argues that OBE's are the result of a disconnection between brain areas that process visual and sensorimotor information. Recent studies using video goggles have shown that OBEs can be induced in the lab.
- Such research focuses on particular aspects of OBE and fails to explain the richness of experiences, nor can they easily explain anomalous occurrences such as people reporting things during OBE that they could not otherwise have known (eg what was on the top of a tall cupboard in the room).

**15. Outline one or more methodological issues related to the use of the Ganzfeld procedure in the study of paranormal cognition. (4 marks)**

- Possible cheating by participants.
- Lack of control in early studies, eg order of presentation, sensory leakage, insecure storage of images
- Possible researcher bias, eg sceptical researchers v psi believers can influence the amount of elaboration by the receiver
- Influence of the receivers' beliefs (the sheep-goat effect)

**16. Joe started following his local football team when he was 10 years old. The first four times he went to a match he wore a special scarf knitted by his mum and each time his team won. For the next match that he went to, Joe could not wear the scarf as it was in the wash. The team lost. Joe blamed the defeat on not wearing the scarf. Joe is now 25 and still follows the same team. Even though they have lost lots of matches over the years he still makes sure he always wears the scarf. He believes it helps his team to win.**

**Use your knowledge of the role of coincidence and/or probability judgements in anomalous experience to explain Joe's behaviour and his belief in the power of the scarf. (10 marks)**

Psychological explanations for Joe's behaviour and beliefs are based around the idea that humans have a deep-seated need to seek causality for everything that happens. This makes us look for causes for random events which are actually the product of chance. In general, people have a poor understanding of chance and probability.

Potential explanations Joe's beliefs and behaviour include:

- Probability misjudgement: people who believe in the paranormal and are superstitious show less understanding of chance and coincidence than non-believers
- Subjective validation: this is a cognitive bias in which people tend to remember 'hits' and overlook the 'misses'. Joe remembers the times the team wins when he wears his scarf and overlooks the times they don't, or attributes the losses to other factors
- Operant conditioning: Joe was rewarded initially for wearing the scarf. Subsequently, even if the team loses some matches, when they win it provides additional reinforcement. This is a partial (intermittent) schedule that has been shown to sustain behaviour
- Although the focus of the question is on coincidence/probability, Joe's behaviour can also be described as 'superstitious'. References to superstitious behaviour/magical thinking are therefore creditworthy as long as the focus of the answer is on coincidence/probability
- Individual differences related to superstitious behaviour; Joe may have characteristics related to belief in the paranormal ie he is a sheep, not a goat, and so ignores the role of probability and coincidence

**17. Sam and Zara share a flat which Sam thinks may be haunted. Sam occasionally feels a 'presence' in the kitchen, and doors seem to open mysteriously during the night. Sam loves risky sports, and friends describe him as outgoing and willing to**

***try anything new. Zara, on the other hand, does not believe the flat is haunted. She prefers more sedate activities, and friends describe her as cautious and reserved. Use your knowledge of personality factors underlying anomalous experience to explain the differences between Sam and Zara (10 marks)***

***18. 'Research has revealed a number of scientific explanations for near death experiences'. Outline one such explanation for near death experiences and evaluate this explanation using research evidence (4+6 marks)***

***19. Discuss psychological research studies that have investigated psychic healing.***

Psychic healing refers to the treatment and cure of illness and disease through paranormal influences and in the absence of conventional medical therapies.

Psychological research has included controlled investigations with eg untreated and/or placebo control groups (eg Attevelt, 1988, psychic healing and asthma; Benson et al, 2006, psychic healing through prayer of those suffering from post-operative complications following cardiovascular surgery).

Further studies include Wirth's work (Wirth, 1990) on therapeutic touch (TT), which claimed to show that TT speeded up wound healing. Also from Wirth's group, Cha et al., (2001) studied the power of prayer in helping women being treated for infertility become pregnant. They found that twice as many women prayed for by strangers became pregnant, compared with those women not prayed for.

commentary on psychological research studies of psychic healing include:

- Controlled studies usually find no support for psychic healing, but provide evidence for significant placebo effects
- Single case studies provide support for psychic healing, but are usually methodologically unsound, eg lack of control for the natural healing process or for placebo effects
- Single case studies rarely satisfy Randi's (1987) criteria for valid studies of psychic healing.
- Wirth's work on TT has failed to be replicated, even by Wirth. Cha has subsequently been accused of plagiarism, and Wirth himself convicted of criminal fraud, raising serious doubts about the validity of their findings
- Lyvers et al (2006), in a study of psychic healing at a distance, found no objective evidence for psychic healing, but also that 'believers' thought they had improved