

ANOMALISTIC PSYCHOLOGY NOTES

1. SCIENCE AND PSEUDOSCIENCE:

Anomalistic psychology examines paranormal events, experiences and related beliefs and attempts to explain them through psychological and physical factors.

Up to two thirds of UK residents believe in various paranormal phenomena (54% of those said it was due to personal experiences)

Pseudoscience is used to describe a “false” science where researchers claim to be scientific and adopt some of the procedures of science but fail to fulfil the criteria effectively.

SIMILARITIES BETWEEN SCIENCE AND PSEUDOSCIENCE:

- Both gather data, research a hypothesis and publish the results
- They pick and choose their areas of study
- Similar experimental methodologies are used

DIFFERENCES BETWEEN SCIENCE AND PSEUDOSCIENCE:

- The main differences can be seen in the methodology and rigour.
- Lacks controlled replicable research – many studies have failed to be replicated, especially by non-believers. This challenges the objective nature of the research.
- The way in which results are interpreted and communicated is different – science ensures peer review of findings whereas pseudoscience there is a direct communication to the public (often in newspapers) which avoids critical assessment of the research that scientists have to endure.
- In science, key terms are defined precisely but in pseudoscience, specialist terms (eg ‘aura’) are used vaguely and not clearly operationalised
- ‘Burden of proof’ is misplaced – believers say the ‘burden of proof’ is not theirs and is up to sceptics to disprove the phenomena (this is hard as, for example, it’s difficult to prove a photo is false). However, science places the ‘burden of proof’ with the believer not the sceptic.
- Pseudoscience usually makes hypotheses to support the gathered data while science makes hypothesis first and then gathers data.
- Anachronistic thinking – pseudoscience often uses outdated theories to provide support whereas science continually updates its research theories.
- Quantity not quality of evidence is usually used for pseudoscience but not for normal science.
- Pseudoscience create theories which are hard to falsify whereas this is important to normal science. Many pseudoscience hypotheses are unfalsifiable as, for example, they may claim that the phenomena disappears under experimental conditions or the researches lack of belief makes the phenomena go away and so the hypothesis can never be proven false.
- Radner et. al. also believe that pseudoscience shows a refuse to revise in the light of criticism

RESEARCH SUPPORT:

- ✓ The photograph of the cottingley fairies (right) was once regarded as proof of fairies as various attempts to disprove them as fake failed. It was only in 1983 that the women admitted they were a hoax.
- ✓ Paranormal research should not be singled out as the only pseudoscience – Freud’s theory could also be classed as pseudoscientific.
- ✓✗ Mousseau compared articles in peer-reviewed parapsychology journals with mainstream science journals and found parapsychology journals came out better as they did report negative findings whereas the mainstream science ones did not and this is a distinct case of selective reporting. However she did find that more mainstream than parapsychological journals used the experimental method suggesting it is ‘more scientific’.
- ✓ The ‘American Association for the Advancement of Science’ allowed the ‘Parapsychological Association’ to become a member in 1969, this appears to confirm the scientific status of parapsychology.
- ✗ If parapsychologists did use a scientific approach then fraud would not occur... but it does and so fraud has weakened the scientific reputation for parapsychology....

**FRAUD:**

Fraud can occur either by way of fabrication or erroneous interpretation of data or by deliberate methodological design flaws.

HOW CAN PEOPLE COMMIT FRAUD?:

1. **Attention and Distraction** – the focal point of observers can be manipulated so they don’t see things that might give the game away.
2. **Switching methods** – the faker uses a whole range of methods for, as an example using Psychokinesis to mental bend, so that the weak points of one performance are ruled out because they are not present during the other performances.
3. **Controlling conditions** – psychics often say their ability only works under certain conditions and this can be exploited so they only work under conditions that are favourable to fraud (e.g. a dark room)
4. **Using vulnerable people** - people turn to professionals in times of need and their vulnerability gives the psychic power over them.
5. **They have excuses in case something goes wrong** – they may say the conditions were not psi-conductive

RESEARCH EVIDENCE INTO FRAUD (evidence to disprove the abilities of ESP):

- John Edward was a “mental medium” – they avoided the risk of exposure that comes with the physical approach and helps them hide fraudulent activity.
- Soal – he investigated telepathy with 160 participants in 128,000 card-guessing tasks where participants had to guess which card (1,2,3 or 4) the person in the other room had “randomly” chosen. 2 participants had astonishing results that seemed to prove telepathy and even highly respected people were fooled. However... the randomness of the cards being chosen were found to not be as random as Soal was claiming and one participant even said she saw him changing the numbers to suit what the person had said.
- Levy Jr investigated psychokinesis in rats. He implanted electrodes into their brain to create a sensation of pleasure. Computer shocks were “randomly” delivered 50% of the time in the hope to show that rats would anticipate the shocks and manipulate the computer using psychokinesis to increase the number of shocks. And indeed Levy found this to happen. However...his research assistants showed the results were due to Levy’s tampering with the computer and when a different computer was installed without Levy’s knowledge, it confirmed the fraud. Levy later admitted his fraud.
- Sylvia Browne claimed to have extrasensory perceptions but a number of her visions of the future did not come true. In 1992 she was convicted of fraud.
- Wiseman tested the inaccuracy of eyewitness testimonies – 25 people attended a séance, were placed in a dark room and told to join hands to make objects on the table move. None of the objects moved yet almost a third of participants believed they’d witnessed movement of at least one object.

2. CONTROVERSY AND METHODOLOGICAL ISSUES SURROUNDING GANZFELD STUDIES OF ESP AND PSYCHOKINESIS

(A) GANZFELD STUDIES OF ESP

Extrasensory Perception (ESP) = the ability to perceive outside the known sensory system such as the perception of objects or events without any of the known senses being involved. It includes telepathy (mindreading), clairvoyance (contact with non-living) and precognition (predicting future events).

Ganzfeld studies are experiments designed to ensure that signals received by participants were coming from their own mind and not other stimuli.

Procedure:

- 1) Before entering the ganzfeld participants (the receiver) listened to a relaxation tape and was asked to free associate.
- 2) They then entered the ganzfeld and had their eyes covered with half ping-pong balls and wore headphones playing white or pink noise. A red light is shone onto the ping-pong balls.
- 3) The sender was then placed in a different room and had a selection of packets which contained sets of pictures.
- 4) The sender randomly chosen one picture and concentrated to try and use mental intention to telepathically communicate the information to the receiver.
- 5) The receiver is then given a set of images and asked to what degree they think each stimulus was the target image.

- 6) If the highest rating is awarded to the target then it's a hit.

The expected hit rate by chance is 25%

RESEARCH:

- ✓ Sargent – used a traditional ganzfeld experiment and found that 6 of the 12 sessions conducted were direct hits which is higher than the 25% for chance alone. (however there are issues... cheating was not minimised as between 2 sessions two sets of envelopes of images had disappeared).
- ✓ Bem conducted a meta-analysis and found that the hit rates were around 30%, again above the 25% chance level.
- ✓ Radin – meta-analysis found that the hit rates were so strong that the odds of chance being a causal factor was a trillion to one
- ✓ Harris – meta-analysis found a hit rate of 28%
- ✓✗ Honorton studied 28 Ganzfeld studies and found a success rate of 38% (Nevertheless Hyman reanalysed his data and found no evidence for paranormal experience)
- ✓✗ Schmeidler – believers tended to have a higher hit rate than sceptics

METHODOLOGICAL ISSUES WITH GANZFELD STUDIES:

- ★ Sensory leakage – information is indicated to the receiver (such as changes in breathing rate). This could be helped by using separate rooms that are unconnected and electro-magnetically shielded or sensory deprivation could be used.
- ★ Randomisation anomalies- this is because selection of the target image is done by the sender and not randomly so the selection could relate to the sender's interests and so the receiver, who knows them well, could guess which image they would choose. People also have a tendency to avoid picking end choices so they'd naturally choose the middle pictures more. To help this the target image should be non-meaningful, randomly selected by a computer and the sender told which image to transmit.
- ★ Impossible to replicate
- ★ Lack of control – problems could arise as, for example, if the images are passed manually on paper from the sender to the receiver, the target images could have a bent corner.
- ★ File drawer effect - support usually comes from meta-analyses and with these figures can be tweaked by ruling in or out certain experiments.
- ★ Experimenter effect (researcher bias) – expectations of the experimenter could influence results. Wooffitt found evidence of this by concluding that sceptical researchers were less encouraging when asking receivers to elaborate their images leading to more negative results.
- ★ Sheep-goat effect – whether the participant is a believer (sheep) or non-believer (goat) can affect the results. Schmeidler found that believers had a higher hit rate. Blackmore found when participants were presented with random dot pattern images and asked to identify the imaged within them, believers were more able than non-believers to identify the non-existent images.
- ★ Security – in early studies, the pictures were not always kept securely, thus increasing the opportunities for fraud

- Later on 'autoganzfeld' studies were developed to try and overcome the methodological flaws of the earlier studies. Autoganzfeld use computers to select the material so the sender, receiver and researcher were all separated.

(B) PSYCHOKINESIS (PK)

Psychokinesis = the movement or manipulation of objects or events without any physical contact.

- Psychokinesis and ESP are related since psychokinesis relies on the process of ESP.
- Psychokinesis was initially investigated via eye only (macro PK) but later technology was used to test micro PK (such as influencing the fall of a dice)

Types:

MACRO PSYCHOKINESIS – focuses on clearly observable effects

MICRO PSYCHOKINESIS – focuses on effects that are not always noticeable

DMILS (Direct Mental Interaction with Living Systems) is a form of PK where one person tries to influence a biological system from a distance. Research into DMILS has included psychic healing

HOW TO STUDY PSYCHOKINESIS:

- Dice-rolling: attempts are made to affect the roll of a dice by thought alone – problems with this method include the risks of artefact (natural biases in the manufacture of the dice that may emerge statistically after many rolls)
- Random number generator or a random event generator use radioactive decay, electronic noise or computer algorithms to generate random events and participants are then asked to bias the output. One example is Schmidt's electric coin flipper. It makes fraud almost impossible and eliminates participant bias and errors in the recordings of events.
- Psychic healing could be used to study DMILS

RESEARCH:

- ✗ Uri Geller – he demonstrated the ability to bend spoon. His fraudulent doings were eventually exposed and it was even found that he had a confederate in the audience.
- ✗ Nina Kulagina – she said she could make objects move. She's made excuses to do it at home because that's where she said it worked best, but clearly this allowed her, as was later found, to be fraudulent.
- ✓ Bosch (2006) updated previous meta-analyses and added more studies to find a small but significant effect for Psychokinesis.
- ✓ Jahn meta-review found small effects for individual trials but large effects across all trials combined (this, however, does show potential flaws with meta-reviews)
- Schmidt's electric coin flipper study found a significant statistical deviation from chance. (However not all participants achieved the task)

METHODOLOGICAL ISSUES WITH PSYCHOKINESIS:

- ♥ Effect of expectations – Wisemen showed that when participants were expecting an object to move they were more likely to actually report it moving
- ♥ Lack of control – well conducted studies (such as Hansel's) produce no support for psychokinesis. Hansel found that in his studies with low control, positive results were found but in his high controlled studies, negative findings were shown. Ideal controls include having 2 researchers, true randomisation of targets and using independent recordings of targets.
- ♥ Ecological validity – Random Number/Event Generators are often used to test psychokinesis but this could lack ecological validity as REG concerns micro psychokinesis (things you can't see) whereas the original claims for psychokinesis were about observable physical changes so it could be that psychokinesis does not function at the unobservable level.
- ♥ File-drawer effect
- ♥ Randomisation anomalies
- ♥ Impossible to replicate
- ♥ Sheep-goat effect
- ♥ Experimenter bias - expectations of the experimenter could influence results. They may also inaccurately interpret results (e.g. overestimating the distance an object has moved)
- ♥ Evidence using RNG's can only ever be correlational and can't establish a causal relationship.

3. UNDERLYING FACTORS (especially relating to coincidence and probability misjudgements)

(1) COGNITIVE FACTORS

The misattribution hypothesis (Alcock and Blackmore)

- The belief in the paranormal comes when people misattribute and wrongly think everyday occurrences are caused by supernatural powers
- Humans have a deep-seated need to **seek causality** (for example 'Pareidolia' is the term used to describe the human tendency to see recognisable patterns and images where there are none). This leads us to see causes for random events which are the product of chance. This tendency could have an adaptive advantage – for example it's better to think you see a tiger than miss it.

- Basically, people have a poor understanding of probability.

What could cause the misattribution hypothesis:

1. Poor cognitive abilities

Some feel that believers have reduced intellectual ability and do not appreciate the role of coincidence.

EVALUATION:

- ✓ Studies have shown that those with a lower level of achievement on SAT tests tended to have a heightened belief.
- ✓ Believers also tend to score lower on 'syllogistic reasoning tasks' (they're given a pair of statements and a conclusion and have to choose the right statement).
- ✓ Musch – paranormal belief was associated with lower cognitive ability
- ✓ Winklemen found that in a remote Mexican village, formal education tends to reduce the effects of ESP.
- ✗ Thalbourne – believes that results are **inconsistent** as many findings cannot be replicated. However, Emmon's did find that research was actually consistent.
- ✗ Smith – IQ correlated negatively with paranormal belief
- ✗ Most of the participants (as in more anomalistic studies) are university students so samples are not representative of the wider population. This fact further biases the studies as university students would have a higher education and better cognitive ability and so they may naturally not be varied enough in intelligence to provide true results of which comparisons can be made.
- ✗ Some researchers have found the opposite. Surveys also suggest that among the scientific community belief is high (among *New Scientist* readers, 67% said they regarded ESP as an established fact or likely possible.)

2. Probability Misjudgement

A probability judgment refers to a judgment of how likely an event is to happen.

Misjudging the probability when two events occur together. E.g. most people have several dreams each night (average 250 dream themes per night) and many of these are poorly remembered. It is likely that some of them will relate to daily events – some might think there is a psychic basis rather than it just being by chance.

Believers are poorer at estimating chance and coincidence than non-believers

EVALUATION:

- ✓ Blackmore – found support as those who made bad probability judgements were in fact more likely to suggest a psychic basis.

- ✓ Esgate found that disasters are often reported on the news and disaster dreams are common, making the two likely to co-occur by chance, yet people think one causes the other.
- ✗ However studies can be flawed. Most studies use a general scale to determine a person's belief, however, Blackmore simply used one question to determine belief.
- ✗ Even if probability misjudgement does have a link we cannot conclude a causal relationship as there may be an intervening factor, such as cognitive ability.
- ✗ Musch does believe that probability misjudgement could be due to poor cognitive ability instead. He found that when controlling for differences in probability misjudgement there was a reduction in the performance difference between the believers and non-believers on probability judgements.

3. Illusion of control

People feel they control things that, in fact, they have no control over.

Believers are more likely to express an illusion of control when engaged on a psi task.

EVALUATION:

- ✓ Whitson found that reduced control led participants to detect patterns where there were none and form correlations between unrelated events.

4. Subjective validation

This is a cognitive bias in which people tend to remember the affirming 'hits' and overlook the far more frequent 'misses'.

5. The law of truly large numbers

With a large enough sample, the most improbable things happen and some people may then believe that extreme events are unlikely to happen and so causality is misattributed to something paranormal.

2. PERSONALITY FACTORS

Ramakrishna found that people who were 'hitters' on ESP tasks tended to be sociable, cheerful, artistic, relaxed and impulsive whereas 'missers' were tense, frustrated, timid and suspicious.

1. Locus of control

It may be related to certain kinds of paranormal belief.

An external locus of control is associated with more superstitious belief and behaviour as they tend to explain their life circumstances as being controlled by factors outside themselves.

However, some aspects of paranormal belief do not seem to be related to locus of control at all so we cannot make over-arching claims about how locus of control is conclusively related to paranormal belief.

EVALUATION:

- ✓ Allen found a positive correlation between external locus of control and paranormal beliefs
- ✗ Pegden found, however, that external locus of control is not related to superstitious beliefs.

2. Extraversion:

Extraversion is characterised by positive emotions and the tendency to seek extra stimulation to increase brain arousal levels. Extroverts respond better to new stimuli and this means they are more open to paranormal experiences and thus their beliefs are stronger.

EVALUATION:

- ✓ Palmer found that extroverts tend to perform better than introverts on ESP tasks.
- ✓ Honorton conducted a meta-analysis and found that extroverts scored higher than introverts in 77% of the experiments on ESP (however could this may not apply to the real world since ESP experiments are very artificial and low in mundane realism and participants who sign up to studies would have to be relaxed in social situations and thus they should be extroverts and should do better on ESP tasks – this has been shown as spontaneous ESP tasks (those performed outside the lab) do not find such prominent effects of personality).
- ✓ Peltzer found extraversion to be linked with paranormal beliefs
- ✗ Williams found no correlation between paranormal beliefs and extraversion.

3. Neuroticism:

Neuroticism is the tendency to experience negative emotional states rather than positive ones. High neuroticism is associated with a person being emotionally unstable and coping poorly with stress

Paranormal beliefs may create a distance from reality as a defence mechanism to reduce the negative emotional states.

EVALUATION:

- ✓✗ Significant correlations between neuroticism and superstition have been found by Wiseman. However, other studies (e.g. MacDonald) have contradicted this.
- ✓✗ Palmer found that people observed to be neurotic tended to score at chance level or below on ESP tasks and stable participants tended to score higher than chance for their hit rates. However, if ESP tasks are given to a group of people at once, the effect Palmer noted does not seem to happen; this could be due to the deindividuation of the neurotic individual which lowers levels of anxiety and therefore has an effect on ESP performance.
- ✓ Williams found a significant correlation (+32) between paranormal beliefs and neuroticism yet not correlation was found between paranormal beliefs and extraversion.

4. Fantasy proneness

Some individuals may find it difficult to separate their experiences of reality from fantasy. This is the tendency to feel that fantasy is happening because the person becomes so deeply absorbed into it.

EVALUATION:

- ✓ Marks – fantasy-prone people were more likely to report having unusual experiences.
- ✓ Wiseman found that believers were more fantasy prone and were more likely to report that a table had levitated even though they were informed that the person they were interacting with was only pretending.
- ✗ Results in this area have been difficult to replicate.

5. Sensation seeking

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.

6. Whether you are a believer or not

This is also called the sheep-goat effect

Schmeidler found that believers had a higher hit rate in ESP tasks.

Blackmore found when participants were presented with random dot pattern images and asked to identify the imaged within them, believers were more able than non-believers to identify the non-existent images.

- ⚠ However, it must always be remembered that the methodological and theoretical problems with this kind of research limit the extent to which personality factors help us understand the reasons as to why some people have anomalous experiences and others do not.

2. BIOLOGICAL FACTORS

1. Abnormalities in the temporal lobe functioning

Abnormalities in the temporal lobe has been found in people reporting good psi abilities.

Persinger believes that all anomalistic experience can be explained through physiological brain functioning as a result of temporal lobe abnormalities. However, there is little experimental data apart from his own.

2. Right hemisphere

Some researchers have suggested that ESP tasks and psi ability are processed in the right hemisphere of the brain.

These findings have been found by subjecting people to forced-choice ESP tasks to activate one hemisphere (whilst they were given a distracting task to engage the other hemisphere).

However, other researchers believe it is the left hemisphere instead.

Gordon introduced a new methodology called Cognitive Laterality Battery (CLB) to try and prove a single hemisphere activation. Using CLB no difference was found in correlations between ESP scores and cerebral hemisphere dominance.

3. Dopamine

There is also biological support for the tendency to seek causality in coincidences. It has been found that people with high levels of dopamine are more likely to find significance in coincidence and pick out meaning where there is none. Participants given L-dopa (which increases dopamine) made the non-believers act more like the believers.

4. SUPERSTITIONS AND MAGICAL THINKING

Superstition and magical thinking are both examples of irrational thinking where a causal relationship has been assumed between events that are merely correlated.

SUPERSTITION:

Superstition refers to the **subjective belief that a behaviour will have an effect on another area**, either positively or negatively. They are not based on reason or knowledge.

Superstition is often applied to practices surrounding luck or spirituality.

Explanations of superstitious behaviour include:

➤ **Behavioural**

- The accidental pairing of a behaviour with a positive outcome can lead to the two being incorrectly linked
- Superstitions can develop through operant conditioning where an accidental stimulus-response link is learned. Once the superstition has developed it is maintained through negative reinforcement (every time the superstitious behaviour is repeated, anxiety is reduced and the belief is reinforced).
- Superstitious behaviour may not always be rewarded every time it occurs, but there is enough of a link in the person's mind that they continue the behaviour thinking that it is affecting the outcome.
- Here the 'law of really large numbers' could apply as the frequency with which we may use rituals in everyday life may make the ritual seem true.
- Skinner showed how pigeons demonstrated suspicious 'ritualistic' behaviours in the expectation that food would come (even though their behaviour had no effect on when the food actually came). They were given food at regular intervals and certain random behaviours immediately preceded the food and thus *seemed* to cause the appearance of food. These random behaviours were reinforced by the arrival of food.

EVALUATION:

- ✗ Staddon – repeated Skinner’s study and saw similar rituals but realised that the behaviours were unrelated to the food as when the food was presented all the animals were behaving in the same way. Additionally the behaviours occurred at other times and were produced as frequently before any reinforcement had taken place
 - ✓ Matute – in a study on humans he exposed participants to uncontrollable noises from a computer and the people pressed certain buttons to try and stop the noise – which did eventually stop but not because of the participants’ activity. When the noise started again the participants tried pressing the same key they had pressed before. They had assumed cause where there was none.
 - ✓ Conklin found that 19% of people said their superstition depended on a small number of confirming experiences.
- **The need for control** (illusion of control)
- The need for control in stressful situations leads superstitions to develop.
 - Whitson asked some participants to recall situations in their lives where they felt in control and other participant’s situations where they felt a lack of control. They were then all given stories involving a superstitious behaviour and asked to judge how much this affected the eventual outcome of the meeting. Those made to feel less in control were more likely to believe that the superstition affected the eventual outcome.

EVALUATION:

- ✓ Whitson believes that the need for control has benefits as it means we actively confront unpredictable circumstances rather than withdraw from them.
- ✓ Damisch – he showed the value of self-belief. He found that the activation of good-luck related superstitions led to enhanced performance on a variety of tasks and this suggests that superstitions increase a person’s self-efficacy and control.

➤ **Type 1 and Type 2 errors**

- Here superstitions arise from making unjustified causal links as this could be adaptive; it is better to assume two unrelated events are linked (Type 1 error) than to miss a genuine link (Type 2)

➤ **Magical thinking**

- Magical thinking is attempts to influence an outcome in a test/competition

EVALUATION OF SUPERSTITIONS AS A WHOLE:

- ✗ The explanations only account for how individuals acquire *personal* superstitions. There are, however, also culturally transmitted superstitions (e.g. lucky number in UK is 7 but in Thailand it is 9). Therefore some people may adopt superstitions through indirect learning perhaps as a means of gaining a sense of control.

MAGICAL THINKING:

Magical thinking = A type of reasoning in which causal relationships are found between events and/or objects which are not logically related. It is intrinsically linked to superstitious behaviour. Meaning is attached to objects/actions so that they gain special (magical) properties.

Magical thinking can occur when a causal relationship is made between an inanimate object and the person who has been contact with it and can be explained by:

- ★ **The law of contagion** (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.

Rozin relates the law of contagion to our evolved fear of contagion as it would be adaptive to avoid touching something that had been in contact with a diseased person. This would lead to the belief that psychological and physical properties can pass between people via the things they touch.

EVALUATION:

- ✓ One possible explanation for the low levels of people willing to donate organs could be due to magical thinking. Decisions may be based on the law of contagion as we link donation with the image of our dead body and this creates negative emotions. We can therefore increase the donation rate if we focus on the association between donation and giving someone an extended life so that the act of donation gains positive magical qualities.

Magical thinking can also occur when a causal relationship is made between a ritual and benefit or protection of some sort (illusion of connection) and can be explained by:

- ★ **Reduction of anxiety** (Maliowski)

Magical thinking is prevalent in times and places of uncertainty and danger and can help people reduce their anxiety by helping them to cope with uncertainty and to feel 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.

Magical thinking can help due to the illusion of control – where people feel a lack of control – and thus magical thinking may help to protect against learned helplessness (learning to give up in as the outcome would be more favourable than if you did not give up)

EVALUATION:

- ✓ Kainan has demonstrated that magical thinking is more prevalent in war zones and cultures where war is common (war a dangerous situation which produces anxiety).
- ✓ During the Gulf War, residents living in areas likely to be hit by missiles reported more magical thinking.
- ✓ It has also been demonstrated experimentally with pre-operative patients awaiting major surgery.

Other explanations:

★ **Psychodynamic explanation**

Freud identified magical thinking as a form of childlike thought where inner feelings are projected onto the outside world

In adults, such behaviour is a defence mechanism where they regress as a means of coping with anxiety

★ **Dual Processing Theory:**

This theory believes that there are two types of thinking; one is conscious and involves logic and the other is mostly unconscious and is based on intuition and thus lacks logic.

Magical thinking is based on a child's mode of thought and that such thinking is intuitive (lacking internal logic)

Adult thinking is logical but adults still continue to use intuitive thinking in some situations and thus there are two processes.

★ **Animism**

This theory also considers the intuitive nature of children's thinking.

In the pre-operational stage, a characteristic mode of thinking is animism (children ascribe feelings to physical objects)

Magical thinking can link to animism (e.g. feng shui assumes that positive feelings come from furniture arrangements).

★ **Nominal realism:**

This is also a characteristic of the pre-operational stage.

Nominal realism is when children have difficulty separating the names of things from the things themselves, and this can carry on in adulthood.

A study was done by Rozin. She poured sugar into two glasses labelled 'sugar' or 'cyanide' as participants who saw the pouring were still reluctant to drink from the glass labelled as poison.

EVALUATION OF MAGICAL THINKING AS A WHOLE:

- ✓ Magical thinking could lead people to deal more confidently with their environment as they expect good things to happen as a result of their beliefs/actions.
- ✓ Magical thinking acts like a placebo – it creates positive expectations and this alone can account for improvements (a self-fulfilling prophecy)
- ✓ Pronin found that participants showed magical thinking as they believed their thoughts caused actions of a voodoo doll to result in someone experiencing a headache.
- ✗ There are some disadvantages – magical thinking is associated with a number of mental disorders. It is often listed as one of the characteristics of schizophrenia which suggests magical thinking may be an element in the separation from reality experiences by schizophrenics. It is also a critical factor in OCD – in patients with a strong belief in magical thinking there was reported to be more checking symptoms.
- People who are depressed generally show less magical thinking – called depressive realism. This suggests a fully accurate assessment of one's own abilities may not be good for a person. A lack of magical thinking has been linked to low levels of dopamine (and dopamine is high in both schizophrenics and believers in the paranormal)

5. PSYCHIC HEALING

Psychic healing = treatments used to deal with health problems by purely mental or paranormal means

It is a new and alternate form of treatment. It can be found in every culture and it has several names; psychic healing, faith healing, paranormal healing and mental healing. Most commonly results are seen gradually, with treatment being given over several weeks.

TWO WAYS TO ADMINISTER PSYCHIC HEALING:

1. The laying on of hands
2. Distant healing

APPROACHES TO PSYCHIC HEALING INCLUDE:

- *The Therapeutic Touch* – the patient is treated by the healers' hands remaining a few inches above the patient's hands and the healer changes the area of energy surrounding the body.
- *Reiki* – a method of hand healing whereby the healer places their hands on the subject.
- *Shamanism* – this relies on the acceptance of an individual as a shaman (a religious leader and healer) who, through special powers, can contact and communicate with the spirit world.

EXPLANATIONS:

1. **Energy fields**

Using the Therapeutic Touch, healers can detect a patient's aura (energy field) and re-align it.

2. Anxiety reduction

Psychic healing may work not by psychic means but by having a sympathetic person who wants to help. This social support can reduce stress and anxiety and this enhance the effectiveness of the immune system

3. Placebo effect

Real improvements in health might be due to believing that an effective treatment has been received. However, the placebo effect cannot account for the significant healing effects found in double-blind trials.

4. Belief

Underlying all psychic healing is the patient and therapist believing the healing will work

5. The healer's presence

The fact that the patient sees the person as 'the healer' could distract the patient's attention away from the pain and thus increases their sense of relaxation.

6. Connection with the healer

The connection activates natural body systems of self-healing through psychological and mental means (such as the endocrine system and associated neurotransmitters)

RESEARCH INTO PSYCHIC HEALING:

- ✓ **Krieger** – he thought that healers increased the vitality (the ability to fight off infections) of the patients. He took blood samples from people before and after the healing session to see if there was any fluctuation in haemoglobin levels. 49 patients were used, with a further 29 acting as a control. He found that those treated by the healer had higher haemoglobin levels and generally felt better than the control group. The effect also seemed to last for a long time, even in the follow up the next year.
- ✓ **Benor** – in a meta-analysis he concluded that psychic healing showed positive results for humans as well as plants, animals and even bacteria, yeasts and cells.
- ✓ **Braud** – found that healers could selectively lower or raise a person's Electro Dermal Activity (skins resistance to electricity)
- ✓ **Keller** – they looked at the effect of psychic healing on tension headaches. It was a blind trial (didn't know if they were the control group or not) and the severity of the headache was measured using a questionnaire which was taken before and after the treatment. The healer used the 'Therapeutic Touch' method. The difference with the control group is that they had to focus on counting down in 7's from 100 (to stop them focusing on the healing process). They found that before healing the pain rating was the same for both groups but after 90% of the healing group reported lower levels of pain. {to evaluation to study... there was a detailed definition of tension headaches to ensure consistency, it was a bling trial and appropriate apparatus was used to give accurate measurements. However, the sample size was not very large, volunteer sampling was used}.
- ✓ **Cha** – studied the power of prayer in helping women being treated for infertility become pregnant. Twice as many women prayed for by strangers become pregnant.
- ✗ **Livers** – he studied a well-known psychic who claimed he could heal people by looking at and manipulating their photographs and proved them to be fake through a double-blind study.

- ✓✗ Lyvers – he studied 20 people with chronic back pain. No overall reduction in pain was recorded but they did find a correlation between belief and the pain score they gave at the end of a healing session.
- ✓✗ Wirth – treated patients with wounds with either Therapeutic Touch or a placebo using a blind trial. Those with Therapeutic Touch healed faster. However he did fail to replicate this and people who wanted to discuss his research with him failed to be able to contact him. He has subsequently been convicted with fraud and given a 5 year prison sentence.
- ✗ Rosa – tested 21 Therapeutic Touch healers but found that the healers were only able to detect the energy field of another person 44% of the time (less than chance).
- ✗ Long – replicated Rosa's study using normal people and not proper healers and found when the sitters hand was only 3 inches away, the results were better than chance suggesting it was due to the ability to detect heat. This heat explanation is supported by Glickman as they eliminated body heat and the results were at the chance level.
- ✗ Problems with most of the studies into psychic healing include – the contradictory nature of findings, lack of controlled double blind trials, the use of small volunteer samples and the ethical issues of vulnerability and exploitation of those seeking healing.
- ✗ Success rates may be due to spontaneous recovery or because recovery is short-lived and the person relapses but the relapses are not reported.

6. NEAR DEATH EXPERIENCES

Near-death experiences = a distinctive subjective experience that people sometimes report after a near-death episode (an episode where a person might be clinically dead, near to death or very likely to die)

Common features of NDE's include:

- ★ Intense emotion
- ★ Out of body experience
- ★ Movement through darkness towards light
- ★ Encounters with dead loved ones
- ★ A life review
- ★ A decision to return to their body
- ★ Buzzing or ringing noise

Atwater notes that for pleasant near-death experiences there is often a sensation of floating out of one's body, passing through a long black tunnel towards light, friendly greetings from dead loved ones, a realisation that time does not exist and a disappointment at being revived.

A disturbing NDE will cause the person to look for meaning in it so that the person may activate changes in behaviour or perhaps an increase in religious practice.

EXPLANATIONS OF NEAR-DEATH EXPERIENCES:

1. **Anoxia (absence of oxygen in the brain) or Hypercarbia (high level of CO2 in the brain)**

- Cortical disinhibition (random firing neurons that can lead to hallucinogenic states) is related to anoxia and can explain the 'light at the end of the tunnel' and the buzzing noises
- Anoxia creates a flood of the neurotransmitter Glutamate which causes neuronal death and so as a defence, the brain creates a protective blockage to prevent neuronal death and this blockage is the source of a NDE
- ✗ Most of the visual cells in the eye is at the centre of the visual field and if the cells are triggered randomly, as with anoxia, this will produce a bright light in the centre of the visual field (creating a tunnel)
- ✗ Ketamine has found to cause NDE's and it has also been found to trigger the same blockade as glutamate
- ✗ Not all those experiencing NDE's have anoxia or hypercarbia
- ✗ Sabom – he measured body gases in people who have NDE's and found normal body gas levels. However, his chosen method of taking a blood sample, could be seen as inaccurate.

2. **Temporal lobe stimulation**

- Stimulating the temporal lobe leads to participants often reporting memory flashbacks and body distortions.
- The temporal lobe is central to NDE, however it is unclear whether it is due to anoxia.
- Gomez-Jeria believes that NDE's could be due to abnormal neural activity within the temporal lobe
- ✗ Research evidence is not clear or consistent

3. **Endorphins**

- Endorphins are the body's natural narcotics used to reduce sensitivity to pain and stress.
- Since they are crucial in blocking out pain and give people a sense of well-being, they can induce states of intense pleasure and acceptance that is similar to those reported in positive NDE's.
- ✗ Atwater argues that negative NDE's are increasingly common and the endorphins account cannot explain this.
- ✗ Judson suggest that serotonin is more critical than endorphins.
- ✗ Jansen states that endorphins do not deliver what is needed for hallucinogenic potential.

4. **Administered drugs**

- High doses of drugs are given during operations and this could be causing the NDE's
- ✗ Jansen created NDE's using ketamine.
- ✗ Some people who have had NDE's have been under the influence of drugs

- ✗ Greyson show that those under the influence of painkillers are less likely to report a NDE, and if they do it tends to be less vivid.

5. Expectation

- NDE's often happen to those who think they are dying. Paranormal beliefs can lead people to interpret events in terms of paranormal explanations
- It is possible for cultural heritage and religion to inform the content of form the NDE (for example a Christian might see God but a Hindu might see Yamraj)
- Memory and expectation can be influencing – a dying person's memory system may reconstruct a model of what they expect to be happening, such as them lying on an operating bed, apparatus around etc.
- ✗ The fact that NDE's are not experienced by everyone suggests there is likely to be a psychological component
- ✗ Religious denominational differences cannot account for the similarities in NDE's across the cultures.
- ✗ Ring found that someone attempting suicide does not necessarily have a horrible NDE and it can actually reduce future attempts.

6. Possibility of life after death

- Brain function cannot be the only cause as it cannot explain the idea that the soul leaves the body
- ✗ No scientific means of finding out if the evidence is true

EVALUATION AS A WHOLE:

- ✗ one downfall is that not everyone who claims to have had a NDE may have actually had one (perhaps they had constructed a false memory?) and not only those who report having a NDE are the only ones who have had one (some may have had one but cant remember due to brain damage)
- ✗ Are they really dead? There is evidence that patients who appear brain dead may in fact be capable of conscious thought. Scientists did an fMRI on a woman in a vegetative state and found that parts of her brain showed activity when she was spoken to and asked to think about things. This can discount claims that people have said they could recall conversation between doctors when they were "dead"

7. OUT OF BODY EXPERIENCES

Out of body experiences = a feeling of being able to view yourself and the world from out of your own body and feeling a detachment from one's physical body. The second body is called the "parasomatic body"

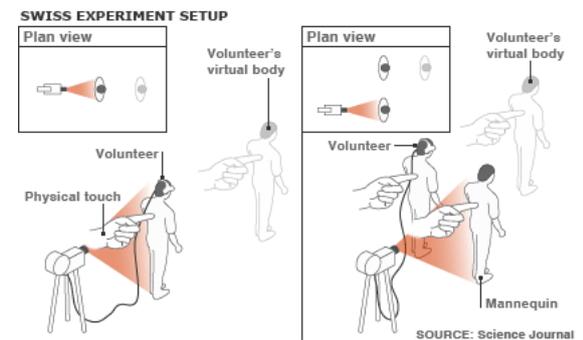
EXPLANATIONS:

- **Neuroscience** –Blanke suggested problems with the neural pathway from the pre frontal cortex to the temporo-parietal junction. The right temporal lobe is responsible for hearing and the parietal lobe is responsible for pain and touch
- **Cognitive** – OBE's can result from disruption of visual self-perception or a shift to a birds eye view.
- **The sleep hypothesis** – Palmer believed OBE's occurred during a hypnagogic state
- **Personality** – belief in OBE's have been associate with personality such as fantasy proneness
- Some researchers believe OBE's can be induced by anaesthetic
- In times were sensory input breaks down, the brain tries to construct what we are seeing using memory and imagination; memory images are often bird's eye views.

KEY STUDY:

Ehrsson – he argued that OBE's were cause by a disconnection between the brain circuits that process visual and touch-sensory information.

- He got 42 people to stand in front of a camera while wearing video-display goggles (the goggles ensured they could see their own back as a 3D virtual own body standing in front of them – they conned the brain into thinking the body was located elsewhere).
- When the back of the volunteer was stroked, they could see their virtual back being stroked and participants reported that the sensation seemed to be caused by the stroke on their virtual back, rather than their real back – making them feel as if the virtual body was their own rather than a hologram.
- The goggles where changed so they could see a mannequin's back being stroked, they still reported feeling as if the virtual mannequin body was their own.
- The goggles were then switched off, the participants were guided a few steps back and asked to walk back to where they had been standing – they all returned nearer to the position of their "virtual self".
- The participants also had a psychological response (e.g. sweating) when they felt their virtual self was being threatened.
- He concluded that self-visual perspective disruption can lead to the experience of a new viewpoint. (however, the sample size was small, volunteer sampling was used and full informed consent was unlikely.)



OTHER RESEARCH STUDIES:

- ✗ **Green** – studied 400 personal accounts OBE's and found that 25% were associated with psychological stress and 12% occurred during sleep.
- ✗ **Alvarado** – viewed studies where OBE's were induced and found that one participant was able to read out a randomly selected 5 digit number that was placed in another room.
- ✗ **Blanke** – produced OBE's by stimulating the angular gyrus (which deals with the sight of your body and your representation of it) which supports the biological claim. Weak stimulation of the 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.

Is belief central to OBE's?:

Belief in OBE's will shape the participants' experience.

Belief in OBE's can be linked to personality features. Lang divided participants into 'believers' or 'non-believers' and gave them questionnaires. Those who had experienced OBE's were more fantasy prone, had a greater belief in the paranormal and showed more somatoform dissociation (the reduction in speaking, seeing, feeling and moving) → these are all traits of 'believers'

HOWEVER, does the person's beliefs influence their personality or does their personality influence their beliefs?

8. PSYCHIC MEDIUMSHIP

PSYCHIC MEDIUMSHIP = a practice where the medium acts as a facilitator of communication between the physical world and the spiritual world.

EXPLANATIONS:

1. **BELIEF**

Belief will often blind the participant to the rather fraudulent tactics (e.g. cold reading – technique to make the person think you know more about them than you really do). Often the participant has paid the medium and thus has a belief in mediumship.

They may be so willing to contact a loved one that they interpret anything as a sign that contact has been made. This has been found by Wiseman who found that even when telling participants the medium was fake, believers had a tendency to be taken in by events.

If a person is fantasy prone or over-willing to attribute an event to the power of exceptional experience, then they might see the psychic as having some influencing power.

Belief ultimately creates positive expectation and thus acts as a placebo.

2. SENSITIVITY TO CUES

Cold readings can give a talented medium information

3. THE BARNUM EFFECT

A Barnum statement is a general one that elicits a lot of responses (e.g. "I see a recent loss") which the sitter may elaborate on and provide information

4. FRAUD

A medium might hire someone to visit the sitter beforehand and ask to go to the toilet, where they then steal a treasured possession. Later the medium might then ask if the person has lost something and tell them where it can be found.

5. BIOLOGICAL EXPLANATIONS

This focuses on mediumship as an altered state of consciousness and emphasis is placed on the role played by the limbic system in the trance like state

Some researchers have argued that mediumship is an extreme form of dissociative identity disorder

6. COGNITIVE EXPLANATION

This explanation focuses on the ways that believers interpret the information provided by mediums

It assumes believers find connections between unrelated events and patterns where none exist – the tendency to make the Type 1 error

RESEARCH:

- ✓ **Schwartz** – he used a triple blind technique (the medium, researcher and sitter had no prior knowledge of the people involved) to avoid methodological flaws or other influences like telepathy. 8 university students were sitters (4 had experienced the death of a parent and 4 the death of a friend). 8 mediums, who knew nothing about the sitters, showed certain accurate information about the deceased. The triple blind technique provides strong evidence
- ✓ **Rock** – 6 mediums spoke on the phone to a sitter and the conversation consisted only of the sitter asking questions about their loved ones. In one condition the loved one was dead and in the other they were alive. Significant differences were found in the information retrieved between the two conditions.
- ✓ **Russek** suggests that highly skilled mediums can give accurate readings and reveal information that is so personal that the chances of guessing is well beyond chance.

- ✓ Winkelman argues that the trance like state is characterised by a shift towards right hemispheric dominance, along with dominance of the parasympathetic nervous system
- ✗ Biological indicators are not consistent across mediums
- ✗ An analysis of the famous medium, John Edward, could be put down to the skill of 'cold reading'. He used to ask very open ended questions in order to pick up on any clues given by the sitter. He often did TV programmes too and these can be heavily edited to make it seem like he is always correct.
- ✗ The messages from beyond the grave always seem positive too – perhaps the readings from mediums match cultural beliefs that are held about after-life and death.
- ✗ It is difficult to research scientifically and does not fit into current scientific models therefore there is not much extensive research