OCR Psychology for A Level & AS Revision Guide

Exam-style question answers

PLEASE NOTE: This document contains suggested model answers that would achieve a good mark if provided by a student in an exam. They are designed to help guide and instruct you but should not be considered definitive.

Component 1 Chapter 1 Research methods

Page 16

Component 1 Section B:

1. The psychologists could ask students who are available in the university common room to take part in the study on the impact of eating chocolate on dreams.

2. The researchers could increase the generalisability of their findings about the impact of eating chocolate on dreams by ensuring that their sample of students is representative of the target population of university students.

3. A strength of using opportunity sampling is that it is an easy technique for the researchers to use because they just use the first university students they can find in the common room to take part in the study on the impact of eating chocolate on dreams.

4. A weakness of using opportunity sampling is that it is biased because the sample of university students used to investigate the impact of eating chocolate on dreams is drawn from a small part of the target population of all university students.

Page 17

Component 1 Section B:

1. The researcher could place all names of the care home residents in a hat and draw out the required number to take part in the study on the impact of watching TV comedy on mental health.

2. The researcher could advertise on a noticeboard in the care home to ask for residents to volunteer to take part in a study on the impact of watching TV comedy on mental health.

3. A strength of random sampling is that the sample would be unbiased because all residents of the care home have an equal chance of selection for the study on the impact of watching TV comedy on mental health.

4. A weakness is that the sample from a self-selected technique is biased because volunteer participants are likely to be more highly motivated and/or may have extra time on their hands than the other residents in the care home and already watch more TV or have better mental health, so therefore the sample is not representative.

Page 18

Component 1 Section B:

1. The researchers could ask the children to provide their own answers about how they occupy themselves on the journey home from school, which would produce qualitative data.

2. The researchers could use a rating scale by asking school children to give an assessment of how they occupy themselves on the way home, using a scale, e.g. from 1 to 5 where 5 represents very busy and 1 represents not busy at all.

3. One strength of using a questionnaire to investigate how the children occupy themselves on the journey is that the children are given a fixed, predetermined set of questions. This means they can be easily repeated so that data can be collected from large numbers of people relatively cheaply and quickly. This means that the investigation could be replicated using a different set of school children to see if the results about how children occupy themselves on the way home can be replicated. If so, this would mean the results are consistent and reliable. Also, the students may feel more willing to reveal personal information in a questionnaire about how they spend their time on the way home than in an interview.

4. One weakness of using a questionnaire to find out about what school children do on the way home is that the sample may be biased because only certain kinds of people fill in questionnaires, e.g. only some of the children may be willing to spend time filling in information about how they occupy themselves on the way home. This means it might not be representative of the target population.

Page 19

Component 1 Section B:

1. In a semi-structured interview, some questions are predetermined but also new questions are developed as the interview proceeds. Therefore, the psychologist would have prepared some questions for the butcher about the popularity of his sausages, but some questions would be added in response to his previous answers.

2. The psychologist would ask the butcher predetermined questions about the popularity of his sausages and would not probe beyond the answers received, but they may answer questions from the butcher (e.g. he may ask the interviewer for further explanation).

3. If a semi-structured interview was used, more detailed information could be obtained from the butcher about the popularity of his sausages than in a structured interview because subsequent questions are specially shaped to the butcher's previous replies. However, a strength of a structured interview is that it is easy to repeat and to analyse because answers are more predictable.

4. If a semi-structured interview is used, this is more affected by interviewer bias than structured interviews because the interviewer is developing questions on the spot and may be prone to issues such as inadvertently asking leading questions to the butcher about the popularity of his sausages.

Page 20

Component 1 Section B:

1. In order to ensure the interviews are reliable, the psychology students should use a standardised procedure, e.g. all participants are given exactly the same instructions and asked exactly the same questions about the posters showing healthy food. The students could also replicate the study (test-retest) to see if results are consistent.

2. Inter-rater reliability can be checked by comparing the results from two or more interviewers who questioned the same person about the posters showing healthy food. The answers given should be the same if the interview is reliable.

3. Using a standardised procedure in this study about attitudes to posters showing healthy food would ensure that each participant's experience was exactly the same and this should increase the reliability of the study as extraneous variables were controlled.

4. If any of the questions about attitudes to the posters showing healthy food are ambiguous, the participants may interpret these differently each time they are asked and give a different answer, which reduces the reliability of the study.

Page 21

Component 1 Section B:

1. Face validity concerns whether the items on the questionnaire look like they are assessing what the researcher intended to assess. In this study, the questions should be related to lorry drivers' attitudes to long working hours.

2. Social desirability bias means that respondents often prefer to provide answers that make them 'look better'. In this case the results may lack validity as the lorry drivers may not tell the truth about their real attitudes to long working hours as they may be concerned about keeping their jobs, so not want to complain.

3. Criterion validity is the extent to which test scores can predict a future behaviour or attitude. A strength of ensuring criterion validity in this study is that it could predict future attitudes about long working hours in lorry drivers.

4. Researcher bias can be demonstrated in a questionnaire if the researcher writes a leading question. The researcher may already believe that lorry drivers will have a negative attitude towards long working hours and this may be reflected in the questions, which means that the responses may lack validity.

Page 22

Component 1 Section B:

1. The observers could firstly carry out a pilot study to see what sorts of things people do on long journeys to occupy themselves. Possible behavioural categories would include: reading; listening to music; chatting; playing with phone/tablet; playing card games.

2. Event sampling involves drawing up a list of behavioural categories and counting every time each behaviour occurs in a specified time period. In this example, every time the following behaviours occur: reading; listening to music; chatting; playing with phone/tablet; playing card games.

3. A strength of using time sampling is that it makes observing behaviour manageable because it avoids having to record everything, which would be an issue as coach journeys around Europe take many hours/days and it would not be practical to observe for such long periods.

4. A weakness of using a structured observation is that the behavioural categories of reading, listening to music, chatting, playing with phone/tablet, playing card games etc. may not cover all possibilities, meaning that some behaviours that occupy time are not recorded, which reduces validity.

Page 23

Component 1 Section B:

1. To carry out an unstructured observation, the researcher would ask the head teacher to record all relevant recycling behaviour but would have no system or tally chart.

2. To carry out a covert observation the researcher could ask the head teacher to observe the students without their knowledge. The students would just think the head teacher was walking round the school as usual, rather than monitoring recycling behaviour.

3. Using a non-participant observation in this study on recycling behaviours leads to increased objectivity due to psychological and physical distance, which increases validity. If the head teacher was a participant, she might influence the behaviour of the students as she is a role model and the students might copy her recycling behaviours.

4. In a naturalistic observation, participants may know they are being observed which alters their behaviour (demand characteristics) and reduces validity. The students would notice the presence of the head teacher and modify their recycling behaviour as she is an authority figure.

Page 24

Component 1 Section B:

1. The independent variable is the amount of time given to memorise playing cards.

2. The students could operationalise the dependent variable by simply counting the number of playing cards recalled.

3. The longer the time given to memorising playing cards, the greater the number of playing cards will be recalled.

4. A two-tailed hypothesis is non-directional, so it would not predict whether a longer or shorter time given to memorising cards would improve (or reduce) the recall of the playing cards. It would simply state there would be a difference.

Page 25

Component 1 Section B:

1. In this study, an independent measures design would be used as the independent variable is whether students study A Level Maths or A Level English. So, English students would be in one condition of the experiment and Maths students in the other.

2. A control group of students studying neither A Level English nor A Level Maths could be used as a baseline comparison to see if differences in reading skills between English and Maths students was due to their choice of subject.

3. One strength of using an independent measures design is that it controls for demand characteristics. As students are only tested once, they are less likely to guess the aim of the study, i.e. whether studying Maths or English impacts on reading skills.

4. A weakness of using a matched pairs design is that it is very time-consuming to accurately match participants on key variables. A key variable in this research could be IQ, which would mean that all participants would need to undertake a time-consuming IQ test before the research could begin so that they could be matched.

Page 26

Component 1 Section B:

1. One extraneous variable would be where the students went to school, for example someone could live in a rural environment, but attend a city school. To control for this, researchers would need to choose participants who lived and went to school in the same type of environment.

A further extraneous variable could be IQ. To control for this, the researcher could use a matched pairs design, where students were matched on IQ levels or SATs results.

2. The researcher may expect students who live in rural environments to do better in school as there are fewer distractions. This bias may lead them to unconsciously encourage certain behaviours in participants. The result is that the researcher's expectations are fulfilled.

3. The researcher could deal with possible demand characteristics by using an independent measures design, where the rural students were unaware of the city students. If participants were unaware of the true aim of the study comparing rural and city living, they would not be able to change their learning behaviour.

4. In order to deal with possible researcher effects, the psychologist could use peer review. The peer could look for any possible bias in the report on the effects of city and rural living on school performance and thereby ensure high standards.

Page 27

Component 1 Section B:

1. To improve population validity, the researcher would need a wider population, not just university students, and would need to use a sampling method that was more representative of the population to ensure they recruited a cross-section of the population.

2. The researchers should control extraneous variables, so that they can be sure that any change in the dependent variable is due to their manipulation of the independent variable. They should ensure that all university students are tested in exactly the same environment and are all given the same standardised instructions, whether verbal or written.

3. A strength of a laboratory experiment is that it allows a high level of control, so extraneous variables can be minimised, increasing internal validity of the findings from the investigation the psychologists are carrying out.

4. A weakness of a laboratory experiment is that it is an artificial situation where participants may not behave naturally in the investigation the psychologists are carrying out, so the results may be low in ecological validity.

Page 28

Component 1 Section B:

1. The co-variables in this study are students' 'strength of character' scores and their psychology test percentages.

2. A positive correlation would be that a high score in character strength would mean a high score on the psychology test percentages, and vice versa. Both variables increase together.

3. If a strong correlation was found between 'strength of character' scores and psychology test percentages, this could lead to further investigation to see if there may be a causal link. Correlations are the first step in research, but cannot show cause and effect.

4. One weakness is that correlations cannot show cause and effect. We can only conclude that character strength scores and psychology test percentages are related, a third variable could be the causal factor.

Page 29

Component 1 Section B:

1. The BPS ethical issue of respect includes informed consent, confidentiality, privacy and right to withdraw. The researchers would need to ensure, for example, that they ask participants for their informed consent when researching people's attitudes towards recycling in their local community.

2. Presumptive consent is a method of dealing with lack of informed consent or deception by asking another group of people whether they would take part. The researchers could ask some local residents if they would consent to take part and, if they agreed, they could assume that other local residents would have no objections to taking part in a study on attitudes towards recycling.

3. The researchers could deal with the BPS ethical issue of responsibility by ensuring that all participants are protected from harm during the study and leave the study in the same psychological state in which they entered it. This could be done by considering the wording of the questions. The researchers would also need to debrief the participants at the end of the study on the aims, findings and conclusions of the research on attitudes to recycling.

4. The research project would need to be reviewed by an ethics committee who would look at all the possible ethical issues and at how the researchers plan to deal with these before the research starts. Only once the ethics committee has passed the proposal, can the research into attitudes towards recycling begin.

Page 30

Component 1 Section C:

1. The psychology students would calculate the means by adding up all the individual scores of number of words recalled in the morning and divide by 25, and then repeat the process for the number of words recalled in the afternoon.

2. The psychology students would calculate the range of the data in this study by taking the lowest number of words recalled from the highest for the morning group and repeat the process for the afternoon group's scores.

3. One strength of using the median is that the median is not affected by extreme scores so would be a more suitable measure of central tendency if there were anomalous scores in the number of words recalled.

4. One weakness of calculating the standard deviation is that the standard deviation may hide some of the characteristics of the data set of words recalled (e.g. extreme values/anomalies).

Page 31

Component 1 Section C:

1. The type of data collected is quantitative as it is numerical, i.e. number of words recalled. It is also primary data as it is collected directly by the researchers.

2. Qualitative data could have been collected in this study by asking participants about their preferences for morning or afternoon if they have information to learn and later recall, and the reasons for those preferences.

3. One strength of quantitative data is it is easier to analyse because data is in numbers which can be summarised using descriptive statistics. This would make it easier to draw conclusions about whether morning or afternoon is better for learning new material.

4. A weakness of quantitative data is that it oversimplifies reality and human experience because it suggests that there are simple answers. It doesn't tell us why people remember more at different times of the day.

Page 32

Component 1 Section C:

1. The data shows the frequency of favourite flavours of ice cream. The total was 40 so the psychologist could work out the size of each piece of pie by dividing the frequency by 40 and multiplying by 360 (degrees in a circle) = degrees of the pie slice. They can then draw as appropriate, i.e. mint choc chip = 180 degrees, strawberry = 63 degrees, vanilla = 27 degrees, pistachio = 90 degrees of the pie chart.

2. When the researcher was collecting the raw data on favourite ice cream flavours, they could have recorded the data in a tally chart (frequency table), making a tally mark each time a person mentioned a particular flavour.

3. A bar chart is a suitable graph for displaying the data on ice cream flavour preferences because the data is in the form of categories (nominal data) and not continuous data.

4. A pie chart is a suitable graph for displaying the data on ice cream flavour preferences because a pie chart represents frequency data. Each slice of the 'pie' represents the proportion (or fraction) of the total.

Page 33

Component 1 Section C:

1. The data is interval because it is measured using units of equal intervals, such as the time participants go to sleep.

2. In a negative skew, most of the scores are bunched to the right which, in this case, would indicate that most people go to sleep late in the evening.

3. Ordinal data is less powerful than interval data, because it doesn't give us any information about the relative differences in scores as the units are not of equal intervals.

4. A strength of plotting the sleep data is that we can see an overall pattern of what time people go to sleep, especially with a large data set. This pattern is called a distribution.

Page 34

Component 1 Section C:

1. The students would understand that probability was a measure of the likelihood that an event may occur. Probability is given as a number between 0 and 1 (where 0 indicates impossibility and 1 indicates certainty).

2. The students would understand that significance was a statistical term indicating that the research results are sufficiently strong to enable a researcher to reject the null hypothesis under test and accept the alternative hypothesis.

3. The students would understand that a significance level is the level of probability at which it has been agreed to reject the null hypothesis. Psychologists usually use a probability of 0.05 (5%).

4. The teacher meant that a Type 1 error occurs when a researcher rejects a null hypothesis that is actually true (a false positive). It is an optimistic error, and happens when the significance level is too lenient (e.g. $p < 0.10$). For example, in a criminal court case the defendant is found guilty when actually they were not guilty.

Page 35

Component 1 Section C:

1. The appropriate test would be the Wilcoxon Signed Ranks test, as this is a test of difference, with a repeated measures design (measuring hair growth before and after using a hair growth product) and generated ordinal/interval data in the form of amount of hair growth (mm).

2. The appropriate test would be the Mann–Whitney *U* test, as this is a test of difference, using an independent measures design (men and women) and generated ordinal/interval data in the form of psychology test scores.

3. Researchers would use Spearman's *rho* test as this was a test of correlation and the data collected (age and attractiveness ratings) were ordinal/interval data.

Page 36

Component 1 Section C:

1. The researcher would place the raw data (i.e. blood pressure readings before and after the stress management programme) into the first two columns of a table (column 1: Before; column 2: After). If the blood pressure reading was higher in column 1 than column 2, the researcher would record a '+' in column 3, and if the reading was lower in column 1, the researcher would record a '–'. If the reading was the same in column 1 and 2, the researcher would record a '0'. The number of + and – signs would be added up individually and the smaller value would be used as the observed value of *S*.

2. $U = R - \frac{[N(N + 1)]}{2}$

$U = 87.5 - \frac{[10(10 + 1)]}{2}$

$U = 87.5 - \frac{110}{2}$

$U = 87.5 - 55$

$U = 32.5$

Page 37

Component 1 Section C:

1. 2 rows (Under-25 and Over-25) and 3 columns (Conservative, Green, Labour)

df = (number of rows – 1)(number of columns – 1)

$df = (2 - 1)(3 - 1)$

$df = 1 \times 2$

$df = 2$

2. The critical value for a two-tailed test at the 5% level of probability where $df = 2$ is 5.99

3. The critical value for a one-tailed test at the 5% level of probability where $df = 2$ is 4.60. As the observed (calculated) value of 5.37 exceeds this value, the results are significant and the null hypothesis can be rejected.

Page 38

Component 1 Section C:

1. The student could write on the revision card that falsification is attempting to prove something wrong, by finding evidence that contradicts it.

2. The student could write on the revision card that objectivity is being uninfluenced by personal opinions, being free of bias. The opposite is subjectivity.

Page 39

Component 1 Section C:

1. The lecturer would include in their guidelines for writing an abstract that is a summary of the study covering the aims, hypothesis, method (including procedures), results and conclusions. It is usually about 150–200 words.

2. The lecturer would describe the purpose of the introduction as being a review of previous research, the focus of which should lead logically to the aims so that the reader is convinced of the reasons for this particular research.

3. The lecturer would recommend including in the discussion: a summary of the results; a consideration of the relationship to previous research; comments on possible methodological problems that arose and improvements suggested; implications for psychological theory and possible real-world applications; and suggestions for future research.

4. The lecturer would suggest including in the appendices: examples of materials (e.g. questionnaire, standardised instructions, diagrams of research set up); raw data; and calculations.

Component 2 Chapter 2 Social psychology

Page 41

Component 2 Section A:

1. Bocchiaro *et al.*'s study relates to the theme of responses to people in authority as it studies obedience. Participants showed higher levels of obedience and lower levels of whistle-blowing than predicted. This suggests that disobedience, as well as obedience, can be attributed to situational factors rather than dispositional ones.

2. The social area is concerned with the effect of other people on our behaviour. Therefore, Bocchiaro *et al.*'s research directly links to the social area as it was concerned with how people's behaviour – either being obedient, disobedient or whistle-blowing – is affected by an authority figure giving an instruction to take part in an unethical piece of research concerning sensory deprivation.

Component 2 Section B:

1. One principle of the social area is that our behaviour involves social interaction. Social psychology aims to understand people in the context of their interactions with others. An early example of the social area is Triplett's (1897) experimental work. He showed that competition with others improved performance, e.g. racing cyclists achieved better times on a circuit when they had someone pacing them.

Additionally, the social area has to consider ethics because psychologists investigating social influence attempt to influence participants' behaviour without the participants' knowledge. However, such influences are common in everyday life (e.g. teachers and health professionals), so social influence isn't always unethical.

2. Social behaviour varies across cultures. However, much research is carried out in one culture only and therefore may not apply to all. For example, Milgram's study was conducted in America (an individualist culture), but his findings about obedience may not apply to collectivist cultures.

3. a) A weakness of research into the social area is that research can take place in unrealistic settings, e.g. Bocchiaro *et al.*'s study was conducted in a university laboratory where participants knew their behaviour in relation to obedience was being studied, creating demand characteristics.

b) A strength of research in the social area is that it provides insights into behaviour and helps us understand how we are influenced by others, e.g. Milgram's study shows how people are surprisingly obedient.

4. Research can help in the prevention of mindless obedience, e.g. in the emergency services and the prison service. It can also help to encourage altruistic behaviour, e.g. encouraging people to consider the costs and benefits of helping behaviour.

5. Levine *et al*.'s study suggests that helping behaviour may be an outcome of nurture rather than nature. As helping varies so much from culture to culture, perhaps it is more likely to be learned than to be a fundamental feature of human nature.

Page 43

Component 2 Section A:

1. Participants were told the aim of the study was to investigate the effect of punishment on learning but the real aim was to investigate the process of obedience.

2. The sample consisted of 40 American men aged 20–50, recruited via a newspaper advert. The men had various occupational and educational backgrounds but were not high school or college students. Participants were paid $4 plus 50c for transport.

3. If the teacher (T) expressed a desire to stop delivering shocks, then the experimenter (E) had a set of statements ('prods') to deliver, e.g. 'The experiment requires that you continue'.

4. Firstly, the naïve volunteer participant was introduced to the other 'participant', a confederate (Mr Wallace), thus suggesting that he was a real participant and had drawn a lot to be the learner. Secondly, they were given a 45-volt test shock to show the shocks were real, which was in fact the only real shock in the whole experiment. Both procedures suggested to the participant that the study was real, and they were giving shocks to a real person.

5. All 40 participants (100%) continued giving shocks up to 300 volts. 26 out of 40 participants (65%) continued to the end (450 volts) and were considered obedient.

6. One strength is that quantitative data allowed Milgram to make conclusions about how obedient people may be when faced with an unethical command from a legitimate authority figure.

7. One strength was that the sample included men from a range of occupations and educational backgrounds, so it was likely to be representative of the target population.

8. One ethical consideration is that, despite being distressed by the experience of believing they had given shocks to people, participants were debriefed and many felt very positive about the study.

Page 45

Component 2 Section A:

1. The aims were to investigate how people deal with unethical/unjust requests. Also to research the differences between how people think they will behave and how they actually behave, and what are the personality characteristics of people who obey/disobey/whistle-blow.

2. The research design was a controlled observation (in a laboratory). The 'experimental paradigm' was a hypothetical unethical study on sensory deprivation to see whether participants would obey a request to write a statement to a fellow student and/or blow the whistle by filling in a form about the ethics of the proposed study.

3. It was a self-selected sample of 149 Dutch university students (96 women and 53 men) paid €7 or given course credit. Two further groups of participants were used to predict obedience behaviour: 92 students in pilot tests and 138 'comparison' students.

4. The personality tests used were the HEXACO-PI-R and the Decomposed Games Measure.

5. Participants were asked to write an enthusiastic statement encouraging fellow students to take part, using words such as great and superb, and not mention the negative effects of sensory deprivation such as it can be frightening.

6. A strength was that it was standardised, e.g. the paradigm used and the timings and locations were the same for all participants. This is a strength as it means uncontrolled factors were minimised, thereby increasing the validity of the results.

7. Quantitative data provided assessments of levels of obedience and personality traits. A strength of using quantitative data is that it makes it easier to compare levels of obedience and analyse the results. Clear differences can be demonstrated through the use of descriptive and inferential statistics.

8. This study could be considered ethical because participants gave informed consent as they knew what was involved. Though they did not know the true aims in relation to obedience, disobedience and whistle-blowing, participants had the right to withdraw and were debriefed.

Page 47

Component 2 Section A:

1. 'Bystander behaviour' is what people do in an emergency situation when they do not provide help to a person in need. In a large group, each person feels less responsibility, and this explains bystander behaviour.

2. One IV was the type of victim (appearing drunk or appearing disabled with a cane)

3. In the 'drunk' condition, the victim smelled of liquor and carried a liquor bottle.

4. Observer 1 noted: (a) the ethnicity, gender and location (EGL) of people in the critical area, (b) the number of people in the car, (c) the number of people who helped, (d) the EGL of the people who helped. Observer 2 noted: (a) the EGL of people in the adjacent area, (b) how long it took for the first person to help after the victim had collapsed and/or after the model appeared. Both observers recorded comments spontaneously made by nearby passengers.

5. One weakness is that if the train was busy, it might be difficult for the observers to accurately see and hear what was going on because of other passengers being in the way. This would affect the validity of their observations.

6. To reduce sampling bias, they used a very large sample of 4,450 people collected over a period of several months containing a wide cross-section of people, and generalisable to the target population.

7. The study may be considered ethnocentric as it took place in one culture: American. America is an individualist culture which is characterised by people being more concerned with individual gains than the 'common good'. People living in a collectivist culture might show greater willingness to help in an emergency situation, such as helping a drunk individual on the subway, and show greater concern about the costs of not helping.

8. The study may be considered unethical as there was no informed consent or debrief. It is difficult to obtain informed consent in a field experiment. This is particularly important in this study due to the risk of psychological harm from seeing someone collapse on the subway. It is also important for those participants who did not offer help and may have felt bad afterwards.

Page 49

Component 2 Section A:

1. Levine *et al*.'s aims were to investigate whether helping strangers is a culturally meaningful characteristic of a place. Also, to investigate whether helping strangers varies across cultures, and to investigate community characteristics associated with helping strangers: economic, cultural and cognitive.

2. Levine *et al.* measured four community variables in the following ways: population size used the United Nations Demographic Yearbook; economic productivity was measured using Purchasing power parity (PPP); cultural values were measured by six experts who rated individualism–collectivism; and pace of life was measured by walking speed between two markers.

3. Levine *et al*. selected the largest city in 23 countries, testing an average of 50 people in each city. Selection criteria for participants was that they must be over the age of 17, not physically disabled, not very old and not carrying heavy objects.

4. The experimenter (E) 'accidentally' dropped a pen 10 feet from a solitary pedestrian and then observed whether or not the pedestrian helped by either picking up the pen and returning it to E, or by telling E they had dropped it.

5. 'Simpatia' cultures (e.g. Brazil, Costa Rica, El Salvador, Mexico and Spain) were significantly more helpful than non-simpatia cultures ($p < 0.02$).

6. A strength of the type of data is that it was quantitative data, and this provided a simple figure, e.g. Costa Rica (1.52) and USA (–1.74). This is a strength as it allowed the researchers to compare helpfulness in different cultures.

7. One weakness is that the sample of 23 countries was considered by the researchers to be small, with many cultures not included – most were from individualist cultures. A second weakness is that a small sample also makes it more difficult to detect trends in behaviour.

8. Although the scripts were standardised, the experimenter was a different person in each country, so may have performed each scenario slightly differently, leading to a lack of consistency and reliability.

Component 2 Chapter 3 Cognitive psychology

Page 51

Component 2 Section A:

1. Loftus and Palmer's study shows us that the input-process-output computer metaphor can be used to explain how eyewitness testimony of an event can be affected by leading questions that lead to a reconstructed memory. The participant sees the video of a car crash (input), the verb given in the leading question reconstructs their memory (process), and this affects their speed estimate (output).

2. Attention is the first link in a chain of cognitive processes such as perception and memory. Moray's study has a theoretical benefit in helping us to understand our wider cognitive systems. His research helped us to better understand how the attentional system processes reject certain messages.

Component 2 Section B:

1. One principle is the computer metaphor. The human mind is studied by comparing it to the processes of machines and information-processing models of cognition. These models are based on computer processes, e.g. input, processing and output.

A second principle is that the cognitive area uses experimentation. Research topics, such as sensory processes and perception, are investigated and also reaction time, learning, attention and emotion.

2. Cognitive psychology lends itself to experiments as single variables can be isolated and tested, e.g. the verb in Loftus and Palmer's study. Identifying single variables enables cause-and-effect conclusions to be drawn. The experimental method is highly controlled and standardised, making it easy to replicate and high in test-retest reliability.

3. a) Research in the cognitive area often lacks mundane realism as the tasks used to test mental abilities are often contrived, e.g. Loftus and Palmer's participants estimated speed from film slides, lacking the emotional involvement.

b) A strength of research in the cognitive area is control of variables which creates high internal validity, e.g. in Grant *et al*. the procedures were standardised, enabling easy replication to confirm the results.

4. One application is through the use of therapy. In cognitive behaviour therapy (CBT), people are taught to think (cognitive) differently about their mental health problems (e.g. depression) and put this into practice (behavioural). CBT is the most commonly used psychological treatment for a range of mental health problems.

Another application is in education, where mnemonics are instructional strategies designed to help students improve their memory of important information. This is based on the psychological understanding of how memory works. For example, contextual cues trigger recall and are used in many memory techniques (e.g. method of loci).

5. Both Simons and Chabris and Moray illustrate how we can investigate internal mental processes in scientific and controlled ways, using the principles of the scientific method, e.g. Simons and Chabris used standardised videos that were the same length, and the unexpected images had the same duration.

Page 53

Component 2 Section A:

1. The aim of the second experiment was to see if a leading question changes a person's subsequent memory of the event.

2. The experimental design was an independent measures design with different participants in each of the five groups, e.g. hit, bumped, smashed, collided and contacted.

3. The IV was the verb, e.g. 'smashed', 'hit'.

4. Smashed and hit.

5. Two types of information make up our memory of a complex event: (1) information from our perception of the event, the crash video; and (2) information we receive after the event, the verb.

6. The findings were in the form of quantitative data. This is relatively straightforward to assess the reliability of the measurements made as Loftus and Palmer could ask the same participants to repeat the task a second time and would expect to get the same speed estimates each time.

7. One strength was that it was carried out under laboratory conditions, which meant that extraneous variables could be controlled, so it has high internal validity, e.g. in 'real life', estimates of speed might be affected by where a person is standing. In a laboratory Loftus and Palmer could ensure that each participant witnessed the accident from the same position.

8. A strength was that they used an opportunity sample of US students on degree courses which meant that participants were easy for Loftus and Palmer to obtain.

Page 55

Component 2 Section A:

1. The aim was to look at environmental context effects with different types of material, specifically the effects of noise.

2. The dependent variable was the number of items correctly recalled on a short-answer and multiple-choice test.

3. The materials used by Grant *et al.* were a passage on psychoimmunology, a 'noisy' tape created by recording students in a cafeteria, headphones, test of recall with 10 short-answer questions and 16 multiple-choice questions.

4. The sample was an opportunity sample of 39 American participants, 17 women and 22 men, aged 17 to 56 years.

5. The lowest score on the multiple-choice test was 79% whereas the highest score on the short-answer recall test was 67%. Participants got higher test scores on the two matching conditions, i.e. the noisy study–noisy test and silent study–silent test conditions.

6. One weakness is that the sample was made up of students who are not always motivated in research, so some of them may not have tried very hard on the tests they were given.

7. One strength is that the task had mundane realism – reading an article and trying to recall information is similar to what students usually do, so the results of the study can be generalised to the everyday life of students.

8. One ethical consideration is protection from harm which had to be considered as participants may have felt they did not do very well on the test, and this could have caused a loss of confidence in their academic abilities.

Page 57

Component 2 Section A:

1. The aims of the first two experiments were: Experiment 1 – to test Cherry's results more rigorously; Experiment 2 – to see if some messages can break through the attentional block.

2. Shadowing involves the listener paying attention to one message (shadowed) but not the other message (rejected).

3. In Moray's first experiment, laboratory conditions meant extraneous variables were controlled, e.g. incoming messages in headphones were precise and sound levels and rate of talking were kept constant.

4. There was no significant difference between the number of digits recalled by either group, i.e. whether participants had been given a warning to remember all the digits or not given a warning.

5. IV 1 was whether digits were inserted into one or two messages. IV 2 was whether participants were told they would be asked questions about the shadowed message or told to remember digits.

6. Using a repeated measures design controlled for individual differences in hearing and attention in the participants. Therefore, we can be sure that any change in the DV is a result of the manipulation of the IV and not participant variables.

7. Moray's procedures were highly standardised, e.g. the way each passage of prose and the word list was presented was the same for every participant. This means that the research could be replicated to check for reliability of results into auditory attention.

8. The sample is likely to be unrepresentative as students and researchers are likely to have high cognitive ability and may perform better on attentional tasks. Therefore, the study lacks population validity.

Page 59

Component 2 Section A:

1. Change blindness is failing to notice large changes from one view to the next, e.g. a gorilla on a basketball court.

2. Simons and Chabris investigated the following factors which may affect visual detection rates: the visual similarity of the unexpected and attended object; and task difficulty.

3. The dependent variable was the percentage of observers noticing the unexpected event.

4. The umbrella woman was noticed more than the gorilla (65% vs. 44%). The unexpected event was noticed more in the opaque rather than transparent condition (67% vs. 42%). The unexpected event was noticed more in the easy rather than hard condition (64% vs. 45%). In the gorilla condition, observers of the black team noticed the gorilla more than observers of the white team (58% vs. 27%). In the umbrella condition, there was little difference between black and white teams (62% vs. 69%).

5. Observers are less likely to notice unexpected events if they are visually dissimilar to attended events. An unexpected object can be undetected even when it passes through the eyes' area of attentional focus (fovea). This shows there is no conscious perception without attention.

6. The use of a laboratory experiment enabled high control over extraneous variables, e.g. in Simons and Chabris' study, all the videos were the same length (75 secs). This means that the experimental conditions were carefully standardised.

7. One weakness is that laboratory experiments may create demand characteristics. However, one factor that was controlled was excluding data from observers who knew of inattentional blindness as this would have affected their behaviour, leading to demand characteristics.

8. A weakness is that university undergraduates may have higher cognitive abilities and perform better on attention tasks, so the sample may not be representative of everyone. Additionally, as they were self-selected, they may have tried harder on the tasks than other people.

Component 2 Chapter 4 Developmental psychology

Page 61

Component 2 Section A:

1. Chaney *et al.* look at how children can learn to increase compliance to a medical regime for asthma (using an inhaler), using the external influence of a Funhaler. This supports the nurture position in the nature/nurture debate, suggesting that nurture is an important influence on development.

2. Lee *et al.* highlight age-related changes in truth telling, suggesting that continued exposure to the Chinese cultural emphasis on modesty has an impact on moral development. For example, Chinese children in prosocial situations rated truth telling less positively than Canadian children do. This suggests that nurture is an important influence on development.

Component 2 Section B:

1. One principle is related to the nature/nurture debate. This debate looks at the relative importance of genetics (nature) over experience (nurture). Some behaviours have a strong genetic component, e.g. children crawling and walking. But some characteristics that we share with our parents may be due to being brought up by them (nurture) rather than sharing their genes (nature).

Secondly, if stages of development involve the emergence of new strategies and skills at different times, it is useful to talk about stages of development, by using informal stages (e.g. the 'terrible twos') or more formal ideas (e.g. Freud's stages of psychosexual development). A stage approach helps us to see the sequence of development that occurs in many children.

2. Ethical issues arise when conducting research with children who are unable to give their own consent, e.g. photographs of the participants in Bandura *et al*.'s study continue to circulate without their direct consent. Although parental consent will have been obtained, it remains an issue.

3. a) One weakness is that attrition is an issue in research in the developmental area, as much research is longitudinal, looking at changes over time. Longitudinal research is not always easy because participants drop out over time, leaving a biased sample. This might have happened in Chaney *et al.*'s study if it had continued.

b) A strength is that the interaction between nature and nurture is demonstrated in developmental studies, e.g. Bandura *et al.* showed aggression can be learned by observing role models and suggested that such learning would interact with innate tendencies to be more aggressive.

4. One everyday application is that research could improve the lives of young children, e.g. reducing asthma attacks in young children by increasing their use of a spacer device (the Funhaler in Chaney *et al*.'s study).

A further application is that research could improve parenting. Bandura *et al.* showed that aggression is learned from role models. This highlights the importance of parents being non-aggressive and demonstrating positive behaviours towards their children, e.g. good health routines.

5. Kohlberg argued that moral thinking is determined mostly by innate processes that unfold throughout maturation. Lee *et al.* suggest that social and cultural factors determine how moral development progresses. Neither of these studies consider the role of free will in moral development and decision-making.

Page 63

Component 2 Section A:

1. Bandura *et al.* aimed to investigate whether children will imitate specific acts of aggression and behave more aggressively generally and whether participants are more likely to imitate same-gender models and boys more likely than girls to imitate aggression.

2. Bandura *et al.* used an opportunity sample of children from a university nursery school in Stanford, California. 36 boys and 36 girls were in the sample, aged between 37 and 69 months. The mean age was 52 months.

3. The dependent variable was the imitation of aggressive acts observed in the experimental room.

4. In the modelling phase, the model plays with toys including a Bobo doll. The children were placed in one of three groups: experimental group 1 observed an aggressive model who sat on Bobo, punched it, said 'Pow'; experimental group 2 observed a non-aggressive model; the control group had no model present. The children watched either a man or woman model.

5. Children in the aggressive group imitated the model's physical and verbal behaviours, e.g. saying 'Pow', including both aggressive and non-aggressive behaviours. The children in the non-aggressive and control groups displayed very few aggressive behaviours.

6. Bandura suggested that learning also occurs with indirect rewards. His social learning theory proposed that people observe 'role models', e.g. the aggressive and non-aggressive role models, and imitate their behaviour.

7. One weakness is that children were aware their behaviour was being studied. This may lead to demand characteristics – e.g. the Bobo doll 'invited' children to behave aggressively.

8. Parental informed consent is regarded as acceptable, but children should have a say. The intervention of the role model aimed to increase the children's aggressiveness, suggesting a lack of protection from psychological harm. Additionally, there was no attempt to reduce their aggressiveness after the study.

9. A strength was that quantitative data was gathered so that comparisons could be made between counting the number of aggressive behaviours displayed in each condition.

Page 65

Component 2 Section A:

1. The aim of Chaney *et al.*'s study was to see whether a 'Funhaler' would increase medical compliance in young children with asthma.

2. Chaney *et al.* used a field experiment with a repeated measures design where the same children used a conventional asthma spacer device and the Funhaler. Self-report was also used to collect data.

3. The independent variable was the child using the conventional asthma spacer device or the Funhaler.

4. The apparatus included a new spacer designed for children (the Funhaler). It looked like a brightly coloured toy with a spinning disk and whistle activated by the child's breathing pattern. Chaney *et al.* also used two matched questionnaires (of mainly Yes/No questions and fixed-choice questions)

before and after the children used the Funhaler. The questionnaires measured attitude to the use of an inhaler and compliance to the medication.

5. Chaney *et al.* used an opportunity sample of 32 children attending clinics within a 51 km radius in Australia, and their parents. The children were aged between 1.5 and 6 years, mean age 3.2 years. Average duration of asthma was 2.2 years. There were 22 boys and 10 girls.

6. An experimental method was used, meaning that causal conclusions can be drawn about the effects of a conventional spacer versus the Funhaler on compliance rates and attitudes towards the spacer device. A repeated measures design controls for the effect of participant variables, e.g. some children may have more severe asthma or be naturally more compliant. This increases the validity of the results.

7. The trials were short-term, lasting only two weeks. The positive attitudes expressed by parents may be related to the novelty of the device. Over a longer period (e.g. six months), use of the Funhaler by parents and children may have less positive attitudes, reducing the validity.

8. Chaney *et al.* used forced-choice questions such as 'always use spacer' versus 'do not always use spacer', which means that finer detail was lost.

Page 67

Component 2 Section A:

1. Kohlberg believed that children's thinking about moral decisions changes with age, as a consequence of maturation. He identified three levels of development: pre-conventional, conventional and post-conventional.

2. Kohlberg used a longitudinal and cross-cultural design, using two quasi-experiments.

3. The independent variable was the age of the boys.

4. The cross-cultural sample included boys from Great Britain, Canada, Mexico and Turkey, plus boys from two villages – Atayal (Malaysian aboriginal) and Taiwanese.

5. The boys' level of moral development was assessed by giving them moral dilemmas, e.g. the Heinz dilemma. The boys were asked open questions about the dilemmas. The questions were adjusted depending on the previous answer. The oral interview took about 45 minutes and covered nine dilemmas.

6. One strength is that longitudinal designs mean that participant variables are controlled, e.g. so that aspects of participants' personality would not affect differences in the development of moral reasoning between boys.

7. Kohlberg's research is biased towards men/boys (i.e. androcentric). The dilemmas were written by a man (Kohlberg), based on a principle of justice favoured by men, and tested on a sample of men/boys only. Thus, Kohlberg's study provides evidence for only one kind of moral reasoning.

8. One strength is that Kohlberg gathered quantitative data so each participant was represented by a number indicating their stage of development, e.g. Richard (aged 16) saw life as important for all humans but dependent on someone else's authority (God) = Stage 4 reasoning. This meant that comparisons could be made. Kohlberg also collected qualitative data which is a strength as it meant the boys were asked to provide reasons for why they made such a decision.

Page 69

Component 2 Section A:

1. The dependent variable was measured by the children rating the story character's deed and what the character said, on a 7-point Likert scale (3 = very, very good, –3 = very, very naughty).

2. The sample consisted of 120 Chinese children (mean ages 7.5, 9.4 and 11.3 years, 20 boys and 20 girls in each age group) and 108 Canadian children (mean ages 7.4, 9.6 and 11.5 years).

3. There were four types of stories: (1) Prosocial + truth telling; (2) Prosocial + lie telling; (3) Antisocial + truth telling; (4) Antisocial + lie telling.

4. The aim was to compare children from individualist and collectivist cultures (Canadian and Chinese respectively), expecting that (1) in prosocial situations, Chinese children would rate truth telling less positively and lie telling less negatively than Canadian children; and (2) this difference would increase with age.

5. Question 1 asked, 'Is what the child did good or naughty?'.

6. A strength of the research method is that the study tested a range of variables, e.g. gender was manipulated across conditions and the researchers were able to show that this was not related to the children's moral judgements.

7. A weakness is that the samples were not representative of all communities as all the children came from urban rather than rural backgrounds.

8. Parents and children would have the right to withdraw if the children felt distressed during questioning.

Component 2 Chapter 5 Biological psychology

Page 71

Component 2 Section A:

1. Casey *et al.* look at parts of the brain. In particular, they showed how reward centres (e.g. ventral striatum) could be linked to impulse control and delay of gratification.

2. Maguire *et al*.'s research indicates that one brain structure (the hippocampus) is related to spatial memory (navigational skills). The correlation between the size of parts of the hippocampus and experience in taxi drivers confirmed the role of nurture in the development of a biological system.

Component 2 Section B:

1. One principle is that we are biological machines. A machine metaphor can be applied to the brain, i.e. it can be regarded as a machine where the collection of chemicals and cells produce the reflective, thinking, feeling organism that is aware of itself and able to act and make choices.

Another principle is that the brain shows localisation of function. The machine model also conceptualises the brain as a set of components. Researchers have mapped the brain, identifying components of the brain that are responsible for particular tasks, e.g. language.

2. Reliability tends to be high as the biological area tends to use specialist scientific equipment which can measure behaviour precisely and objectively, e.g. Casey *et al.* used fMRI scans to relate delay of gratification to activity in certain brain structures (e.g. right inferior frontal cortex). Other researchers can replicate the research using the same specialist equipment.

3. a) One weakness is that it is a reductionist approach. The focus of biological psychology is on biological/physical processes, e.g. Casey *et al.* suggest that delay of gratification is reduced solely to differences in brain reactivity rather than other factors such as experience.

b) The biological area presents the brain and body as determined by genes. This provides a counterargument to the nurture side of the nature/nurture debate, e.g. Sperry explains how our brains are hardwired as the left hemisphere in most people governs language.

4. The biological area is important for understanding the biological basis of behaviour and practically can give advice to people with brain damage. Casey *et al*. showed that the frontal lobes are important in decision-making. These lobes are also linked to aggressive behaviour.

It is also useful for informing treatment options such as the use of drugs to alter undesirable behaviour. For example, depression can be treated by boosting levels of serotonin using drugs such as SSRIs.

5. Biological psychology presents the brain and body as determined by genes. This supports the nature side of the nature/nurture debate, e.g. Sperry explains how our brains are hardwired as the left hemisphere in most people governs language.

Page 73

Component 2 Section A:

1. The brain has two hemispheres (left and right, LH and RH) joined by the corpus callosum. Hemisphere deconnection (split-brain) involves cutting the connections between the LH and RH.

Split-brain patients have had this surgery to control their severe epilepsy (if their epilepsy wasn't improved by drugs).

2. The participants were seated in front of a screen and asked to focus on a cross in the middle of the screen. One eye was covered. Images flashed on the screen using a tachistoscope, each for 0.1 seconds, so that the eye only had time to process the image in the visual field where it was placed.

3. One test was the visual and verbal task. Participants were shown an image to the left visual field (LVF) and a different image to the right visual field (RVF). They were asked to say or write what they saw. Another task was the visual and tactile task where participants were asked to select an object from below the screen that matched what they had seen.

4. When information was just presented to the RVF, the participant could describe visual material in speech and writing as normal, as the information from the RVF is processed in the left hemisphere which deals with language. However, when information was just presented to the LVF, the participant could neither describe it in speech nor writing as the information has been sent to the right hemisphere. This is evidence to suggest that language is processed in the left hemisphere of the brain.

5. When information was just presented to the RVF, the participant could describe visual material in speech and writing as normal, as the information from the RVF is processed in the left hemisphere which deals with language.

6. One strength is that Sperry used objective tests to measure the patients' capabilities and this provides an unbiased means of assessing the effects of the operation, so the study had high internal validity. For example, showing $ and ? signs to different visual fields to see which could be described verbally.

7. A strength of the data was that it was primary, qualitative data, e.g. how a patient responded to a symbol displayed to the RVF. This is a strength because the data specifically focused on the aims of study and gave rich, in-depth detail about the effects of the split-brain operation.

8. A weakness was that the sample size of 11 was relatively small and they all had severe epilepsy, therefore individual differences (e.g. handedness or brain damage from epileptic fits) may have affected the results, meaning we cannot generalise from them.

Page 75

Component 2 Section A:

1. The aims of Casey *et al.*'s study were to see if the ability to delay was a consistent personality trait and to see if this ability could be linked to differences in the way the brain behaves when resisting temptation.

2. One dependent variable from experiment 1 was the reaction time and accuracy on certain go/nogo tasks.

3. In experiment 1, there were 59 participants, 32 high delayers (20 women, 12 men, mean age 44.6 years) and 27 low delayers (16 women, 11 men, mean age 44.3 years).

4. Participants were given a go/nogo task, where a photo of a man's/woman's face is shown, and they had to press a button on any trial where the photo matched the target (= go) and not press the button if the photo did not match the target (= nogo).

5. Low delayers committed more false alarms than high delayers on the nogo trials. Also, on nogo trials, low delayers had (a) reduced activity in the right inferior frontal cortex, and (b) more activity in the ventral striatum when shown a happy face.

6. One weakness was that participants are not randomly allocated to conditions in quasi-experiments so there may be extraneous variables, such as personality differences. For example, people who have more difficulty paying attention may find it difficult to delay gratification.

Another weakness is attrition, i.e. in a longitudinal study, some participants drop out, which in turn biases the sample. For example, the low delayers remaining in experiment 2 may be more aggressive, which would act as an extraneous variable.

7. The sample was unrepresentative, as the study is relevant to certain cultural groups and not others. An American (individualist) bias may overemphasise importance of delay of gratification, which may be less important in collectivist groups.

8. One ethical consideration is that use of fMRI may cause physical harm as it is an unpleasant experience (noisy and claustrophobic) and difficult for participants to withdraw once scanning has started.

Page 77

Component 2 Section A:

1. Blakemore and Cooper aimed to look at physiological and behavioural effects of restricted early visual experience on development of the visual cortex and to consider whether brain plasticity occurs due to nurture rather than nature.

2. The independent variable was whether the kittens' early experience was a horizontal or vertical environment.

3. A special cylinder was constructed with no corners or edges which the kittens were placed in. The kitten stood on a glass plate supported in the middle of the cylinder for five hours a day. The surface of the tube had black and white stripes (vertical or horizontal) of varying widths. The kitten wore a wide black collar to prevent it from seeing its own body.

4. There were permanent deficits in the cats' vision, e.g. the cats often reached out to touch something that was quite far away, suggesting that the experience had affected depth perception.

The difference between 'horizontal' and 'vertical' cats was that, when a long black rod was held vertically and shaken, it was watched and played with by the vertical-environment cat but ignored by the horizontal-environment cat.

5. One extraneous variable controlled by Blakemore and Cooper was that the kittens' first two weeks were spent in a completely dark room.

6. Blakemore and Cooper's study lacks reliability as there was no check on the reliability of the data – for example, it was not possible to see if another cat, reared with horizontal lines only, would respond in the same way to vertical lines.

7. A strength was the research was carried out under laboratory conditions which meant that extraneous variables could be controlled, e.g. the kittens' first two weeks were spent in a completely dark room.

8. One strength is that they used quantitative data, e.g. reaction of the neurons to the orientation of the lines, which allowed comparisons between cats.

Secondly, they gathered qualitative data, e.g. observations were made of the cats in a well-lit environment, such as tripping over table legs, which meant that rich, detailed descriptions were collected.

Page 79

Component 2 Section A:

1. Two aims of Maguire *et al.*'s study were to see whether the brain is capable of changing in response to environmental stimulation and to demonstrate structural changes in the human brain in response to behaviour requiring spatial memory.

2. The independent variable was whether a participant was a London taxi driver or not.

3. The dependent variable was the volume of each hippocampus, measured in six areas: right and left, and anterior, body and posterior hippocampi.

4. The sample consisted of 16 right-handed taxi drivers (all men) who had passed 'The Knowledge'. They had a mean age of 44 years (range 32–62 years), mean experience of taxi driving 14.3 years (range 1.5–42 years). The mean training time was 2 years (range 10 months – 3.5 years). All had healthy medical, neurological and psychiatric profiles. There was also a matched control group of non-taxi drivers.

5. The men were matched by health, mean age, age range, gender and handedness.

6. A strength of the way Maguire *et al.* reduced sampling bias was that, by matching participants, it controlled for key variables that might explain differences between taxi drivers and non-taxi drivers (e.g. age and handedness).

7. A weakness was that Maguire *et al.* didn't collect qualitative data. By asking taxi drivers and controls to describe their experiences of using spatial memory, they may have found out explanations for why experienced taxi drivers have good spatial memory.

8. Maguire *et al.* used MRI scanning to measure brain volume. This is a standardised technique conducted in highly controlled conditions. This creates consistency, i.e. reliability and replicability.

Component 2 Chapter 6 Individual differences

Page 81

Component 2 Section A:

1. Mental health is one way in which people differ, but the differences are not all-or-nothing. In the study by Baron-Cohen *et al*., some people in the autistic group scored quite well on the Eyes Task. This shows a continuum in the Theory of Mind deficit. This study furthers our understanding of autism.

2. Freud's study illustrates the factors that make Little Hans both different and unique, e.g. his experience of phobia. It also tells us the similarities each of us have in the way that the Oedipus complex may be part of typical development.

Component 2 Section B:

1. The controversial theory of eugenics aims to improve the quality of human beings through selective breeding. Galton collected data about people (e.g. visual acuity) and used this to estimate people's inherited intelligence.

The individual differences area also focuses on differences and commonalities between people. When looking at differences the focus is on the uniqueness of people. This focus uses qualitative methods to build up a picture of subjective experiences. This is an idiographic approach, often used in case studies. When looking at commonalities, there is a focus on characteristics that people share. This is a nomothetic approach and quantitative approach, e.g. psychometric tests.

2. Socially sensitive research refers to research that has the potential to have a negative impact on specific groups of people or society generally. Freud's study might influence the way parents interact with their children and Baron-Cohen *et al.*'s study could mean that employers avoid hiring autistic people because of their apparent deficit.

3. a) One weakness is that ethical issues related to informed consent could arise in some research in the individual differences area, e.g. in Baron-Cohen *et al*.'s study on autism, participants may not have been fully able to give informed consent because their comprehension abilities were poor.

b) One strength is that research on individual differences is useful as it increases understanding of people with psychological disorders and provides insights into everyday experiences, e.g. Freud's case study of Little Hans's phobias can be related to everyday anxieties.

4. One everyday application is the development of effective treatment for psychological disorders, e.g. Freud's research led to the development of psychoanalysis, the beginning of the talking cure.

5. Research in the individual differences area has led to the development of psychometric tests, to assess the differences between people, e.g. different types of personality. These are very useful in assessing people's suitability for certain types of jobs or helping to diagnose educational issues which can then be addressed with suitable interventions.

Page 83

Component 2 Section A:

1. Freud aimed to use a case study to support his ideas about child development and the Oedipus complex. He also wanted to investigate the origins of psychological disorders such as phobias and the value of psychoanalysis for treating psychological disorders.

2. The design was a longitudinal case study, using a boy called Little Hans, spread over two years.

3. Freud used Hans and his family as an example of his theory, because it gave him the opportunity to explore his theories about the origin of phobias and psychosexual development. This was an opportunity sample as Hans's father was interested in Freud's work and wished to give him this opportunity.

4. Data was collected from conversations between father and son. This was then recorded in writing by his father, via a mixture of interview and self-report. His father also recorded the events in Hans's life. This information was then passed on to Freud by Hans's father.

5. Hans experienced the Oedipus complex (a desire for his mother, making his father a rival). A second result was that Hans developed a fascination with his 'widdler' because he was in the phallic stage.

6. This study is considered low in validity because it is a case study focused solely on one child who may not be typical. Hans may not be regarded as representative of other children his age and so any generalisations about typical development should be made with caution. The use of leading questions and the lack of objectivity also reduce validity.

7. One strength of collecting qualitative data was that the conversations and descriptions of events in Hans's life produced rich, in-depth insight into Hans's thoughts, feelings and phobias, which is a strength because it increases our understanding of his experiences thereby increasing the validity of the results.

8. One ethical problem is that, although Hans's father provided informed consent, Hans himself did not and this might have been embarrassing to him as an adult, as the transcript of the father/son conversations represents an intrusion into their privacy. A second ethical problem is that the intensive level of questions about why Hans felt as he did might have been quite stressful, causing him psychological harm.

Page 85

Component 2 Section A:

1. Theory of Mind is the understanding that someone else has a separate mind to your own and therefore does not see or experience the world as you do.

2. The experimental group were 16 self-selected autistic (AS) participants (13 men and 3 women) with no additional learning difficulties.

3. In the Eyes Task, participants were shown pictures of 25 pairs of eyes, each for three seconds. The participants had to select between two mental state terms printed under each picture, e.g. sad/happy.

4. The AS group did least well on the Eyes Task (mean score 16.3 out of 25). The non-AS and Tourette syndrome (TS) groups scored about the same (mean score 20.3 and 20.4 respectively).

5. Two conclusions from the study are that AS adults may lack a Theory of Mind (ToM) and that this is not due to a lack of intelligence, nor to frontal lobe damage.

6. A strength of using control groups was that it provided a baseline to judge the behaviour of the AS group, e.g. the TS group showed that, even with a neurological deficit, they could perform well on the Eyes Task.

7. Reliability is high as the tasks (e.g. the Eyes Task) are standardised and carried out the same way each time so the results could be interpreted in the same way each time.

8. The sample was British and the approach to understanding autism was from an individualist (ethnocentric) perspective. Symptoms of autism may be viewed more positively in some cultures if lack of social interaction is not seen as a problem to be solved.

Page 87

Component 2 Section A:

1. The sample was an opportunity sample of 1.75 million American Army recruits, all men, ethnically and culturally mixed, including white Americans, black Americans and European immigrants.

2. The 'Army Alpha test' was a written version of Yerkes' intelligence test for literate recruits (those that could read and write).

3. One difficulty was that there were too many illiterate recruits, so the criteria for taking the Alpha test were lowered and criteria varied from camp to camp. This is a difficulty as it reduced the reliability of the procedure.

4. The average 'mental age' of white American Army recruits was equivalent to a 'moron' (less than 13 years of age). Black Americans had the lowest 'mental age' (10.41 years).

5. Two conclusions from the study are that the intelligence tests were culturally biased because they required culturally-based knowledge and skills. Secondly, this explains the inferior score of black Americans and immigrants, and not genetics.

6. Two weaknesses are that the test results may be biased, favouring one cultural group (ethnocentric). Also, the tests may lack construct validity because they do not measure what they aimed to measure, e.g. intelligence.

7. Yerkes' results can be considered ethnocentric as conclusions were drawn from the IQ data about black people and immigrants, based on the ethnocentric views of white American psychologists (the questions and methods of testing people were rooted in white, middle-class American experience).

8. Informed consent was an issue as the Army recruits did not give consent to the data being used in the way that it was. Therefore, they did not really know the true aims of the study and thought it was only being used as part of their Army recruitment process.

Page 89

Component 2 Section A:

1. Hancock *et al.* aimed to carry out a text analysis of psychopaths describing their violent crimes, focusing on an instrumental/predatory world view, i.e. that psychopaths are more likely to be motivated by an external goal. They also focused on unique socioemotional needs, i.e. that psychopaths show little need for others, and also poverty of affect, i.e. psychopath's lack of emotional intelligence.

2. The independent variable was whether the participant was a psychopath or not.

3. The sample was 52 murderers in Canadian correctional facilities: 14 psychopaths and 38 non-psychopaths, all men.

4. Assessment of psychopathology was via a psychometric test. The Psychopathy Checklist-Revised (PCL-R) measured affective/interpersonal traits (e.g. superficial charm) and impulsive/antisocial traits (e.g. criminal versatility). A score of 25 or above indicated psychopathy.

5. The data was analysed using Wmatrix (types of words) and the Dictionary of Affect in Language (DAL) (emotional content). Using Wmatrix, text was classified into parts of speech (e.g. nouns, verbs), semantic categories (e.g. 'money'), and major discourse fields (e.g. social actions). It was then further analysed using the DAL.

6. One strength was that they collected quantitative data. The rich data from the transcripts was reduced to categories of speech, e.g. disfluencies such as 'um' to count occurrences. This is a strength as it allowed comparisons to be made between the psychopaths and non-psychopaths.

A second strength is that the qualitative data (e.g. audiotaped transcripts of what the participants said) provided a rich record of participants' thoughts, feelings and attitudes. In total over 100,000 words were collected.

7. One weakness of the sample is that the behaviours exhibited by the psychopaths who volunteered for the study were perhaps not typical of psychopathic murderers, e.g. they were much prouder of their murder than those who did not volunteer.

8. The study was low in external validity. This is because it is difficult to generalise to other populations, e.g. women, other cultures and non-murderers.

Component 2 Chapter 7 Perspectives, debates and methodological issues

Page 90

Component 2 Section B, for each perspective:

Behaviourist perspective

1. The key concept of the behaviourist perspective is that behaviour is shaped through conditioning. Classical conditioning is learning through association. Pavlov's dogs associated the sound of a bell with the arrival of food, then learned to salivate at the sound of the bell alone. Operant conditioning (Skinner, Bandura) is learning through reinforcement, punishment and vicarious reinforcement.

2. One application of the behaviourist perspective is therapy to overcome psychological disorders. For example, systematic desensitisation uses classical conditioning to overcome phobias as the client learns to associate fear with relaxation.

3. Chaney *et al.* showed that operant conditioning through positive reinforcement increased adherence to asthma medication through the Funhaler. The spinner and whistle provided a reward for the child when they correctly used the Funhaler.

4. The behaviourist perspective is similar to the cognitive area as it excludes emotional influences. It is based solely on observed behaviours and the cognitive area focuses solely on thought processes.

The behaviourist perspective differs from the individual differences area as it focuses on experimentation and direct observation, using the scientific method. On the other hand, the individual differences area often uses case studies and is more subjective in its interpretation of behaviour.

5. One strength of the behaviourist perspective is that it is scientific. This is a strength because it allows for cause and effect to be determined. For example, Bandura *et al.* controlled variables such as the specific types of aggressive behaviour demonstrated by the role models to show that aggressive models increase aggression in young children.

However, a weakness is that it is reductionist. Complex behaviours are represented simply as stimulus–response. For example, Chaney *et al.* showed that the Funhaler creates a reward for the child when they take their medication correctly.

Psychodynamic perspective

1. The psychodynamic perspective sees the unconscious mind as determining the adult personality. It contains unresolved conflicts that we access through dreams through fulfilment of wishes.

2. An application of the psychodynamic perspective is therapy for psychological disorders, such as psychoanalysis and dream analysis. Unresolved conflicts in the unconscious cause psychological disorders, which can be resolved by therapy.

3. The psychodynamic perspective sees the unconscious mind as determining personality. Freud explains Little Hans's phobias through his unconscious mind and the events of his childhood. Little Hans's phobia of horses was seen as a displaced fear of his father and evidence of an unresolved Oedipus complex.

4. The psychodynamic perspective is similar to the individual differences area as it uses case studies. For example, in his case study of Little Hans, Freud explains Little Hans's phobias through his unconscious mind and the events of his childhood.

The psychodynamic perspective differs from all other areas as it is more of an ideology than a science. Freud explains behaviour from a viewpoint where he interprets behaviour via the unconscious rather than setting out to show any causal relationships.

5. A strength of the psychodynamic perspective is that it is interactionist. The perspective combines nature and nurture. For example, Freud focuses solely on Little Hans and explains his phobias through his unconscious mind (innate urges) and the events of his childhood (life experiences).

However, a weakness is that it is determinist. It sees people as controlled solely by their unconscious. For example, Freud explains Little Hans's phobias through his unconscious motivations.

Page 91

Component 2 Section B:

1. Nurture suggests that behaviour is learned through experience and interactions with the environment.

2. One application of the nature/nurture debate is Eugenics, which aims to improve the quality of humans through selective breeding. But selective breeding only improves quality if the behaviour (e.g. IQ) is inherited, it only considers the nature side of the debate.

3. Bandura *et al.*'s research poses the question: Are children born to be aggressive (nature) or do they learn it (nurture)? Bandura suggests that aggression is a learned behaviour (nurture) as the children imitated an aggressive role model by hitting the Bobo doll and through imitation of physical aggression such as 'pow'.

4. Nature and nurture are both similar to determinism as they both ignore the role of free will. They suggest that genetic and environmental influences control our behaviour and there is very little we can do about it.

5. A strength of the nature/nurture debate is the concept of interactionism. This makes us consider what makes each of us unique – a mix of our genetic make-up and life experiences.

6. Free will is the idea that we are able to make choices about our behaviour.

7. Determinist research can be useful. For example, brain scanning might be used to identify people for certain jobs or identify criminality (Raine *et al*.).

8. In Milgram's study participants' obedience was determined by the situation of being in a prestigious university and being given 'prods' by a legitimate authority figure rather than their spontaneous choice of giving electric shocks (free will).

9. Free will differs from nature/nurture because it suggests that genes/environment don't determine behaviour because we can make choices. On the other hand, genetic or environmental explanations of behaviour suggest we have no control over how we behave.

10. A weakness of the free will/determinism debate is that it is reductionist. This is a weakness as it suggests that our choices are limited by e.g. biology, thus discouraging people from exercising their free will.

Page 92

Component 2 Section B:

1. Holism suggests that living matter is made up of unified wholes that are greater than the simple sum of their parts. It is the opposite of reductionism.

2. Reductionist research can be useful because, in the case of medical models, it helps reduce complex psychological disorders to simple chemical changes in the brain leading to psychological disorders (e.g. depression). This can then lead to effective treatments (SSRIs).

3. Baron-Cohen *et al.* reduced explanations of autism spectrum disorder to a lack of Theory of Mind. Their results showed that people with autism spectrum disorder scored lower on the Eyes Task than non-autistic people. This simplifies a very complex disorder, which may actually have multiple complex explanations.

4. Reductionism differs from situational explanations where a more holistic approach is needed because behaviour is harder to quantify, and numerous situational factors may need to be considered.

5. Holism is less scientific than reductionism because breaking complex systems down to lower-level units may enhance understanding. Holism is often too complicated.

6. Individual factors are enduring aspects of an individual – their disposition or personality.

7. IQ tests need to consider people's upbringing (situation) as this may determine how well they can answer the questions. For example, lack of education can explain a poor performance on an IQ test, rather than innate ability.

8. In Sperry's study, the split-brain participants' behaviour was due to an individual influence (severed corpus callosum). This meant that the split-brain patients could not always say what they had seen, e.g. if objects were presented in the left visual field.

9. Individual factors are often similar to nature explanations because they see behaviour as being explained by biology.

10. A strength of the reductionist argument is that it is scientific. This is a strength as it involves breaking complex systems down to lower-level units which may enhance understanding.

Page 93

Component 2 Section B:

1. 'Usefulness of psychological research' has three dimensions: the moral dimension (who is the research useful for?); the practical dimension (what are the benefits?); and the knowledge dimension (what new insights does research provide?).

2. Research into psychological disorders can have practical implications for treatments and therapies, such as SSRIs or cognitive behaviour therapy.

3. Loftus and Palmer's research is useful because the research can inform court decisions. This is because it highlights potential problems with the reliability of witness memory and therefore improves our understanding of eyewitness testimony.

4. Behaviourism trains people with rewards and punishments to behave in such a way as to be well and be happy. Therefore, behaviourism is useful as it has implications for treatment and therapy through behaviour modification.

5. The usefulness debate focuses attention, so rather than thinking too much about technical issues (e.g. sample sizes), we can focus on more important questions, e.g. is research useful and what are its implications for society?

6. Ethics are a moral framework that are applied to a narrow group of people, e.g. psychologists. They help psychologists solve moral dilemmas in research.

7. Psychologists should follow the BPS ethical guidelines and try to ensure their results are used to help people rather than to harm them.

8. In Milgram's study, participants experienced a stressful situation that stayed with some of them for the rest of their lives. In this way, they were not protected from harm. Additionally, they had not given informed consent and were deceived about the true aim of the study. However, Milgram did give a detailed debrief and most participants were pleased to have contributed to such important findings, so it could be argued that the ends justified the means.

9. Ethical considerations differ from determinism because the assumption that rewards/ punishments can determine behaviour is unethical.

10. One weakness is the narrow focus of ethical considerations. They tend to be about a limited set of issues, ignoring the broader context of how research is used, which is why we also need to consider socially sensitive research.

Page 94

Component 2 Section B:

1. Socially sensitive research considers the extent to which studies can have a negative impact on specific groups of people or society generally.

2. One application is research into false memory. This research helps clarify the claims surrounding recovered memories of childhood abuse.

3. Loftus and Palmer's research has a social impact with regard to unreliability of memory and eyewitness testimony. This could be socially sensitive as these memories might be linked to socially sensitive issues such as abuse. It also has implications for how juries may reach their decisions in court.

4. Conducting socially sensitive research is similar to ethical considerations as both are about making moral decisions.

5. One strength of conducting socially sensitive research is that it enables a broader approach. This means that it allows for the study of areas that are generally not spoken about or under-researched, e.g. men's health.

6. Science is an approach to study that values systematic observation, identification, description and empirical investigation. This contrasts with approaches that value subjective experience.

7. Scientific research is useful because it enables us to predict future behaviour through the use of objective, verifiable methods that build up coherent theories.

8. Bandura *et al.* demonstrated a causal relationship between observation and aggression using the experimental method. For example, children who were exposed to the aggressive role model displayed significantly more aggressive behaviours than the children in the non-aggressive role model condition. This gave empirical support for social learning theory.

9. Psychology as a science is similar to determinism because science aims to discover how behaviour is determined by identified causes.

10. Viewing psychology as a science is useful. This is a strength because it allows us to develop a body of knowledge that can be tested and developed. This means that cause-and-effect relationships can be inferred.

Page 95

Component 2 Section B:

1. Ethnocentrism means using our own cultural (ethnic) groups' beliefs, attitudes and behaviour to judge others.

2. Ethnocentrism is useful when interpreting psychological research as it enables the consideration of potential ethnic biases of researchers.

3. Gould's study links to ethnocentrism as it shows how ethnocentric bias in intelligence tests led to the misapplication of the findings to immigration laws. For example, Gould showed that Army tests were culturally biased because they required culturally-based knowledge and skills. This explains the inferior score of black Americans and immigrants and not genetics.

4. Ethnocentrism is similar to conducting socially sensitive research as both are concerned with ensuring research is unbiased.

5. Spotting ethnocentric bias in psychological research is best done by considering how the results would be different if the study was carried out with different groups.

6. Internal validity refers to whether the researcher is testing what they intended to test.

7. In experiments, extraneous variables mean that changes in a dependent variable may not be due to the independent variable. This means the researcher is measuring the effect of the extraneous variable and not the effect of the independent variable, so the research would lack validity.

8. In Bocchiaro *et al.*'s study, the participants didn't know researchers were noting their ethical behaviour meaning it was high in ecological validity, as the participants were acting naturally when they were being obedient, disobedient or whistle-blowing.

9. Validity differs from reliability because validity is about the accuracy of a measure whereas reliability concerns its consistency.

10. When replications confirm original results, they show external (ecological) validity because the same results are produced in different settings, i.e. are generalisable.

Page 96

Component 2 Section B:

1. Reliability is a measure of consistency in research. If the study were to be repeated would the results be the same?

2. Good science depends on replication to demonstrate the validity of any results – if we repeat a study and find the same results this suggests the results must be 'real' (valid) rather than just a fluke.

3. In Bandura *et al*.'s study, the dependent variable (aggressiveness) was measured by making observations of the children playing. A second observer checked the observations for half of the participants and inter-rater reliability was reported as high. This means the study is reliable.

4. Reliability is similar to validity because if reliability is low this then threatens the validity of the measure; they are inextricably linked.

5. Reliability in psychological research involves repeating a standardised procedure with each participant to make comparisons between participants.

6. Sampling bias is a systematic error where the sample does not accurately represent the population of interest.

7. Getting a good sample, free from bias, requires balancing costs against using the most representative sampling methods.

8. Grant *et al*.'s sample was free from gender bias as there were men and women, but all were Americans so there was a cultural bias in the sample when investigating context-dependent memory.

9. Ethnocentrism is similar to sampling bias as both are biases related to the group of people studied and restrict how much the sample can be generalised to others.

10. The best psychologists can do is to remove as much bias as possible and try to ensure that some groups of people are neither over- nor under-represented in psychological research.

Component 3 Chapter 1 Issues in mental health

Page 98

Component 3 Section A:

1. One historical view of 'mental illness' (psychological disorder) is humoral theory. Hippocrates said that the four bodily humours (fluids) each related to a different personality dimension. Black bile related to introversion; yellow bile to impulsiveness; blood to being courageous; and phlegm to being calm. Psychological disorders were due to an imbalance in one of the four humours, e.g. excess yellow bile leads to mania.

2. Whether any behaviour is classed as 'mental illness' (psychological disorder) depends on many factors, e.g. culture, context and historical time period and this explains why there are differing views of 'mental illness'. 'Mental illness' is not like physical illness as there are no medical tests to aid diagnosis, so diagnosis is subjective which further explains the differing views.

3. The humoral view explains 'mental illness' (psychological disorder) as having a biological basis (imbalance of humours), whilst the psychogenic explanation sees it as having a psychological cause, namely unconscious motivations and forces within the mind.

Page 99

Component 3 Section A:

1. One definition of 'abnormality' is statistical infrequency. In statistical terms, human behaviour is 'abnormal' if it falls outside the range that is typical for most people, in other words the average is 'normal'. Things such as height, weight and intelligence fall within fairly broad areas. People outside these areas might be considered 'abnormally' tall or short, fat or thin, clever or unintelligent, etc. Therefore, psychological disorders such as schizophrenia might be considered 'abnormal' because most people do not have schizophrenia.

2. Both statistical infrequency and deviation from social norms suggest that 'abnormality' is behaviour that is in some way different from what most people do and not in line with society's expectations. However, deviation from social norms does distinguish between desirable and undesirable behaviour. For example, an IQ below 70 is statistically infrequent and undesirable, however, an IQ above 130 is also statistically infrequent, but wouldn't be considered a problem in the same way that a low IQ would be.

3. One way of categorising psychological disorders is the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). DSM-5 is used in the USA and lists around 300 disorders that are divided into three sections, e.g. Section II includes 20 categories of disorders, such as depressive disorders.

Page 101

Component 3 Section A:

1. One way in which the hospitals failed to diagnosis the pseudo-patients as sane was that 'normal' behaviours were interpreted as symptoms of their disorder, e.g. queueing early for lunch was seen as pathological behaviour.

2. All but one of the patients was discharged with a diagnosis of schizophrenia in remission, suggesting that their disorder could reappear at any time, highlighting that a diagnosis of a

psychological disorder is hard to shake off. Rosenhan noted the 'stickiness of psychiatric labels' as all the patient behaviours were interpreted according to a label of 'abnormality'.

3. Reliability is the extent to which findings are consistent which, in this context, is the extent to which the psychiatrists agreed on the same diagnosis when assessing patients. In Study 1, no pseudo-patient was suspected by staff, and all but one were diagnosed with schizophrenia. This suggests 88% consistency and reliability of the initial diagnosis.

All the observations were consistent with each other, with all pseudo-patients reporting similar experiences. However, there were no direct comparison of observations between the pseudo-patients in different hospitals, which questions inter-observer reliability.

4. In Rosenhan's study, psychiatrists were deceived as they were told the pseudo-patients were hearing voices and that they were real patients. None of the medical staff were able to provide informed consent nor did they have the right to withdraw from the study. Additionally, the pseudo-patients may have experienced stress and so were not protected from harm as they did not know when they would be released. Many nurses complained that Rosenhan's study made their profession look bad but overall the benefit to society has been enormous. The study raised awareness of the flaws in psychiatric diagnosis and treatment. As a consequence, diagnostic systems became more stringent.

Page 103

Component 3 Section A:

1. Sarah would need to explain the characteristics of a psychotic disorder to her client using client-friendly language and explaining that they will not necessarily experience all of these symptoms, all of the time. Sarah would explain that psychotic disorders are when there is a split between the mind and reality – therefore they may experience positive symptoms such as hallucinations, delusions, catatonic behaviours etc.

Sarah could also explain that they may well experience negative symptoms, which is an impairment in typical behaviour, such as poverty of speech, lessening fluency, and being emotionally flat. Additionally, cognitive deficits can occur where mental processes are affected, e.g. disorganised thought or speech. This will help Sarah's client to understand the characteristics of their psychotic disorder.

2. The doctor would need to explain the characteristics of an affective disorder to Pete and Louise using client-friendly language and explaining that their son will not necessarily experience all of these symptoms, all of the time. The doctor could bring out the DSM/ICD and allow Pete and Louise to read about it first.

The doctor could explain that affective disorders such as major depression are typically categorised by low mood, loss of interest or pleasure in everyday activities and reduced energy levels. They might also notice changes in sleep patterns, appetite, self-confidence and concentration levels. This will help Pete and Louise to understand the characteristics of their son's affective disorder.

3. The main similarity between the characteristics of a psychotic disorder and an anxiety disorder is irrational thought processes. In a psychotic disorder these often take the form of delusions and in an anxiety disorder, such as phobias, an irrational fear. Also, both disorders can interfere with normal functioning in everyday life.

A main difference is that a characteristic of a psychotic disorder is sensory hallucinations, which are not a feature of anxiety disorders. Other characteristics of a psychotic disorder such as speech poverty (alogia) and disorganised thought or speech, e.g. jumping between thoughts due to 'loose associations' between concepts or words are also not seen in anxiety disorders.

Page 105

Component 3 Section A:

1. Major depression can be explained by the monoamine hypothesis, which is a biochemical explanation. Low levels of monoamines such as serotonin (which regulates monoamine neurotransmitters) are related to low mood and erratic thinking. Noradrenaline is involved in the regulation of heart rate and alertness, and deficiencies lead to a lack of energy. Dopamine regulates motivation, and deficiencies relate to a lack of interest in pleasure and reward. These are all characteristics of major depression.

2. Differences in the amount of grey matter and the levels of activity in the limbic system are linked to major depression. The amygdala (which regulates emotions) is disrupted in people with major depression, e.g. increases in activity have been found when depressed people are presented with negative stimuli such as a sad face. The hippocampus is significantly smaller in people with major depression and the more severe the depression, the more severe the loss of grey matter in the hippocampus. This may explain why people with major depression process emotionally-charged memories in dysfunctional ways.

3. Specific phobias can be explained by Gamma-aminobutyric acid (GABA) deficiencies. GABA is responsible for counterbalancing the excitatory action of the neurotransmitter glutamate. Decreased levels of GABA means that neuronal firing in the glutamate pathways is higher, leading to the feelings of anxiety commonly associated with a phobia.

4. It has been suggested that specific phobias could be genetic. Kendler *et al*. (1992) found concordance rates for animal-type specific phobias (anxiety disorder) were 25.9% for MZ twins and 11% for DZs, implying genetic causation. However, they found no significant differences in concordance rates for blood–injection–injury or situation-specific phobias.

5. The enlarged ventricles explanation is where some people with schizophrenia (a psychotic disorder) have enlarged ventricles (spaces) in their brain. These spaces contain cerebrospinal fluid which provides nutrients to the brain and protects the brain from damage. The enlarged ventricles lead to a reduction in the total amount of grey matter in the brain, e.g. in the temporal lobes which are involved in acoustic memory and this may explain auditory hallucinations.

6. It has been suggested that schizophrenia may be genetic. Glatt (2008) found that the concordance rate for schizophrenia in MZ twins is about 50% (range of 46–53%). In other words, if one MZ twin develops schizophrenia the other has about a 50% chance of developing it. The concordance rate in DZ twins is about 15%. The greater concordance for MZs strongly implies a substantial genetic component to schizophrenia.

7. Both the brain abnormality explanation and the genetic explanation of schizophrenia provide physiological explanations. For example, the genetic explanation suggests that the genes we inherit from our parents determine whether or not we display the characteristics of schizophrenia, e.g. hallucinations. Similarly, the brain abnormality explanation proposes that enlarged ventricles in the brain lead to a reduction in the total amount of grey matter in the brain, e.g. temporal lobes involved in acoustic memory that may explain auditory hallucinations.

Additionally, both the brain abnormality explanation and the genetic explanation for schizophrenia support a determinist viewpoint. Differences in the brain and genetics are beyond the control of people with schizophrenia and therefore it can be argued that they cannot exert any control over their behaviour, e.g. hallucinations.

Page 107

Component 3 Section A:

1. The key research by Gottesman *et al*. is a family study which investigates the heritability of disorders and therefore supports the medical model of 'mental illness' (psychological disorder), in particular genetic explanations. It found that having one parent with a disorder increases the likelihood of their offspring being diagnosed with that or any other disorder. This increase is even more marked when both parents have the disorder. A child with one parent with schizophrenia has a 7% risk of diagnosis of schizophrenia, compared with a 1.12% risk for the general population of a diagnosis of schizophrenia. If both parents have schizophrenia this increases their child's chances of getting schizophrenia to 27.3%, and even higher for any psychological disorder. This shows that psychological disorders have a genetic component and supports the medical model of 'mental illness' (psychological disorder).

2. Gottesman *et al*.'s sample was very large so the conclusions in relation to psychological disorders can be generalised to the target population of Danish citizens. However, Gottesman *et al.* only included people with hospital admissions for schizophrenia and bipolar disorder, excluding those with less severe characteristics. The conclusions about genetic explanations for psychological disorders may only apply to severe cases and to those people in Denmark.

3. The genetic explanation of psychological disorder predominantly supports the nature side of the debate. It suggests that we are born with certain characteristics which underlie psychological disorders. Family, twin and adoption studies show that the closer two individuals are genetically, the more likely it is that both will develop the same behaviours. For example, concordance rates for schizophrenia are about 50% for MZ twins and 15% for DZ twins (Glatt 2008). Therefore, this shows that nature has a major contribution to the disorder.

The research by Gottesman *et al.* suggests that psychological disorders have a genetic cause. An issue with family studies such as this is that they fail to take account of the nurture side of the debate. Family members are brought up in the same environment, so it could be that the behaviour is learned or influenced by environmental factors.

Nurture is the opposite view and argues that all behaviour is learned and influenced by external factors such as the environment. This includes both the physical and the social world and may be more widely referred to as 'experience'. It includes the effects on an infant before birth, e.g. a mother who smokes. Supporters of the nurture view hold the view that all knowledge is gained through experience.

The biochemical explanation suggests that major depression can be explained by the monoamine hypothesis, where low levels of monoamines (such as serotonin which regulates monoamine neurotransmitters) are related to low mood and erratic thinking. Brain abnormality and biochemical explanations support nurture as they take into account the role of events that occur after birth, e.g. brain damage (as the result of an accident) or use of drugs (using cannabis).

The truth is that behaviour is the result of a complex interaction between both nature and nurture. People may inherit a predisposition to schizophrenia, but some sort of environmental stressor is

required to develop the disorder. This may explain why schizophrenia emerges in late teens or early adulthood, as these are times of considerable upheaval and stress, e.g. leaving home, starting work, forging new relationships. Therefore, psychological disorders may be explained by nature and nurture.

Page 109

Component 3 Section A:

1. A biological treatment for schizophrenia is antipsychotics. The drug blocks dopamine by occupying postsynaptic receptor sites, particularly D2 receptors. This reduces activity in postsynaptic neurons resulting in less activity in the mesolimbic pathway and a decrease in positive symptoms of schizophrenia.

'Typical' ('first generation') antipsychotics (e.g. chlorpromazine and haloperidol) were introduced in the 1950s as a tranquiliser to calm people with schizophrenia. Typical antipsychotics are effective at reducing the positive symptoms of schizophrenia but they do not reduce the negative symptoms.

'Atypical' ('second generation') antipsychotics (e.g. clozapine and risperidone) are newer and are more widely used. They still work by blocking dopamine receptors, but in a more gradual way. They tend to also reduce the negative symptoms.

2. A strength is that antipsychotics are an effective treatment for schizophrenia. Clozapine is the most effective antipsychotic in terms of reducing hospital admissions and reducing the use of other medications (Stroup *et al.* 2015). It has also been found to be effective for people who have found other antipsychotic medications ineffective.

However, side effects are a weakness of typical antipsychotics, particularly when a person experiences tremors, spasms, jerky movements, slow movements or restlessness. In many cases the severity of the side effects can lead to reduced adherence to the medication, which of course makes the medication become less effective and may raise ethical concerns in relation to protection from harm.

3. Drug treatments for schizophrenia raise ethical issues. It may be that if someone has a psychological disorder they do not have the capacity to give informed consent for their treatment and might therefore be given drug treatments without their consent or understanding. This also means that they might not have the right to withdraw from the treatment either. Many patients are given drugs as a way of controlling what is seen as unacceptable behaviour in society. This raises the question of whether or not they should be given drugs simply so that their behaviour conforms to societal norms, especially if their behaviour is not upsetting them.

Antipsychotic drugs can have serious side effects and this raises the issue of protection from harm, especially if the patient lacks the capacity to give informed consent. However, antipsychotic drugs are an effective treatment for schizophrenia, so a cost–benefit analysis needs to be carried out to see if any potential ethical concerns are outweighed by the benefits of alleviating the symptoms of the disorder.

4. Antipsychotics are useful. A strength of antipsychotic medications is that they have benefits in reducing symptoms. Leucht *et al.* (2012) found that antipsychotic medication reduces both the relapse rate of schizophrenia and hospital readmissions. It creates a better quality of life for people with schizophrenia and reduces aggressive acts. It may even mean that people are able to hold a job and this is of benefit to society and the economy as well as the individual's well-being. However, this

usefulness has to be balanced against potential side effects which may reduce the usefulness as the side effects can lead to reduced adherence to the medication.

Page 111

Component 3 Section A:

1. The behaviourist explanation of 'mental illness' (psychological disorder) suggests it is learned and is determined by external events. It is driven by past experiences and anticipation of future outcomes.

The main ways in which psychological disorders are learned is via classical and operant conditioning and social learning theory. For example, a phobia could be learned via classical conditioning (associating the feared object with unpleasant emotions) and maintained via operant conditioning (avoidance behaviour is reinforced as fear is not experienced). A phobia could also be learned via social learning theory, for example, a child learns a fear of blood and needles from watching their parent's reaction.

2. The cognitive approach to 'mental illness' (psychological disorder) focuses on faulty (maladaptive) thinking. For example, Beck explains depression through the cognitive triad.

The 'self' aspect of the triad is where the person believes that they are worthless, e.g. they feel unattractive or not likeable. The 'future' aspect means the person thinks the future is going be negative, e.g. they will never find a job. The 'world' aspect is where the person thinks that everyone around them, and every situation, is negative, e.g. a friend cancelling a get-together means no one likes them. These three negative cognitive schemas mean the person expects situations to be negative and therefore interprets them in this way (known as a 'systematic negative cognitive bias'). The negative schemas stem from criticism and rejection early in life from parents or teachers, and may also come from over-expectations in childhood.

3. A similarity between the behaviourist and the cognitive explanation of 'mental illness' (psychological disorder) is that both support the nurture side of the nature/nurture debate. Both explanations see psychological disorders as being caused by learning and environmental factors. For cognitive explanations, psychological disorders are the result of irrational thought processes which are caused by schemas which are learned through experiences. For example, Beck explains depression through the cognitive triad such as the self where the person believes that they are worthless. For the behaviourist perspective, psychological disorders are learned via classical conditioning, operant conditioning or social learning (imitation). For example, Watson and Rayner conditioned 11-month-old Albert to develop a fear of white furry objects through association with a loud noise.

A difference between the behaviourist and cognitive explanations of 'mental illness' (psychological disorder) is their approach to research. Whilst the behaviourist explanation focuses on observable and measurable behaviour (e.g. Albert's development of a fear of white furry objects), cognitive processes cannot be observed, but rather they have to be inferred from behaviour or self-report of patients which may not be reliable or valid. The behaviourist approach is therefore much more objective, whilst the cognitive approach is more subjective.

4. An alternative to the medical model is the behaviourist explanation, which assumes that we are born with a blank slate and that 'mental illness' (psychological disorder) is learned from the environment and the result of nurture. The behaviourist approach is scientific to a large extent due to the use of laboratory experiments, which allow for high levels of control meaning that the effect

of the IV on the DV is clearly measured. An example would be Little Albert – using the concept of classical conditioning, a little boy learned to fear white furry objects due to an association between a white rat and a loud noise, which then generalised to other white objects leading to his phobia (anxiety disorder). Thus, through the laboratory-controlled condition, the behaviourist approach is scientific to a large extent. The behaviourist perspective is also scientific because it is objective. It is free from bias and this is shown through the Little Albert study again, as the concept of classical conditioning to see the effects of a conditioned stimulus and a conditioned response was objective.

Another alternative would be the psychodynamic perspective, which assumes that 'mental illness' (psychological disorder) is caused by unconscious conflicts, which manifest themselves into our behaviour – leading to psychological disorders. This alternative is less scientific as it is unfalsifiable – it cannot be proven wrong. For example, Little Hans's phobia of horses was explained to be a result of his unconscious conflicts which resulted in the Oedipus complex – but this cannot be proven wrong as the psychosexual stages of development and the ego and superego are theories and cannot be tested. The psychodynamic perspective is also less scientific as it is subjective, dreams and psycho-analysis differ, and this lowers its reliability. For example, Freud interpreted Hans's phobia through his dreams, such as the parenting fantasy where he was married to his mother, and his father was elevated to grandfather, which was seen by Freud as Hans's resolved conflict, thus meaning his phobia would stop. This is highly subjective and open to interpretation.

In conclusion, the behaviourist approach is scientific as it uses laboratory experiments and objective methods to gather research about psychological disorders. However, the psychodynamic perspective is less scientific due to unfalsifiable explanations of psychological disorders. Thus, alternatives to the medical model vary in terms of the extent to which they are scientific.

5. Cognitive neuroscience takes an individual (dispositional) approach to explaining 'mental illness' (psychological disorders). It explains psychological disorders by taking a biological approach, looking at the structure and function of the brain. The focus is on individual case studies and what their brains tell us about their psychological disorders. For example, it has been shown via brain scanning techniques that some people with schizophrenia have enlarged ventricles in their brain.

In contrast, the behaviourist explanation takes a situational approach. This explains psychological disorders as behaviour which is learned from the wider context of the environment (e.g. upbringing, poverty, peer group). For example, a phobia could be learned from imitating a parent or through a negative experience, e.g. being bitten by a dog.

A strength of taking an individual/situational approach to the study of psychological disorders is it is useful to discover which behaviour is individually determined and which is situationally determined, as this can influence treatments. Furthermore, it can direct further study by discovery of complex interactions between individual and situational factors.

However, a limitation is that it is difficult to separate out effects of a situation and disposition of a participant. Furthermore, taking either an individual or situational viewpoint is reductionist – it is far too simplistic. Psychological disorders are usually a result of the complex interaction between the two. In conclusion, to explain psychological disorders both individual and situational factors need to be considered.

6. A similarity between the medical model and the behaviourist explanation of 'mental illness' (psychological disorders) is that they both use a scientific approach. For example, the key research by Gottesman *et al.* is a family study which investigates the heritability of disorders and therefore supports the medical model of 'mental illness' (psychological disorder), in particular genetic

explanations. Gottesman *et al.* found that having one parent with a disorder increases the likelihood of their offspring being diagnosed with that or any other disorder. Similarly, in Watson and Rayner's research using Little Albert and classical conditioning, the little boy learned to fear white objects due to an association between a white rat and a loud noise, which then generalised to other white objects leading to his phobia (anxiety disorder). Thus, through the laboratory-controlled conditions, the behaviourist approach is scientific to a large extent. Both explanations are concerned with objective evidence, observable and measurable characteristics and behaviour. Both try to establish causal relationships in order to explain psychological disorders.

A difference between the medical model and the behaviourist explanation of psychological disorders is that the medical model firmly supports the nature side of the nature/nurture debate and the behaviourist supports the nurture side of the debate. The medical model sees psychological disorders as having a physical, biological cause such as genetics, neurochemical imbalances and brain structures whereas the behaviourist approach sees psychological disorders as behaviour which is learned via environmental factors. Both are seen as deterministic: for the medical model, biological determinism; and the behaviourist explanation, environmental determinism. Both also deny the role of free will in psychological disorders.

Page 113

Component 3 Section A:

1. Psychodynamic explanations of 'mental illness' (psychological disorders) focus on unconscious forces, conflicts and motivations. These stem from childhood experiences, e.g. of loss and failed attachments. For example, depression occurs in adulthood when an adult experiences a loss (real or symbolic) and they experience repressed unconscious feelings of self-directed anger and loss from childhood. Freud suggested that adults with schizophrenia had coped with a harsh childhood (e.g. cold, rejecting parenting) by regressing to an earlier state of development, called primary narcissism. The child can no longer distinguish between fantasy and reality and their only concern is to meet their own needs. Freud believed this infantile state could be detected in the symptoms of schizophrenia (e.g. delusions of grandeur), triggered by extreme stress.

2. A similarity between the cognitive explanation of 'mental illness' (psychological disorders) and the psychodynamic explanation is that both are subjective approaches to studying disorders. Freud suggested that adults with schizophrenia had coped with a harsh childhood by regressing to an earlier stage in development, which he called primary narcissism. Unconscious motivations cannot be observed or tested, but neither can thought processes. The cognitive approach to psychological disorders focuses on faulty thinking. For example, Beck's cognitive triad explains how the person thinks that everyone around them, and every situation, is negative, e.g. the world is a cold, hard place with no hope. Both explanations focus on the importance of the mind, rather than physical factors when explaining psychological disorders, so both are on the nurture side of the nature/nurture debate.

A difference between the cognitive explanation of psychological disorders and the psychodynamic explanation is that, for the psychodynamic perspective, disorders are the result of unresolved childhood conflicts, whereas for the cognitive approach, disorders are the result of irrational thought patterns which arise from negative cognitive schemas. A further difference is that the psychodynamic perspective is much more deterministic than the cognitive approach. The cognitive approach sees individuals as active participants in their own recovery and embraces the idea of free

will whereas the psychodynamic perspective relies on unconscious thoughts as an explanation for psychological disorders.

3. A similarity between the behaviourist explanation of 'mental illness' (psychological disorders) and the psychodynamic explanation is they both view environmental factors as a cause of disorders. For example, Watson and Rayner used classical conditioning to induce a phobia of white rats in Little Albert. By pairing a loud noise with a white rat, they were eventually able to elicit the fear response from Little Albert in response to the rat alone. Similarly, Freud saw early childhood experiences as a cause of psychological disorders. Little Hans developed a phobia of horses after seeing one fall over in the street. However, the explanations here are different as Freud did not believe that Little Hans had learned a phobia in the way that a behaviourist would. For Freud, the phobia of the horse was actually a displaced fear of his father, caused by an unresolved Oedipus complex.

A major difference between the two explanations is that behaviourism can be considered to be a scientific approach to explaining psychological disorders as classical and operant conditioning is testable. Experiments, such as the one carried out by Watson and Rayner produce evidence to support the theory. However, the psychodynamic perspective, with its emphasis on the unconscious, is untestable and therefore unfalsifiable, making it much less scientific.

A further similarity is that both explanations have practical applications for treating psychological disorders. For example, phobias can be treated by flooding or systematic desensitisation through behaviourism. The concept is that if a behaviour has been learned it can be unlearned. In the psychodynamic perspective, psychotherapy and dream analysis can be used to uncover traumatic childhood experiences with an aim to resolving them.

4. The medical model is largely determinist as 'mental illness' (psychological disorder) is explained by neurotransmitters, genes and brain structure, which are factors beyond personal control. This is known as biological determinism. Cognitive neuroscience is also biologically determinist as it sees the causes of psychological disorder as being due to structures and processes within the brain.

The behaviourist explanation is also determinist as it suggests that psychological disorders are due to conditioning experiences, showing environmental determinism. Behaviourists believe that all behaviour is caused by previous experiences through the processes of classical and operant conditioning, e.g. phobias are acquired through conditioning (learning a conditioned response to a previously neutral stimulus). But you can also 'unlearn' that response to cure phobias (through systematic desensitisation).

The psychodynamic perspective is also determinist. Freud believed that childhood experiences and unconscious motivations govern behaviour. Freud's psychoanalytic theory of personality suggests that adult behaviour is a mix of innate drives and early experiences, i.e. both internal and external forces. Behaviour is driven by the libido (internal force), which focuses on erogenous zones, such as the mouth or anus. If a child is frustrated or overindulged (external forces) at any stage during development, then the libido remains tied to that erogenous zone and fixation occurs. The method of obtaining satisfaction in that stage will dominate their adult life.

However, the humanistic explanation supports free will as it explains how our choices reduce the gap between the real and ideal self. Humanists believe that incongruence can be a major factor in depression. Client centred therapy requires people to take control and responsibility for their own recovery.

In conclusion, people do not actively choose to have psychological disorders, so the concept of free will in relation to disorders makes little sense. However, soft determinism offers a better explanation. Although, people may not have a choice about whether or not they develop a disorder, they do have a choice about how they deal with it and the treatments they seek out. Individuals should be active participants in their own treatment and recovery.

Page 115

Component 3 Section A:

1. Szasz's view is that there is no such thing as 'mental illness' – which he argues is a myth – and that it should just be seen as behaviours that disturb others. He suggests that 'mental illness' is defined by political and economic criteria. Many so-called disorders, e.g. homosexuality, are no longer considered disorders. If psychological disorders were a real phenomenon, they could not change so readily. He also sees disorders as a metaphor for an undiagnosed physical illness.

2. Szasz's claim that 'mental illness' is a myth and is in the eye of the beholder could be seen as useful as it may lead to more ethical treatment of people with psychological disorders. Szasz argues that disorders are a construction and a label for behaviour that society finds unacceptable. This concept is backed up with evidence of cultural variations in what is considered to be a disorder. Fifty years ago, when Szasz's original essay was published, it was common practice for people with psychological disorders to be incarcerated in hospitals, often against their will and forced to undergo what would now be considered extreme and unethical treatments, such as lobotomies. Szasz's essay did raise awareness and led to a focus on more humane treatments and care in the community.

However, arguing that psychological disorders are a myth is not useful and could lead to some people being denied treatment. Not all disorders have a clear biological cause and therefore do not respond to biological treatments, such as drugs. Szasz's argument could lead, for example, to depressed people being expected to just pull themselves together and being deemed unworthy of medical treatment.

3. A weakness of the validity of Szasz's essay is that it is based on his own opinion and attitudes and not on empirical research. This reduces validity as his argument that 'mental illness' (psychological disorder) is a myth is not based on objectively gathered data. On the other hand, the research by Watson and Rayner with Little Albert is more valid as it uses classical conditioning. Albert learned to fear white objects due to an association between a white rat and a loud noise, which then generalised to other white objects leading to his phobia (anxiety disorder). Thus, due to the laboratory-controlled conditions, the behaviourist explanation is scientific to a large extent. It is concerned with objective evidence, observable and measurable characteristics and behaviour and tries to establish causal relationships in order to explain psychological disorders.

fMRI scans can be used to study brain function (e.g. in schizophrenia), but the reliability of the results of such scans can be variable, e.g. it depends on tasks being undertaken. However, fMRI scans do use a standardised procedure and so there is an element of reliability present.

Sampling bias is a weakness of research into alternative explanations. Case studies are often used which means the research tends to focus on just one individual, e.g. Little Albert and Little Hans. Each child is from culturally distinct backgrounds and it may be wrong to assume that we can generalise about the different explanations for psychological disorders from such restricted and unique samples.

With regard to ethnocentrism, a weakness is that Szasz (2011) talks about the 'politicalisation of mental illness' in the USA, suggesting that the view of 'mental illness' is affected by the assumptions of the dominant political groups at the time.

4. Nature refers to the biological and physiological processes that determine our behaviour whereas nurture explains behaviour as being learned from the environment. The cognitive neuroscience explanations of 'mental illness' (psychological disorder) predominantly support the nature side of the debate. It has been argued that genes may underlie the faulty neural circuits implicated in some psychological disorders. However, differences within the brain can also be caused by trauma or disease, supporting the nurture side of the debate.

The behaviourist explanation of 'mental illness' (psychological disorder) supports the nurture side of the debate. Psychological disorders such as phobias are likely to be learned behaviours. We acquire phobias through classical conditioning (association), and phobias are maintained through operant conditioning as avoidance behaviours are reinforcing. However, biological preparedness suggests we are biologically programmed to learn some behaviours more easily. This may explain why phobias of snakes, spider and heights are easier to learn. These things are inherently dangerous, and we may have evolved to fear them.

The psychodynamic perspective can be seen to explain psychological disorders from both a nature and nurture viewpoint. Freud believed childhood experiences and unconscious motivations governed behaviour. Freud's psychoanalytic theory of personality suggests that psychological disorders stem from a mix of innate drives and early experiences, i.e. both internal and external forces.

Therefore, perhaps a stronger explanation is that behaviour is the result of a complex interaction between both nature and nurture. Although people may inherit a predisposition to schizophrenia, some sort of environmental stressor is required to develop the disease. This may explain why schizophrenia starts in late teens or early adulthood, times of considerable upheaval and stress in people's lives, e.g. leaving home for the first time.

Page 117

Component 3 Section A:

1. A non-biological treatment for phobias is systematic desensitisation (SD). SD is based on the principle of classical conditioning, so it is a behaviourist therapy. It is often used to help overcome phobias and other anxiety disorders.

There are four main stages to SD. Functional analysis is the first stage during which the therapist and client discuss reasons for the phobia, how the client responds to the phobic stimulus and feared scenarios. The second stage is the construction of an anxiety hierarchy. The therapist and client develop a hierarchy of phobic situations, from the least to the most fearful situations. The third stage involves relaxation training where the client is taught relaxation techniques, e.g. breathing exercises. In the final stage, the client is ready for gradual exposure to the phobic object, e.g. a feather. Starting with the least phobic situation, e.g. seeing a picture of a feather, the client experiences the fear response and practises relaxation in the presence of the phobic stimulus. When the client is coping and reports no anxiety, they move to a slightly more anxiety-provoking phobic situation, e.g. having a feather on the table next to them.

Treatment usually takes place over a number of sessions, depending on the severity of the phobia and the client's ability to relax.

2. A strength of systematic desensitisation is that it is effective. Lang and Lazovik (1963) found that people with snake phobias who had undergone SD, displayed less avoidance of snakes when presented with them and reported fewer phobic behaviours, even up to six months later.

However, although symptoms of the phobia may appear to have reduced, such treatments may not address the root cause of the phobia and therefore the phobia may reappear in a different form. Other forms of therapy, such as psychoanalysis, focus on the underlying cause.

3. Non-biological treatments such as systematic desensitisation (SD) can contribute to the success of the economy and society because finding successful ways to alleviate the distress experienced by people with psychological disorders is a key feature of any successful society. Furthermore, psychological disorders can cause problems for the economy through absence from work and costs to the NHS, so treatments can enable people to regain their health and return to work and contribute to society via taxation.

4. Systematic desensitisation (SD) is generally seen as a more ethical treatment for phobias than flooding, which exposes the client to their phobic object or situation very quickly. SD is a much more gradual and gentle process. Therefore, SD protects the client from psychological harm. However, the therapist must ensure that the client has given fully informed consent and understands exactly what the treatment entails as the process can still be very upsetting and stressful. As the process is stressful, the client must have the right to withdraw at any time and the therapist must take things very slowly to protect the client from psychological harm.

A further consideration is that SD can be time-consuming. This means that the client may continue to experience phobic responses to objects (such as feathers) for some time, and thus still be exposed to psychological harm.

However, SD is an effective treatment for phobias, so a cost–benefit analysis needs to be carried out to see if any potential ethical concerns are outweighed by the benefits of alleviating the characteristics of the disorder.

Component 3 Chapter 2 Child psychology

Page 119

Component 3 Section B part (c):

(c) The educational psychologist could use the Wechsler intelligence scale for children (WISC) to test Pooja's intelligence. WISC is the most widely used intelligence test in the USA (and other countries) for children aged six to 16. It has been revised five times since first being introduced in 1950.

WISC measures five main forms of intellectual functioning (the primary indexes, assessed by two subtests, so ten tests in total). There are five ancillary indexes. The test can also give complementary index scores which can be useful in diagnosing learning-related difficulties.

The educational psychologist could use trained testers to administer the test face-to-face with Pooja in a session lasting between 15 minutes and three hours. The WISC can also be administered and scored online. It provides lots of scores from many subtests, which can be used in different ways depending on Pooja's particular needs. However, the use of lots of subtests also means the test can be difficult to interpret and therefore the educational psychologist would need to be trained in using this test.

The WISC could be used to identify the areas where Pooja is particularly struggling and then an appropriate intervention strategy could be devised to help Pooja do better in school. For example, Pooja might have a specific learning difficulty such as dyslexia or she might have a more generalised global developmental delay. The psychologist could then liaise with Pooja's teachers and parents to discuss the best strategies for helping Pooja achieve her full potential at school.

(c) Celine might choose to use a battery of intelligence tests to help her assess the cognitive strengths and weaknesses of her clients. Celine could use the Wechsler intelligence scale for children (WISC) to test their intelligence. WISC is the most widely used intelligence test in the USA for children aged six to 16. WISC measures five main forms of intellectual functioning; these primary indexes are assessed by two subtests each. There are five other indexes. The test can also give complementary index scores which can be useful in diagnosing learning-related difficulties. This test could be used to identify the cognitive strengths and weaknesses of Celine's clients.

Celine could also use Raven's test which assesses fluid intelligence. It is a nonverbal tests and therefore considered to be 'culture-fair'. The standard progressive matrices (SPM), which is used for children, has 60 tasks arranged into five sets (A to E) each with 12 tasks which are progressively more difficult. Each item has a matrix of six or nine items, where one item is missing, and the person being tested has to select the appropriate item from a set of usually six or eight alternatives. The SPM would take between 15 and 45 minutes for Celine to administer. The test produces a standard IQ score for comparison with the wider population.

Using both these tests should give Celine a clear idea of the cognitive strengths and weaknesses of her clients.

Page 121

Component 3 Section B part (a):

(a) Van Leeuwen *et al.* (2008) aimed to separate genetic and environmental effects on IQ and to investigate why spouses have similar intelligence scores. They did through conducting a series of mini-case studies. The sample included twins, siblings and parents from 112 Dutch families. Van

Leeuwen *et al.* collected cognitive behaviour and hormonal data, pubertal status and MRI brain data on two different days, then cheek swabs for DNA collected at home. Children were tested for cognitive ability in separate rooms using a cognitive test battery with the Raven's standard progressive matrices (SPM) and the parents used Raven's advanced progressive matrices (APM).

They found no significant sex differences in IQ scores, and IQ correlations were higher in MZ twins than the other relatives. The mean IQ score was higher in older siblings and there was also more variance in siblings than twins. There was high spousal correlation due to phenotypic assortment, and inherited genetic factors influenced children's intelligence. The environment was more important in explaining individual differences for low-IQ groups than for high-IQ groups.

They concluded that individual differences were largely accounted for by genetic differences, and parental influence on offspring's IQ was explained by gene transmissions, not cultural transmission, e.g. education. Environmental factors were more important in children with a genetic predisposition for low IQ.

This study shows that when psychologists are discussing intelligence, they are mostly referring to IQ scores measured on a psychometric test. They use this as an operationalised definition of IQ as it is easy to quantify and measure. However, most would argue that intelligence is much wider than this and cannot be reduced to a score on a psychometric test. But other definitions of intelligence are much more subjective.

Component 3 Section B part (b):

(b) Reliability refers to the consistency of a test or procedure. It is important to establish reliability when undertaking research. One aspect of reliability involves assessing the consistency of measurement between different observers – this is called inter-rater reliability. Another aspect of reliability involves researchers being able to achieve consistent measures when developing psychometric tests.

Research is reliable as Van Leeuwen *et al.* used reliable tests to measure IQ, e.g. the Raven SPM and APM tests which have good internal and external reliability. For example, the IQ tests used by Van Leeuwen *et al.* are reliable, with test-retest reliability of 0.88 for the child's version and 0.91 for the adult version. This means that if the test was taken again a similar score would be achieved, showing consistency. Zygosity was also tested by taking DNA from cheek swabs, which is a method consistently used within science and is also reliable. However, it must be noted that not all participants took their IQ tests at the same time. They were done on two separate days, raising the possibility that the test conditions may not have been the same, which could reduce reliability. However, this is unlikely as Van Leeuwen *et al.* are likely to have carried out these tests under controlled conditions with a standardised procedure.

However, Gardner (1983) argued that we all have eight independent intelligences but each of us blends them differently, e.g. a person may have moderate logical-mathematical intelligence, but little musical intelligence. Therefore, different types of IQ test may be measuring different types of intelligence and therefore would not give consistent results. For example, the same person could score highly on one IQ test but lower on another. This would reduce the reliability of the findings. Furthermore, when Van Leeuwen *et al*. discuss intelligence, they are mostly referring to IQ scores measured on a psychometric test. They use this as an operationalised definition of IQ as it is easy to quantify and measure. However, most would argue that intelligence is much wider than this and cannot be reduced to a score on a psychometric test. But other definitions of intelligence are much more subjective.

In conclusion, research into intelligence does tend to have high test-retest reliability, but results may not be consistent across time, situations and different types of IQ test.

(b) Van Leeuwen *et al*.'s findings support the genetic explanation of intelligence and therefore the nature side of the nature/nurture debate. 67% of intelligence was found to be due to genetics and parental influence is due to genes. However, although the nature argument is stronger, 33% of intelligence is due to environmental factors and those who are biologically more likely to have a low IQ are more heavily influenced by nurture. In further support of the nature argument, the research by Plomin and Defries (1998) found that intelligence scores of identical (MZ) twins raised in shared environments were significantly more similar than scores of non-identical (DZ) twins raised in shared environments.

However, Van Leeuwen *et al*. do not account for how genes and environment interact. For example, a parent's reaction to their child's play behaviour is an environmental influence that develops intelligence. It is possible that MZ twins are treated much more similarly than DZ twins or siblings and it is this environmental influence which explains their similar IQs. This shows the importance of nurture in developing intelligence.

Van Leeuwen *et al*. provide support for the heritability of intelligence. Although they do conclude that genetics have a larger influence, they admit that environmental factors do play a smaller role. This suggests that there is an interaction between nature and nurture. Flynn (1987) points out that there is scope for intelligence scores to improve over time, therefore suggesting environmental influences. Our brains benefit from key micronutrients (e.g. neurons become more efficient), so people are performing better on IQ tests now than they did 50 years ago. This supports the idea of nurture and intelligence. Intelligence tests will always be questioned on their ability to measure innate intelligence, in fact intelligence in general.

In conclusion, it is likely that intelligence is best explained by the interaction between nature and nurture. Bartels *et al*. (2002) argues that intelligence may be more an interaction between nature and nurture: the genetic effects of the variability in intelligence are between 25% and 50%, while part of the remaining variance results from the nurture of children brought up in the same family.

Page 123

Component 3 Section B part (c):

(c) A psychologist might suggest to Nadine a nurse visitation programme (NVP) which would reduce her stress and reduce the risk of her harming her baby. The principle behind the NVP intervention is to reduce stress in parents. A nurse visits the parent(s)-to-be at home before childbirth and for some time afterwards. The programme trains parents to cope with stressors that could provoke mistreatment and they are put in touch with health services and social support, e.g. friends. Such stress reduction will have a long-term effect on reducing risk-taking later in life.

The NVP would work for Nadine because preventing child mistreatment avoids the risk of damaging brain structures and processes at a sensitive period in development. We know that early stressful experiences can damage the prefrontal cortex, limiting its influence on the ventral striatum (VS) later in life. This can lead to more impulsive behaviour and greater risk-taking. The intervention stimulates brain development by encouraging Nadine to provide better nurturing care for her child. As long as Nadine agrees to this and takes on board the advice she is offered, this should reduce the chance of her baby suffering stress early in life which we know can have life-long negative effects.

(c) A psychologist might suggest that Devon takes a graduated driver programme. This is an intervention that directly targets risky driver behaviours. Adolescents are frequently involved in driving accidents, and this is possibly due to the delay in the maturation of the cognitive control system relative to the emotion regulation system (which matures earlier). This imbalance leads to an underdevelopment of cognitive skills that are in fact crucial to driving, e.g. distance judgement. This makes the programme an ideal way to help ensure Devon remains safe on the roads with his friends.

Graduated driver programmes are designed to reduce the impact of arousal and make driving safer. Driving with friends in the car is likely to produce high arousal for Devon. Interventions during adolescence have been devised to reduce the impact of arousal on behaviour. This programme is available for inexperienced drivers like Devon. In the 'learner' stage, Devon would always be supervised. In the second 'intermediate' stage, Devon can drive unsupervised but only during daylight. Devon can only reach stage 3 ('full privileges') after passing stage 2 and reaching the age of 18. If Devon takes part in this programme, he will become more aware of the dangers of his risky driving behaviour and hopefully learn to drive in a more responsible manner.

Page 125

Component 3 Section B part (a):

(a) Barkley-Levenson and Galván investigated the influence of brain development on risk-taking behaviour. They compared the risk-taking of 19 adults and 22 adolescents on a gambling task while having an fMRI scan. Participants detailed their monthly spending money and where it came from. The researchers gave participants a number of different gambles which had a 50% chance of gaining the amount shown on one side of a spinner and a 50% probability of losing the amount shown on the other side. On each trial, participants had to decide whether or not they would accept the gamble for real money.

When there was no risk involved, they found no difference between rates of acceptance for adolescents or adults. This was for both gain-only and loss-only trials, suggesting that adolescent brains are no different from adult brains when *not* taking a risk. However, the higher the Expected Value (EV) of the win, the more likely adolescents were to gamble compared to adults. Barkley-Levenson and Galván found that these results correlated with greater activation of part of the brain called the ventral striatum, which is sensitive to rewards, in the adolescents. As the EV increased, activation in the superior medial prefrontal cortex (PFC) also increased. This shows that the adolescent brain has a uniquely heightened sensitivity to rewards and that the brain's 'valuation system' is located in the medial PFC.

It can also be concluded that the ventral striatum is important in representing valuation in adolescents which is not true in adults. The research shows that there is neural sensitivity to rewards. Adolescent risk-taking is therefore underpinned by biological processes that occur in a specific part of the brain.

Component 3 Section B part (b):

(b) The research by Barkley-Levenson and Galván clearly supports the nature side of the debate in that biological features cause us to behave in certain ways, i.e. a hyperactive ventral striatum causes risk-taking behaviour. For example, Barkley-Levenson and Galván found that their results correlated with greater activation of part of the brain called the ventral striatum, which is sensitive to rewards, in adolescents. As the EV increased, activation in the superior medial prefrontal cortex (PFC) also increased. This shows that the adolescent brain has a uniquely heightened sensitivity to rewards and

that the brain's 'valuation system' is located in the medial PFC. Furthermore, it is argued that the process of synaptic pruning is innate, based on a genetically-determined blueprint. This research suggests that risky behaviour in adolescents is innate as their brains have yet to fully develop. This further supports the nature argument.

However, synapses that are underused are removed, showing environmental stimulation. This supports the nurture side of the argument. Those on the nurture side of the argument would argue that processes such as education can reduce such behaviour. Risky behaviour could also be a learned behaviour, as adolescents are very susceptible to peer pressure. For example, the risky behaviour of teenage drivers could be explained by a need to impress others to increase self-esteem, rather than by biological processes. Therefore, education programmes such as graduated driver programmes are interventions which target risk-taking driver behaviours directly through the learning process of nurture. Additionally, it is also possible that certain substances such as drugs and alcohol can make risky behaviour more likely. Although these substances have physical effects that would support nature, the choice to take them and the influences on those decisions are environmental, e.g. the behaviour of peers and role models. This therefore supports the nurture argument.

(b) Reliability refers to the consistency of a test or procedure carried out in psychological research. The research by Barkley-Levenson and Galván can be said to be highly reliable as it used scientific techniques, which are objective and produce consistent results which can be replicated. For example, the researchers used standardised procedures, e.g. the gambling task was the same for everyone. Furthermore, the fMRI scanning followed an established protocol, so it was conducted and analysed consistently. This would suggest that their findings in relation to pre-adult brain development and risk-taking behaviour are reliable. This is important as it means that the results can be generalised to other groups of adolescents and not just to the sample that was used by Barkley-Levenson and Galván. Therefore, applications of the research, e.g. the introduction of graduated driver programmes, can be made.

Previous research by Steinberg (2008) suggests that risk-taking in adolescence, e.g. drug-taking, is directed by the interaction of two brain systems that mature at different times. The ventral striatum (VS) is an emotion-regulating system and matures in response to changes in the VS resulting from increased dopamine activity in early adolescence. The VS is involved in sensation-seeking behaviour and addiction and has greater sensitivity in adolescence to rewards than at any other age.

The prefrontal cortex (PFC) is a cognitive control system. It matures later than the emotion-regulating system and cannot exert control over risk-taking behaviours. This imbalance during adolescence results in more impulsive behaviour than in childhood or adulthood. As Barkley-Levenson and Galván's research supports these theories, this also shows reliability in the findings.

Therefore, the fact that research into pre-adult brain development tends to follow scientific procedures would suggest that it is likely to be reliable as it follows standardised procedures. This is beneficial as research can be replicated and findings can be investigated for consistency.

Page 127

Component 3 Section B part (c):

(c) A psychologist might suggest sensory integration therapy (SIT) to Esther to help her daughter with her difficulties processing sensory information. SIT can be used to aid all children, but specifically those who have difficulties processing sensory information – some children are hyposensitive to sensory stimuli (e.g. they don't feel pain), whereas others are hypersensitive, (e.g.

they are overwhelmed by sounds). Therefore, this therapy would be suitable for Esther's daughter as she is concerned that sensory overload in school is leading to her daughter's 'temper-tantrums'.

Esther's daughter would firstly be observed by an occupational therapist in school, who would use checklists to diagnose sensory problems. A structured programme of sensory experiences would then be tailored to the daughter's needs. This would be her 'sensory diet' and would include play activities, e.g. messy play. Activities would become more challenging over time. The programme involves accommodations, which are adjustments in Esther's daughter's environment. For example, schools provide sensory-friendly classrooms with reduced lighting and glare, and also offer special training for teachers.

The SIT programme would be useful for Esther's daughter as the sensory diet can become a daily home routine, and one that fits into her and her family's schedule. SIT is flexible and realistic about what her parents can achieve. If this programme is successful, it should help reduce Esther's daughter's temper-tantrums.

(c) The psychologist might advise Malcolm to use form constancy to improve the speech of the children in his nursery. 'Form constancy' refers to how our perceptual system 'knows' the properties of an object, e.g. shape does not change even when viewed from a different angle. The aim of the application is to develop those constancies that are essential for functioning in everyday life, e.g. through play. The psychologist would suggest that Malcolm uses activities to develop shape constancy with the children in his nursery school. Activities can use household objects or toys that are familiar to the children. The child identifies all the rectangular shapes in a room. Then he or she stands in a different place and repeats the activity. Form constancy is useful because it is fundamental to reading, writing and speech. For example, in whatever way the letter 'L' is represented, it is still the letter 'L' even though the projection of it on our retinas varies.

The psychologist would also suggest activities to develop auditory perceptual constancy. Malcolm could introduce games that involve saying the same words but in high and low pitches. This helps the child understand that speech sounds are the same no matter who says them. This would help the children to distinguish between similar sounds in speech, such as 's' and 'f'. Listening to music is beneficial for understanding that sounds remain constant under changing conditions because an instrument, e.g. a guitar, remains that instrument even if its tone or pitch changes.

Page 129

Component 3 Section B part (a):

(a) Gibson and Walk tested whether youngsters would crawl over an apparent cliff – if the neonates did it could be assumed that the ability to see depth is not innate. Their apparatus consisted of a 'centreboard', either side of which was a sturdy glass platform. One side of this had a chequered pattern immediately under the glass (the 'shallow side'). On the other side of the centreboard was a visual 'cliff' – here, the chequered pattern was beneath a vertical drop. The sample was 36 human babies ranging in age from six months to 14 months. The mothers of the babies also participated in the experiment. The independent variable (IV) was whether the infant was called by its mother from the cliff side or the shallow side (of the visual cliff apparatus). The dependent variable (DV) was whether or not the baby crawled to its mother. This was a repeated measures design because the baby was called from both the cliff side and the shallow side of the apparatus.

Gibson and Walk found that, even when encouraged to do so by their mothers, 92% of the babies refused to cross the cliff – even if they patted the glass. This experiment was repeated with chicks,

lambs and kids (baby goats) and none of them would cross to the deep side. As the infants were able to detect the danger from the 'cliff' side, Gibson and Walk concluded that depth perception might be innate – it was at least present as soon as they could crawl. However, as human infants take several months to crawl it is possible that they had learned their ability to perceive depth during this time.

Together, the findings suggest that depth perception is an innate process. The survival of any species has evolutionary value. In order to survive, animals develop depth perception by the time they can move independently. In humans this seems to be an innate predisposition to learn at a certain time rather than an innate ability.

Component 3 Section B part (b):

(b) The nature argument suggests that our behaviour is due to innate, biological and genetic factors whereas the nurture argument explains behaviour from an environmental and learned perspective. Gibson and Walk may be seen as supporting the nature argument as they provide an innate explanation of depth perception. This is due to the fact that the participants were so young that it is presumed their perceptual development is mainly biological. Similarly, Bower *et al*. (1971) tested depth perception in 8- to 17-day-old babies. Babies raised their arms defensively when shown a smaller object 8 cm away heading towards them, but not a larger object 20 cm away heading towards them. This suggests the babies had some depth perception only days after birth and supports a nature argument.

However, on the other hand, Hudson (1960) showed two-dimensional drawings to South African children and adults who were schooled or unschooled. The unschooled participants could not correctly interpret the depth cues in the image in the way the schooled participants could. This implies that depth perception is at least partly learned through experience of drawings that represent three dimensions. This means that perceptual development in these participants would appear to support the nurture argument.

However, we are aware that depth perception changes extremely quickly after birth, and this would imply environmental influences. The human babies in Gibson and Walk's study were old enough so that environmental influences on depth perception cannot be ruled out which is evidence for the nurture argument. For example, cliff avoidance in humans appears to develop by six months. In that time, babies have had opportunities to acquire depth perception through experience, suggesting that depth perception might not be innate in humans.

In conclusion, to fully explain the development of depth perception we need to consider the interaction between nature and nurture – biology and environment.

(b) One methodological issue with Gibson and Walk's research into perceptual development is one of sampling bias. As the sample size was small, it limits how much the results can be generalised to the wider population of all children. For example, the sample consisted of just 36 infants aged between 6 and 14 months and this does not necessarily mean that perceptual development found in this sample would be the same for all children. Additionally, as the research took place at Cornell University it is likely that the sample was biased in terms of white, middle-class Americans, which further limits the generalisability of the findings concerning perceptual development. However, if a nature argument is to be followed, then the demographic nature of the sample should not influence the findings into perceptual development. The demographic nature of the sample could influence the findings if it was found that, for example, white, middle-class Americans provide a particularly

stimulating nurturing environment in which to raise their children. However, this assumption is something of an overgeneralisation and one that it difficult to support.

Looking at perceptual processes using the visual cliff apparatus involves inferring meaning from the babies' behaviour. In this way, Gibson and Walk made certain assumptions about what the babies were thinking. These assumptions may not necessarily be valid – especially when there is no verbal communication to support the assumptions made. Therefore, it could be argued that their findings are based on subjective interpretation of behaviours. This limits the validity of the research as there is little objective evidence to support the findings. Although the procedures and instructions were highly standardised and provided a high control of variables, it is possible that the verbal cues provided by mothers may have changed when calling the child from the shallow side compared to the cliff side. For example, the mothers knew the aim of the research and may have unconsciously communicated this to their babies. Therefore, demand characteristics could be a confounding variable in this research thus further limiting the validity.

However, Gibson and Walk did control many potentially extraneous variables, enhancing internal validity, e.g. the two sides of the visual cliff were identical in every way except the appearance of depth. Moreover, Gibson and Walk's methodology is reliable as they used standardised procedures, e.g. the starting position for each baby or young animal was exactly the same for each trial. It also meant that the procedure was easily replicated.

Page 131

Component 3 Section B part (c):

(c) Martin might recommend memory strategies to the year 11 pupils to improve their exam revision because there is a lot of content to revise for GCSE exams. This works on the basis of context-dependent memory. Cues or 'triggers' can be powerful aids that can help when trying to recall information, especially for year 11 pupils in exams. A cue can help pupils remember something if it is present at encoding (when we learn material) and at retrieval (when we recall it). Therefore, Martin might suggest that the pupils use mnemonics or make up rhymes or stories to make the content more memorable.

Another strategy he could teach them would be the memory palace. He would ask the year 11 pupils to select somewhere that is really familiar, e.g. inside a building (hence 'palace') or a street they often walk down. He would ask them to form mental images of everything they want to remember and 'place' these images in various locations in their 'palace'. To recall the items, the year 11 pupils can take a mental walk through their 'palace'. Each location acts as a cue to trigger their memory of the item placed at the location.

These techniques would improve pupils' memory and help enormously with their revision for GCSEs.

(c) Jhumpa could use mind-mapping to help her prepare effectively for her psychology exam. A mind map has a central element, which is the main concept, e.g. Milgram's core study, and several lines branch out from it to sub-elements. Each different aspect of the main concept should be positioned at the end of each branch in the mind map. There could be further lines or twigs leading to lesser elements of the core study, that, while still important, are less central to understanding the study. A complex mind map could include other lines connecting related concepts, using different colours and images.

Mind maps work as they help structure knowledge in a meaningful way and creating a mind map will force Jhumpa to process material meaningfully. This means that information for Jhumpa's

psychology exam is easier to recall, so the *process* of producing a mind map may be more beneficial than the end result. Therefore, a mind map will enable Jhumpa to see the connections between different areas of psychology and the process of creating it will help her to remember.

Page 133

Component 3 Section B part (a):

(a) Wood *et al.* investigated how children of different ages respond to tutoring when they have a problem to solve. Children of 3, 4 and 5 years of age were given a pyramid task to solve. They were tested individually for between 20 minutes and an hour and were asked to put together a wooden pyramid made up of 21 blocks that interlock together. The task was designed so that children could understand it, but it was too difficult for them to complete on their own.

Results were scored in many ways, including how well the children put together the pyramid. Wood *et al.* found that the youngest children (3-year-olds) needed the most help, with the tutor having to show them how to complete the task rather than learning by verbal instruction. They were also the group most likely to go off task and needed the tutor to keep them motivated. The middle age group (4-year-olds) needed the tutor to prompt and correct mistakes they made. The eldest group (5-year-olds) needed the least amount of help. These children were the most independent and only really needed the tutor to confirm whether what they were doing was correct.

Wood *et al.* concluded that this is the action of 'scaffolding', with the study demonstrating how younger children need more direct support, while older children need less. Wood *et al.* identified several key ideas for teachers and tutors to help scaffold effectively. For example, reduction in degrees of freedom which help the learners eliminate the number of things they can do wrong, leaving them with the solution. This shows that children need help in the form of scaffolding to successfully problem solve, but this help needs to be tailored to the child's age and ability in order to be successful.

Component 3 Section B part (b):

(b) The research by Wood *et al*. has high internal validity. This means they were able to measure what they set out to measure. For example, the task of constructing a pyramid had high validity as it was appealing and similar to the kind of activity children would engage in either at home or at school. However, children reason in a different way from adults which could have made briefing the child about the study quite difficult. Additionally, it can also make collecting and interpreting the behaviour difficult as adults may have a biased view of the behaviour. Therefore, this may limit the validity of their research.

On the other hand, there may be low validity as Wood *et al.*'s study was a controlled observation in a laboratory setting so children may not have behaved naturally. For example, each child was tutored individually and sat at a small table with the 21 blocks spread out on it. This learning environment would not necessarily be the same as the environment in schools. However, Wood *et al.*'s procedure was flexible in order to fit in with the child's responses, which increases the ecologically validity of the research. The reliability of the key research may be good as Wood *et al.* used a standardised tutoring procedure, e.g. five minutes' free play for all children. Therefore, this is likely to produce consistent results regarding the children's cognitive development. On the other hand, it may lack reliability as the procedure was flexible in order to fit in with the child's responses and would be difficult to replicate and create comparison data.

Wood *et al*.'s sample of children was limited because it was drawn from a very narrow geographical area and socioeconomic grouping (middle class). For example, they used 30 children aged 3-, 4-, or 5-years-old from families living within a five-mile radius of Cambridge, Massachusetts, USA. This limits how far the results can be generalised to other children from different backgrounds.

(b) Determinism is the concept that all human behaviour results from either internal or external causes that are not under our conscious control or free will. This philosophy suggests our behaviour is the result of a chain of consequences. Piaget's research into cognitive development and education is seen as deterministic due to the fixed stages of cognitive development. For example, the pre-operational stage (approximately 2 to 7 years) is where children lack consistent logic and make reasoning errors. However, the concrete operational stage (approximately 7 to 11 years) uses logical reasoning with physical objects only. This means that a child is capable of conservation (understanding that quantity stays constant even if its appearance changes), and that is determined by their age-related stage of development. As the stages are linked to biological development of the brain, e.g. a child can't learn until it is ready, it is biologically determinist.

Similarly, Vygotsky saw the scaffolding of a task as the responsibility of the tutor which could be seen a form of environmental determinism. For example, children learn in a sociocultural context. Experts (either adults or peers) pass on knowledge, skills and cultural values and so language is crucial in learning. Additionally, Vygotsky's zone of proximal development (ZPD) suggests that cognitive development occurs in the gap (ZPD) between what a child understands on their own and what they could understand in collaboration with an expert. This again highlights environmental determinism.

However, the idea of discovery learning puts some free will element into the argument as the child is choosing what parts of the environment to engage with, out of curiosity. Wood *et al.* show that interactions between tutor and child are individualised and moderated by other factors within the child's control. These might include their choice of behaviour, for example how polite they are to the tutor. Children learn best when they are active, but they have to choose to be active learners, i.e. they have to exercise their free will.

Therefore, cognitive development and education are best seen as the product of soft determinism. There is an element of biological preparedness and innate ability, but learning takes place through interaction with the environment, discovery and active learning.

Page 135

Component 3 Section B part (c):

(c) A psychologist would suggest that Mercedes should look for high-quality childcare provision for her baby. The features she should look for are a low number of children per caregiver as this is better for the care of her child. Mercedes should look for staff to be well-qualified, experienced and knowledgeable about child development. Clearly this would be important so that Mercedes feels reassured that her child will be looked after properly when she is at work. Staff turnover should be as low as possible as this indicates a successful day care nursery, and the staff should be responsive and sensitive to the emotional needs of Mercedes' baby.

The psychologist would stress to Mercedes that consistency of care is a feature of high-quality day nurseries and this contributes to an attachment-friendly environment. Her baby should be allocated a key worker. The 'key person approach' assigns each child (and family) a specific member of staff who cultivates an attachment bond with the child by being approachable, warm, sensitive and

responsive. Mercedes can be reassured that consistency of care and affection can provide an attachment that is not identical to the bond between baby and main caregiver (e.g. mother) but is good enough to be beneficial.

(c) In order to improve Florence's experience of hospitalisation, the hospital should maximise family contact. Parents and children should be able to stay with each other on hospital wards so that Florence and her mother can still be together. Charities have built houses or rooms near to children's hospitals so families can remain close, so this may be a possibility for Florence's mother. With this 'rooming-in', families can remain in close proximity, meaning the bond between primary caregiver (Florence's mother) and child (Florence) is maintained.

The hospital should also provide suitable substitute emotional care when Florence's mother cannot be there. Substitute carers in hospitals should be sensitive and responsive to Florence's emotional needs. They should maintain Florence's typical routines as much as possible. Other caregivers in Florence's life, e.g. her grandparents, should also be encouraged to visit regularly to maintain an emotional connection with the family. In this way, if the hospital stay is well managed, then the three weeks of care should not have any effect on Florence's attachment with her parents.

Page 137

Component 3 Section B part (a):

(a) Ainsworth and Bell's 'Strange Situation' was a controlled observation in which one-year-old babies and their mothers were observed through a variety of different situations. They tested 56 babies (aged between 49 and 51 weeks old), all from white, middle-class families. The Strange Situation has eight episodes which are designed to test different things: how the baby uses their mother as a secure base from which to explore the unfamiliar surroundings; how the baby acts when separated from their mother; how the baby reacts to the stranger; and how the baby reacts on reunion with their mother. For example, episode 1 included the mother, baby and observer.

Observations were made through a one-way observation window. Behaviour was classified by how the babies interacted with mother and stranger, e.g. proximity- and contact-seeking behaviours such as approaching, reaching. Exploration was found to be at its lowest in episode 7, when it was just the baby and the stranger in the room, and the baby's crying increased in episode 4, again when just the baby and stranger were present.

It can be concluded that attachment and attachment behaviours are not identical – the predisposition to seek proximity is the attachment. Also, attachment behaviour increases in threatening situations of danger or separation from the mother. Strong attachment behaviour, e.g. seeking proximity, cannot co-exist with exploratory behaviour, but the mother overcomes this by acting as a safe base from which the baby can explore. Attachment behaviours are often stronger after separation and there are individual differences in the quality of attachments.

This research would help parents planning to use day care or a childminder as they could ensure that they allow the child time to get to know the caregivers in their presence, in order to build confidence and prevent stranger anxiety.

Component 3 Section B part (b):

(b) The Strange Situation was a controlled observation with a standardised procedure, with all participants being exposed to the eight episodes. For example, mother, baby, observer in episode 1. This meant that extraneous variables were minimised and internal validity was high. However, on

the other hand, the Strange Situation was artificial. This means that a mother might behave differently towards her child than she would at home, so the study is low in external validity. Although babies are exposed to strangers in everyday life (e.g. childcare nursery), which would suggest that ecological validity is high, the artificial nature of the Strange Situation means we can question the ecological validity of the research.

Reliability of Ainsworth and Bell's research was high as observations were standardised using five behavioural categories. For example, proximity- and contact-seeking behaviours, e.g. approaching, reaching. Additionally, inter-rater reliability of four babies in the Strange Situation was very high, e.g. +.99 for exploration. However, some mothers diverged from the Strange Situation 'script' so Strange Situation experiences may not have been consistent from one infant–mother pair to the next. This would limit the reliability of the research findings.

Ainsworth and Bell's research demonstrates sampling bias as the sample used was 56 white middle-class children and their mothers. This means that generalisations about attachment and exploration are questionable. It may be that parenting styles and attachment is substantially different in working-class families who would most likely have to work very long hours and not be able to afford high quality childcare. Also, the fact that these mothers volunteered to take part in this study also suggests that they didn't have any worries about attachment issues. This might explain why Ainsworth and Bell found that 70% of their sample had a secure attachment.

(b) In the sample from Ainsworth and Bell's research, all parents had given informed consent for their children to take part in the Strange Situation study. They formed a volunteer sample and were not deceived about the aims such as how much the one-year-old babies use their mother as a secure base for exploration. The parents could withdraw themselves and their child at any time and stop participating in the study if they felt uncomfortable. In these ways, the study can be seen as extremely ethical.

However, it seems ethically questionable to design the Strange Situation to cause distress. The study was upsetting for the children – being left alone and being separated from their mothers did cause them distress. This suggests that the participants were not really protected from harm as the BPS guidelines for responsibility suggest that participants should be in the same 'state' at the end of research as they were in at the beginning. It could be argued that Ainsworth and Bell could have foreseen the distress the babies experienced. On the other hand, the mothers were only outside the door and could easily have been reunited with their child if the child became too distressed.

The research by Ainsworth and Bell is socially sensitive because it has important implications for parents who work away from the home. This research could help parents planning to use day care or a childminder as they could ensure they allow enough time for the child to get to know the caregiver, while in their presence, in order to build confidence and prevent stranger anxiety. Therefore, Ainsworth and Bell's research has broader implications beyond the study itself.

In conclusion, overall the research by Ainsworth and Bell was ethical and any distress caused was very minor and short. The ends did justify the means.

Page 139

Component 3 Section B part (c):

(c) Shirley might suggest that the government regulates the advertising industry more tightly to reduce the impact of advertising on children under 12 years old. There are a number of ways that the government could do this. The Campaign for a Commercial-Free Childhood (CCFC) have

proposed a total ban on advertising to children under 12 years in the US. However, this is not very likely to happen as children are an important consumer market. A more realistic approach is to selectively ban certain types of adverts, for example junk food.

The UK Code of Broadcast Advertising bans the advertising of products that appeal to children during children's programmes. The advertising industry could also be encouraged, by government, to self-regulate and ensure advertisements are ethical and do not promote gender stereotypes or antisocial behaviour. These types of partial or selective bans have proven useful in reducing the impact on children and are the type of strategy that Shirley might recommend. For example, interventions to restrict advertising have been closely linked to preventing and reducing childhood obesity, with economic and health benefits to individual children and their families.

(c) Ramone could increase the children's awareness of the effects of advertising by employing media literacy interventions. Cognitive defence is a strategy that involves teaching children directly about the purpose of adverts and ways of thinking critically about advertising, marketing and consumer culture. Ramone could speak to children in school to make them more aware of the effects of advertising and perhaps hand out leaflets for the children to take home so they can discuss the issue with their parents.

Ramone could also use 'affective defence' as a further strategy. 'Affective' in this context refers to 'emotion-based'. Ramone should encourage the children to develop critical attitudes towards advertising, especially advertisements that appeal to their emotions. The more cynical children's attitudes towards TV in general are, the less vulnerable they are to the persuasive intent of advertisements. A complete intervention strengthens both of these cognitive and affective defences.

These types of strategies are useful interventions to avoid the negative consequences of advertising, such as parent–child conflict over buying advertised products. The strategies will also decrease the dissatisfaction and unhappiness that children experience when they are unable to fulfil their high expectations. Raising the children's awareness of the effects of advertising using educational strategies should enable them to think more critically about advertisements and be less influenced by them.

Page 141

Component 3 Section B part (a):

(a) Johnson and Young aimed to investigate the themes and styles that contribute to what children learn about gender from television commercials. Specifically, whether the language of ads aimed at preschool/early elementary school children is scripted differently for boys and girls and how gender is used as a discourse code to link products to gender roles.

They analysed 478 advertisements broadcast during cartoon programmes in New England, USA, recorded from 1996, 1997 and 1999. Advertisements showed toys, food, educational announcements, recreational facilities, video and film trailers or other. They then categorised the adverts into boys' toys, girls' toys, toys for both genders, or toys with no specific gender shown.

They found that there were significant differences in the language used. The names of the toys in the ad reinforced gender stereotypes (e.g. boys' toys were names like 'Beast Wars Transformers', while girls' toys were called 'Friend Link and Tea Bunnies'. Voiceovers also differed according to gender. In ads for both boys' and gender-neutral toys, a man's voice was used. In ads for girls' toys, a woman's voice was used 89% of the time but these could have man's voices with them. This shows that advertisements are promoting the difference between genders through use of stereotypes.

Johnson and Young concluded that language that polarises gender continues to be presented in consumer culture for children to model. Also, ads present children with stereotypical language which communicates that boys prefer action and girls like to talk. The research suggest that children tend to play in different ways that match their gender and that gendered language of ads provides models for children.

Component 3 Section B part (b):

(b) Validity refers to the extent to which a study actually measures what it sets out to measure. Johnson and Young's categories for 'gendered voice' of ads (e.g. use of the word 'power') is relevant to gender stereotyping in children's advertising, so the study has high internal validity. Johnson and Young used a systematic coding method. Ads were classified into verbs that were related to action (e.g. fly) and competition/destruction (e.g. crush). The results supported the impact of advertising as boy-oriented ads had over 12 times more competition/destruction verb elements than girl-oriented ads, thereby indicating validity.

Johnson and Young's research used a sample of advertisements that were aired in New England, USA, therefore their research lacks population validity. It may not be possible to extrapolate the results about the impact of advertising to other cultures or places. This also limits the external validity of the research findings.

They found that 80% of voices in boy-oriented ads were gender-exaggerated and 87% of voices in girl-oriented ads were gender-exaggerated. However, the extent of 'gender exaggeration' is likely to be a matter of interpretation (i.e. is more subjective). It is possible that the researchers' own stereotypes and preconceptions on gender made their interpretation subjective, which makes their findings less valid.

Bandura's research into social learning theory does show that children are influenced more by same-gender role models and do imitate what they see. For example, girls who watch ads where girl or women characters are rewarded (e.g. for passivity) are more likely to imitate this. Moreover, this also suggests that Johnson and Young's findings have concurrent validity.

In conclusion, it is clear that advertising does have the potential to influence children, therefore the research can be seen to have validity.

(b) The nurture side of the nature/nurture debate suggests that behaviour is learned and influenced by the environment that surrounds us. Bandura showed that children learn via social learning theory and will imitate behaviour performed by role models, especially if they identify with these role models (e.g. are of the same gender). Children learn gender roles from the language and behaviour that is presented to them in ads, supporting nurture. Johnson and Young imply that advertisements reflect cultural gender stereotypes that define a woman's role as caring and a man's role as aggressive and dominant, all of which suggests environmental effects, providing support for the nurture argument.

Nature, on the other hand, explains behaviour from the point of view of inherited characteristics via genetics and biology. If children are born predisposed to behave in gender-stereotyped ways, e.g. aggression due to hormones, it would be as a result of nature. It might be that children choose which advertisements to imitate due to their biological predispositions, e.g. someone with a biological predisposition to aggression would be more influenced by advertisements for toy soldiers or tanks. Some children are naturally more easily led and more likely to copy other people's behaviour, whereas other children are more independent free thinkers. Furthermore, as we learned from Bandura, boys were more aggressive than girls which may suggest a genetic explanation.

In conclusion, we need to consider the impact of both nature and nurture when considering the impact of advertising on children. Some children are more susceptible to the influence than others and this may be genetic, but it is clear that children do learn through observation.

Component 3 Chapter 3 Criminal psychology

Page 143

Component 3 Section B part (c):

(c) A biological strategy that a criminal psychologist might recommend to Andrew is to use dietary supplements. Supplements are useful to HM Prison Service as a strategy to reduce disruption in prisons or to prevent recidivism if combined with a nutrition education programme that prisoners follow after their release. Omega-3 deficiencies may result in self-control problems and aggressive behaviour. Antisocial behaviour in prisons, including violence, is effectively reduced by supplementing young offenders' diets with vitamins, minerals and essential fatty acids e.g. omega-3 found in salmon.

An example of a nutritional supplement regime for prisoners comes from Gesch *et al*. 2002. Nutritional supplements are packed into blister packs labelled with the prisoner's name, cell and prison number. An omega-3 capsule is taken four times per day and a vitamin or mineral capsule at lunchtime. The omega-3 and vitamin or mineral supplement dosages should equal the recommended daily intake and be taken every day for a month. Supplements are consumed under the watch of prison guards to ensure compliance.

This strategy will be effective in reducing the risk of criminal behaviour, because omega-3 improves regulation of the limbic system by the frontal cortex resulting in reduced self-control problems and reduced aggressive behaviour. Therefore, if Andrew provides this strategy for the offenders in his prison, it may help to reduce recidivism.

(c) A strategy that a psychologist might recommend to Seemab to use as part of the Troubled Families Programme is dietary supplements. These supplements would form part of a nutrition education programme that Seemab would introduce to the families of criminals. Omega-3 deficiencies may result in self-control problems and aggressive behaviour and so providing these supplements and a diet that contains omega-3, such as salmon, would help to alleviate these problems.

This strategy would involve Seemab providing weekly menus with suggested meals that could be cooked by the family to support them not engaging in future criminal behaviour. The Troubled Families Programme could support families by providing these supplements and a suggested programme. The families could be given nutritional supplements that are packed into blister packs labelled with the instructions to take an omega-3 capsule four times per day and a vitamin or mineral capsule at lunchtime. The omega-3 and vitamin or mineral supplement dosages should equal the recommended daily intake and be taken every day for a month. If Seemab works with the family and provides this strategy for them, it may help to reduce the chances of them engaging in criminal behaviour. This is because omega-3 improves regulation of the limbic system by the frontal cortex and the result is reduced self-control problems and reduced aggressive behaviour.

Page 145

Component 3 Section B part (a):

(a) Raine *et al*.'s research looked into understanding how the criminal behaviour of murderers pleading not guilty by reason of insanity (NGRI) can be explained to a certain extent by brain dysfunction in specific areas. This quasi-experiment involved 39 men and 2 women who were

accused of murder and who pleaded NGRI. They were matched to a control group by age and sex, with no convictions and no history of psychological disorder.

All participants completed a continuous performance task (CPT) based on target recognition. 30 seconds after starting the CPT, the participants were injected with an FDG glucose tracer, which shows levels of activity in the areas of the brain being exercised. After 32 minutes of working on the CPT, the participants had a PET scan.

Raine *et al.*'s research found that, in the murderers' minds, there was a lower activity level in the prefrontal cortex, corpus callosum and left angular gyrus compared to the control group. As well as this, in the left hemisphere there was reduced activity in the hippocampus, thalamus and amygdala for the murderer group compared to the control group.

As all of these areas of the brain link to violent behaviour, Raine *et al*. concluded that criminal behaviour can be explained to a certain degree by brain dysfunction. Specifically, there appears to be lower function in the prefrontal cortex, corpus callosum and left angular gyrus – areas that are linked to emotional processing, communication within the brain and rational thinking. As well as this, within the murderers there was lower activity in the hippocampus, thalamus and amygdala within the left hemisphere, areas linked to memory, reaction to threatening stimuli and emotional processing. Lower levels of activity in these areas mean that these behaviours are not as apparent for criminals compared to non-criminals, meaning they may be more inclined to commit criminal behaviour such as murder. However, Raine *et al.* emphasise that other factors will affect criminal behaviour, such as the environment, and that their results should not be used to support the argument that murderers pleading NGRI should not be held responsible for their actions.

Component 3 Section B part (b):

(b) Research into what makes a criminal will have high population validity if the sample being studied truly represents the intended target population. It can be argued that the research into brain dysfunction and aggression in murderers by Raine *et al.* has good population validity as the sample consisted of 41 murderers who had pleaded not guilty by reason of insanity (NGRI). This means that the study shows brain dysfunction in real murderers' brains. However, because the murderers were all pleading NGRI, the sample does not represent murderers who plead not guilty in general. Similarly, the sample were only from California, USA which means we cannot be sure that these murderers are typical of murderers across all the USA or in other areas of the world. Therefore, we can conclude that Raine *et al*.'s research into what makes a criminal demonstrates both good and limited population validity.

The internal validity of Raine *et al.*'s research is high as it can be seen to be free from biases that could affect the results. One way to ensure good internal validity is to objectively measure the dependent variable. For example, in their study on brain dysfunction in murderer's brains, Raine *et al*. measured their DV using standardised PET scans. This is objective as it could not be biased by the participants or researchers. This gives the study good internal validity. On the other hand, some studies into what makes a criminal have to rely on self-report data gathering techniques.

Self-reports can be biased as respondents can be subject to demand characteristics or social desirability bias. This means that the study may have low internal validity. For example, Palmer and Hollin conducted a study to see if young offenders had immature moral reasoning. To investigate this, they used two questionnaires. It is possible that the participants could have lied on these questionnaires. This means that Palmer and Hollin's study may have problems with internal validity.

In conclusion, some studies into what makes a criminal have high control and high internal validity as they study participants objectively, whereas some studies have to rely on self-report which means their internal validity can be questioned.

(b) The idea of determinism is that all behaviours are causally determined by factors not under our control. The research by Raine *et al.* could be considered to be deterministic to an extent as it suggests that brain dysfunction is related to violence. For example, low activity in the left amygdala has been linked to aggressive behaviour and fearlessness and so is related to violent behaviour. However, Raine *et al*. suggest that brain dysfunction alone does not determine violent behaviour but rather it is a contributory factor. It may be that there are other social factors that may interact with the brain dysfunction that determine criminal behaviour.

Furthermore, other physiological explanations can also be seen to be deterministic. For example, Brunner *et al.* (1993) used a case study of a violent Dutch family to identify a mutation in the MAOA gene (called the 'warrior gene'). This further supports a deterministic point of view because the family have no control over their genetic inheritance and therefore their predisposition to be aggressive.

Similarly, non-physiological explanations can also be seen to be environmentally deterministic. For example, a social explanation regarding family relationships was put forward by Farrington *et al.* (2006). They conducted longitudinal research, interviewing 411 boys/men periodically from the age of eight up to 48 years of age. Criminal records and data about aggressive behaviour was collected from teachers. Results suggested that criminal behaviour is influenced by risk factors such as having a single parent. However, the strong evidence for the role of brain dysfunction and genetics in criminal behaviour also indicates that non-physiological explanations such as upbringing or lack of moral reasoning cannot solely determine criminal behaviour. However, it could be argued that people can exert self-control (free will) over their behaviour. For example, people who grow up in a criminal family do not always become criminals. Similarly, some ex-offenders consciously decide to stop their criminal behaviour.

Page 147

Component 3 Section B part (c):

(c) One way that Michelle could reduce the potential for bias is to use the ACE-V technique. This involves four stages of analysis, comparison, evaluation and verification (ACE-V) and is a structured approach to fingerprint identification which can be useful in minimising the effects of bias.

Michelle's first step is to analyse and make a thorough examination of the unknown evidence from the door handle. In the case of the fingerprints on the door handle, the latent print is examined to determine the overall pattern of the ridges. Michelle can then look for more detailed features such as the size of a ridge width. Another part of the analysis of a latent print is the assessment of all the various causes of distortion and their effect upon the clarity of the print.

During the comparison phase, Michelle must concentrate primarily on the known, inked prints taken from the suspect. Each inked print is examined to see if it is consistent with the detail found in the latent door handle print during its analysis. In the evaluation phase, Michelle will examine the two prints together, side by side. She will find features in the unknown print first, then in the known print. Corresponding features are then evaluated to determine if they are within tolerance for the level of clarity that exists in the images.

All positive identification opinions must be verified by a second qualified expert. The second expert may repeat the entire process which is best carried out blind. That is, the second expert does not

know from the outset that Michelle has already made the positive identification regarding fingerprints from the drug-related crime.

(c) A criminal psychologist should recommend that Celine works in a linear rather than circular line of reasoning in order to prevent bias in the processing of forensic evidence. This means that the reasoning process works from the evidence to the suspect, rather than from the suspect to the evidence, thereby preventing confirmation bias. Linear sequential unmasking (LSU) is a technique that adopts this linear line of reasoning. A vital element of linear sequential unmasking is that Celine must first examine and document the trace evidence from the crime scene before being exposed to the known reference material such as a case report.

The process of LSU means that following the initial analysis of the trace evidence, the sequential unmasking approach ensures that other case information is presented as late as possible in the examination process and only when it is necessary. It is gradually unmasked to Celine in sequence of importance to the case. For example, Celine may make an initial analysis of a fingerprint. She may then be given a case report to read which provides her with details of the crime such as whether it involved violence, e.g. gun crime. Information may also be given about the complexity of the crime. The information should only be given to Celine in order to help her make an identification. In this way, it is less likely that Celine will be influenced by the case reports and more likely to make an objective identification.

Page 149

Component 3 Section B part (a):

(a) Hall and Player tested the effect of context on fingerprint identification by fingerprint experts. The aims were to see if the written report of a crime affects a fingerprint expert's interpretation of a poor-quality mark. They also investigated whether fingerprint experts are emotionally affected by the circumstances of the case. An independent measures design was used with participants randomly assigned into an IV of low-emotional context or high-emotional context. The DVs were whether the mark was a match or not, whether or not they had referred to the crime scene examination report and if the information contained in the report had affected their analysis.

A volunteer sample of 70 fingerprint experts was used from the Metropolitan Police Fingerprint Bureau. The low-emotional context (LEC) group was given an examination report referring to an allegation of forgery. The high-emotional context (HEC) group was given an examination report referring to an allegation of murder. Experts were asked whether or not they had referred to the crime scene examination report and if the information had affected their analysis.

The results showed that 57 of the 70 participants had read the crime scene examination report, 30 of whom were in the HEC group. 52% of the HEC participants who had read the report felt that they were affected by the information given on the examination report, which is significantly higher than the 6% in the LEC scenario. This suggests that fingerprint experts believe they are open to the effects of cognitive bias. However, the final decisions made by the experts were very similar regardless of the emotional context. This suggests that bias can be reduced if experts are aware that bias exists and if they are trained to recognise possible occasions when bias may exist.

Component 3 Section B part (b):

(b) Research by Hall and Player has good external validity as it has real-world applications. For example, it shows that even if experts think that a serious crime-type has affected their analysis, the final outcome is not affected. Fingerprint experts are adept at dealing with fingerprint analysis in a

non-emotional manner. This is useful as it indicates that fingerprint evidence in courts of law is likely to be valid. Additionally, the population validity of the research is high to an extent. It could be argued that Hall and Player's research has greater population validity than that of Dror *et al*. (2005), as it involved fingerprint experts and not untrained students. This increases the population validity of the research and means that the results are more generalisable to other fingerprint experts.

The research by Hall and Player is valid as it used standardised procedures with control over extraneous variables. For example, all participants were given the same forefinger impression that was used as the fingerprint for the research. Similarly, participants in each condition received the same contextual report (either murder or forgery). This suggests that the findings about the effects of cognitive bias are likely to be valid and can be generalised to the wider legal process.

Despite having standardised procedures and controls, Hall and Player's research can be seen to have high ecological validity. In order to create an environment that was as naturalistic as possible for the experts, they were all asked to participate in work time, and a typical fingerprint examination room within the New Scotland Yard Fingerprint Bureau was used for the experiment. The volunteers were asked to treat the experiment as they would a typical day. This means that the findings can be considered true to real life and have useful applications for police forces in training their experts to be aware of the effects of cognitive biases.

(b) The term 'social sensitivity' is used to describe research where there may be social consequences for the participants or the group of people represented by the research. The results from research into the collection and processing of forensic evidence, in particular fingerprint analysis, have very important real-life implications for suspects in criminal cases. For example, Charlton *et al.* (2010) used semi-structured interviews with 13 experienced fingerprint experts. They concluded that experts are influenced by psychological factors, e.g. job satisfaction and emotional rewards associated with catching criminals, emotions linked to making mistakes and finding identification matches. This means that erroneous conclusions can be made if the context and the motivation is strong enough.

Similarly, Hall and Player (2008) found that even if experts think that a serious crime-type, e.g. murder, has influenced their analysis, the final outcome is not affected. This suggests that experienced fingerprint experts are rarely affected by cognitive bias. This is reassuring for the public that any fingerprint or forensic evidence produced in courts is valid so that there is confidence in the judicial process. This means that further public money should be spent on training fingerprint experts so that their analysis is sufficiently reliable in courts of law and that any miscarriages of justice will be minimised.

Research can also be seen to be socially sensitive due to its ethics. Hall and Player's research can be seen to be ethically sound as the experts provided informed consent and there was little scope for psychological harm. The experts carried out the identifications as they would on a typical day at work and without any time pressure so it is unlikely that they were placed under any undue stress, though they might have been anxious if they felt they were being judged. It is possible that the high-emotional context experts may have experienced some distress due to the murder scenario. However, this type of scenario would be unfortunately commonplace for a fingerprint expert and so the participants were not exposed to any more stress than they would be normally. As such there would be minimal ethical consequences beyond the research ensuring the research is socially sensitive.

Page 151

Component 3 Section B part (c):

(c) The police should use the PEACE Model in their interview with Bernice as it has been developed to produce reliable evidence to be used in court. Initially the police would plan and prepare the interview with Bernice by creating and recording a written interview plan, including characteristics of Bernice and practical arrangements for the interview. The second stage of the interview would be to engage and explain the process to Bernice (e.g. to explain that the interview will be recorded). Interviewers establish a rapport with witnesses to encourage conversation and, in this way, use of the principles of the cognitive interview will help to collect evidence from Bernice.

The next stage of the PEACE process is account, clarification and challenge. Here the police would use open-ended prompts to initiate Bernice's account of the crime, e.g. 'Tell me what happened'. Permitting Bernice to pause and reflect is important. The interviewer also clarifies and expands on Bernice's account of the cybercrimes to ensure everything is covered. Once the police have collected all their evidence, closure of the interview should be planned and the interviewer should announce the date and time before turning the recording equipment off. Finally, the police should evaluate how Bernice's account fits in with the rest of the investigation.

(c) Mirka could advise the police to use the principles of the Cognitive Interview. Memon and Higham reviewed the four components of the CI and found that it was effective in helping police to collect evidence from witnesses and suspects. The first principle the police could use is context reinstatement. This is where the interviewers help witnesses recreate the context of the crime scene, creating images of the original scene, e.g. location of objects in a room.

The second principle that can be used is for the police to encourage the witness or suspect to report everything. In this way, witnesses are encouraged to report any detail that they can remember regardless of how trivial. It is valuable to combine details from different witnesses to the same crime.

A further technique that is used, though less frequently, is to change perspective. Witnesses are encouraged to view the scene as others may have seen it, e.g. the victim (though this may confuse witnesses).

Finally, the police could ask witnesses and suspects to change the order of how they recall the events of the crime, e.g. starting halfway through a sequence of events and then working backwards. Using these techniques suggested by Mirka will help the police to maximise the evidence they collect from witnesses and suspects.

Page 153

Component 3 Section B part (a):

(a) Memon and Higham's research reviewed the use of the components of the Cognitive Interview. Firstly, the use of context reinstatement (CR). The witness mentally reconstructs the physical (external) and personal (internal) contexts which existed at the time of the crime. The interviewer can help witnesses recreate context by asking them to form an image or impression of the environmental aspects of the original scene (e.g. the location of objects in a room), to comment on their emotional reactions and feelings at the time (e.g. surprise, anger, etc.), and to describe any sounds, smells and physical conditions that were present (e.g. hot, humid, smoky, etc.). This is based on the concept of cue dependent memory.

The second component of the Cognitive Interview is to report everything (RE). It encourages witnesses to report all detail that they can remember regardless of how trivial it may appear. This aids the recall of additional information as witnesses are encouraged to report in full without screening out anything they consider to be irrelevant or for which they have only partial recall (Fisher and Geiselman 1992). This technique may provide information that helps combine details from different witnesses to the same crime.

The third component is to ask witnesses to recall from a changed perspective (CP). Witnesses are encouraged to view the scene as others who were also present may have seen it (e.g. other witnesses, the survivor/victim or the perpetrator). The aim is to use a number of pathways to increase the retrieval of detail from the witness about the crime. However, there have been concerns that it could lead to fabricated details and also confuse the witness.

The fourth component is to ask interviewees to recall using a changed order (CO). Witnesses are encouraged to recall events in different orders, for example starting halfway through a sequence of events and then working backwards or from the most memorable event. This technique can result in the recall of additional details and help police to collect evidence.

Component 3 Section B part (b):

(b) The research by Memon and Higham is very useful as it increases our understanding of the ways in which police interviewers can collect evidence from witnesses using the Cognitive Interview (CI). For example, the CI has been shown to increase the amount of information recalled. Memon and Higham's research recommended the use of context reinstatement (CR) where the witness mentally reconstructs the physical and personal contexts of the crime. The interviewer can help witnesses recreate context by asking them to form an image or impression of the environmental aspects of the original scene, e.g. the location of objects in a room. This is based on the concept of cue dependent memory and is useful to the police in collecting evidence. Not only is this useful to the police but it is also useful to the Crown Prosecution Service as it helps them put forward a more compelling case.

Additionally, Memon and Higham's critique shows how the CI can be used to help child witnesses retrieve information about crimes. This is particularly important as children can understandably find the experience of a police interview very stressful and any technique that will help children must be welcomed. In contrast it could be argued that the Reid Technique is less useful because it focuses on the aggressive interrogation of a suspect in order to obtain a confession. This means that the Reid Technique may lead to false confessions, which certainly doesn't facilitate justice and may result in wasting time and money. For this reason, the Reid Technique is not used in the UK, which reinforces the fact that it has limited usefulness.

The Memon and Higham review is also useful as it highlights that police interviewers should be given adequate training in CI techniques for them to be most effective. For example, they recommend a two-day training programme. However, the effectiveness of training programmes depends on their quality and this may be governed by the resources that can be allocated to the training.

(b) Determinism follows the argument that our behaviour is beyond our control and we have no choice in the way we behave. It could be argued that the retrieval of information from witnesses and suspects is determined by others. For example, Memon and Higham's research recommended the use of context reinstatement where the witness mentally reconstructs the physical and personal contexts of the crime. In this context it is the interviewer who can help witnesses recall information by asking them to form an image of the environmental aspects of the original scene, e.g. the location of objects in a room. Additionally, using techniques such as the Cognitive Interview results in a much

higher level of information being collected. For example, Fisher *et al.* (1989) found that 63% more information was obtained by detectives trained in using the CI than those who were untrained. This would suggest that information recalled by a witness is determined by an effective CI.

Similarly, it could be argued that the Reid Technique is also determinist. The argument is supported by the coercive, interrogative nature of the Reid Technique being responsible for confessions from a suspect rather than a suspect deciding to confess out of free will. This may be more the case for vulnerable adults, e.g. those with learning difficulties, or for youths who are more likely to be influenced by these interrogative techniques. On the other hand, the CI instruction to report everything would suggest that there is an element of free will on behalf of the witness to report as much information as they wish about a crime. Indeed, any suspect has the right to remain silent and in such cases this choice demonstrates free will too.

Page 155

Component 3 Section B part (c):

(c) A psychologist might suggest the use of expert witnesses to the Justice Secretary. Expert evidence can be used to interpret and present evidence in the case so that specialist information is clearly explained. For example, Elizabeth Loftus is frequently called upon to provide expert testimony when it comes to matters of memory or indeed a witness perhaps recalling false memories. Therefore, the use of expert witnesses provides an effective safeguard against jurors' over-reliance on witness confidence when assessing the evidence. The evidence that expert witnesses provide is independent, impartial and unbiased to assist a court in reaching its decision where there is a specialised area that needs explaining. This means that the jury should be better able to make an informed decision with less chance of it being overturned later on appeal. Expert witnesses must have detailed knowledge of their subject and the ability to communicate opinions clearly so that jurors can understand.

Evidence for using expert psychological witnesses comes from Cutler *et al*. (1989) who found expert psychological testimony improved juror sensitivity to eyewitness evidence, meaning jurors had improved knowledge of factors influencing memory. In this way, the Justice Secretary should be reassured that jury decision-making will be improved by the use of expert testimony.

(c) Nigel could use the strategy put forward by Pennington and Hastie (1992) who proposed that both prosecution and defence lawyers should present their evidence in chronological order to help juries in decision-making. In doing so, lawyers create a timeline and evidence is organised and presented in what is called 'story order'. As a defence lawyer, it is Nigel's job to allow jurors to develop a coherent story. Nigel should present his evidence so that the jurors can make sense of the trial information by making their own story based on their knowledge of the events given to them by Nigel at the trial. Once Nigel has presented his evidence and told his 'story of events', the judge sums up the evidence at the end of the trial and advises the jury on how to come to a verdict. The jurors then match the story portrayed by Nigel to the possible verdicts given to them by the judge. It is thought that those lawyers, like Nigel, who create clear timelines are more likely to be believed.

Page 157

Component 3 Section B part (a):

(a) The aim of Dixon *et al.*'s study was to test the hypothesis that a suspect with a 'Brummie' accent would receive a higher rating of guilt than a suspect with a standard accent. Also, whether ethnicity or type of crime would have an effect on the judgement. The study compared a Brummie-accented

suspect with a standard-accented suspect, and compared black and white suspects, as well as blue- and white-collar crimes. The sample were 119 white undergraduates, excluding any participants who grew up in Birmingham. The participants listened to a two-minute tape recording based on an interview in Birmingham. The police officer had a standard accent. The suspect was in his 20s and was a code-switcher who could switch between a brummie and a standard accent. The suspect was described as black or white and was pleading his innocence of either a white-collar or a blue-collar crime.

The participants completed a 7-point Likert scale measuring guilt. The results showed that the suspect with the Brummie accent received a higher guilt rating than the suspect with the standard accent. In addition, the participant in the black, Brummie-accent, blue-collar crime condition received the highest guilt rating. This shows that suspects speaking with a Brummie accent are more likely to be perceived as guilty of an offence than standard English-speaking suspects. Suspects accused of a blue-collar crime who are black and speak with a Brummie accent are likely to be perceived as most guilty. Dixon *et al.* suggest this is because the accent indicates the speaker is working class and arouses the stereotype that this person is more likely to be a criminal. This research shows how the characteristics of a defendant can affect whether they are found guilty.

Component 3 Section B part (b):

(b) Ecological validity refers to the extent to which research tasks or the setting relates to real life. The ecological validity of research using mock trials (e.g. Penrod and Cutler) or mock interviews (e.g. Dixon *et al*.) can be questioned. Mock trials and videotaped interviews have to be used, otherwise the research would be unethical due to its social sensitivity. However, playing a tape recording of a police interview in which the ethnicity of the suspect is suggested does not represent what would happen in a real courtroom. Similarly, a videotaped trial does not have the same impact on jurors with regard to the responsibility of their role. It is difficult therefore to generalise the results from mock trials to how jurors are presented with evidence and make their decisions in real trials.

However, the methodologies used in these artificial environments assist the internal validity because a high level of control is possible. For example, when Dixon *et al.* tested the validity of the Brummie and standard English accents, more than 95% of people were able to identify the region of the Brummie accent. In addition, the accents were matched by judges who rated the accents to be a similar level of loudness.

On the other hand, there are problems with external validity as it is difficult to generalise the perceptions of Brummie accents to other accents of England such as Mancunian (Manchester), because people may not view them as being negative. Additionally, Dixon *et al.* only look at accents in England and it may be that other countries also do not view accents negatively, further reducing the external validity.

The population validity of the research is low. The sample used by Dixon *et al.* consisted of white psychology undergraduates and we might question the representative nature of this sample. For example, people other than students (such as hospital workers) may perceive accents differently because they are exposed to a greater variety of accents. This has real-life implications because juries are not solely made up of students and so this makes it difficult to generalise attributions of guilt due to accents from this sample.

(b) The research into psychology and the courtroom can be considered useful for judges and juries. This is because they need to be aware that physical attraction, accent, ethnicity and type of crime committed impact on jurors' perceptions of guilt. For example, Dixon *et al*. found that suspects with

a Brummie accent were more likely to be perceived as guilty than people with a standard English accent. Similarly, Castellow *et al*. (1990) found that when the defendant was rated as attractive, guilty verdicts were found 56% of the time, compared to 76% for an unattractive defendant. Therefore, judges and juries should be made aware of this so that they are not affected by these factors when making their decision. Moreover, this has consequences for defendants who may be falsely convicted based on faulty decision-making.

The results from Castellow *et al*. are also useful for lawyers, who should emphasise to their clients the importance of appearance and the way they speak in court if they wish to attempt to positively influence a jury. However, the research only looked at photographs of people and not real people, and also jurors are not asked to rate the attractiveness of defendants in real court cases. This reduces the usefulness of the research as it lacks ecological validity. Other research by Pennington and Hastie is also useful for lawyers as it provides them with a story order strategy to influence the decision-making of jurors to the benefit of their client. It also helps jurors to understand information at the trial.

Research into psychology and the courtroom is useful because psychologists can be called to court as expert witnesses to advise jurors about the results of their research – though it is not clear to what extent this actually can control people's inherent biases.

Page 159

Component 3 Section B part (c):

(c) Simon could adapt the strategy of Newman's defensible space. The first principle that Simon could adopt is to create territoriality. He could do this by creating zones within his shop that provide boundary markers, e.g. using aisles and displays. This provides Simon's shop with a sense of ownership. Also, by using signage and colours that identify the shop and its displays as belonging to the retail store, Simon will create a sense of territoriality.

The next thing Simon could do is to create natural surveillance by providing unobstructed views of areas where there are displays of trainers. He could also improve lighting in the store so there are spotlights focused on the trainers. This will provide shop staff with a clear view of any potential shoplifters and make them feel as if they are being watched.

Simon should make sure the store looks good with regular maintenance and improved appearance, which increases the perception that Simon's shop is well looked after. Additionally, by making sure the entryways to the shop are clearly visible from the road or mall improves surveillance. If Simon uses these strategies, he should hopefully be able to reduce the theft of trainers from his shop.

(c) Elizabeth could suggest that the police use a strategy called 'pulling levers'. This works as it increases the benefits of not being involved in crime and acts as a driver for crime prevention by reducing the opportunities for crime. The pulling levers deterrence framework involves selecting a particular crime problem, e.g. targeting street drug dealing and pulling together a law enforcement group to deal with it. This group might include police, probation services and community groups who are experienced in dealing with and preventing drug crime.

The police use their records and intelligence networks to identify key offenders in the drug rings and a law enforcement operation is directed at offenders by using any and all legal 'levers' to sanction those who commit serious drug crime. By identifying and removing the key offenders, the police reduce the opportunity for others to be drawn into drug crime. Additionally, the police communicate directly with offenders to let them know they are under scrutiny and how they can avoid

enforcement action for being involved in drug crime. For example, offenders are directed to attend face-to-face meetings with law enforcement officials. In this way, criminals are deterred from committing future crime as they become aware that the costs outweigh the benefits.

Page 161

Component 3 Section B part (a):

(a) In their article, Wilson and Kelling outline how the police in Newark implemented the Safe and Clean Neighborhoods Program. This involved moving police out of patrol cars and onto the streets. As a result, residents felt more secure and believed that crime had been reduced, so took fewer steps to protect themselves from crime. They had a more favourable opinion of the police compared with people living elsewhere, and the officers walking beats had greater job satisfaction.

People are scared of violent attackers but the fear of being bothered by disorderly people (such as drunks) is often overlooked. The police should enforce the law and keep an eye on strangers, and make sure regulars observe the rules. Wilson and Kelling highlight what they called a 'broken windows' policy. When there is a neglected property, e.g. with broken windows, it is a fair target for disorder. This breakdown of community controls leads to crime. Because residents believe crime is on the rise, they keep off the streets and choose to move away from areas which then become vulnerable to criminal invasion.

The role of the police changed from maintaining order to one of detecting and apprehending criminals. The key to the police maintaining order is to employ their resources effectively. To do this, they need to identify neighbourhoods at the tipping point where public order is deteriorating, and deal with (would-be) offenders to prevent crime escalating. This can involve using a zero-tolerance policy. Wilson and Kelling suggest the use of private security guards or off-duty police officers to patrol properties. They conclude that, as well as high-crime areas, policing should also focus on the value of maintaining intact communities without broken windows.

Component 3 Section B part (b):

(b) The situational explanation of crime shows how the environment affects criminal behaviour rather than any individual, dispositional explanation. Research into crime prevention supports the situational explanation as we are explaining why people commit crime from the point of view of the neighbourhoods in which they live. For example, Wilson and Kelling use their observations from accompanying foot-patrol officers to show that features of neighbourhoods, such as run-down areas with 'broken windows', influence crime rates. Areas with a high number of derelict buildings further attract crime and residents move away as the area becomes undesirable. Lack of community care also leads to breakdown of community controls and this makes areas vulnerable to crime. This would suggest that the zero-tolerance policing introduced by the New York Police Department achieved success because of its situational approach to crime prevention.

Further research that supports a situational explanation is Newman's idea of defensible space. Territoriality creates zones where residents have a sense of ownership. This can be achieved by providing boundary markers such as fences and changes in paving that indicate zones of territory and privacy. Additionally, the milieu or surroundings involve making the most of a property's location close to heavily used communal areas. The use of entryways that are visible from the road helps improve surveillance and allows tenants to identify strangers more easily. This clearly supports the idea that crime prevention has a situational explanation.

On the other hand, it may be that there is an individual explanation for how crime can be prevented. For example, it may be that residents of Newark exerted an element of self-restraint in committing crime and this led to the reduction in crime in the neighbourhoods. This is supported by falling crime rates during the early 1990s due to a reduction in people using crack cocaine.

(b) Research into crime prevention can be regarded as useful because of the social benefits it brings to neighbourhoods. For example, Newman (1973) argued that where neighbourhoods and residential areas have little or no defensible space, residents will be less satisfied with their neighbourhood, and there will be more crime and fear of crime than in residential areas where architectural design creates more space. By setting out to create defensible space in housing projects, Newman suggests that crime prevention can occur simply through architectural design.

Similarly, the article by Wilson and Kelling is useful because it highlights the important role the police have in crime reduction. For example, the people of Newark clearly believed the police were the key to maintaining order and therefore central to crime prevention. They did this by moving police out of patrol cars and onto the beat. This meant that, although crime rates did not fall, the residents of Newark felt safer and the police had greater job satisfaction. Wilson and Kelling report how the police should enforce the law and keep an eye on strangers, whilst making sure that regulars observe the rules. Wilson and Kelling highlight what they called a 'broken windows' policy. Moreover, the article by Wilson and Kelling is useful because it highlights the need for a changing role for police and how they should target communities at a tipping point so that community controls are maintained.

The article by Wilson and Kelling was used as support for zero-tolerance policing. A zero-tolerance policing strategy involves relentless order maintenance and aggressive law enforcement. This was employed in New York and other American cities throughout the 1990s and it can be argued was responsible for a reduction in violent crime. On the other hand, the anecdotal evidence from Kelling lacks validity and therefore his observations should be applied cautiously – though they are supported by the crime statistics that between 1990 and 2009, the murder rate reduced by 82 percent in New York.

Page 163

Component 3 Section B part (c):

(c) Cognitive behaviour therapy programmes such as JETS (Juvenile Estate Thinking Skills) are a powerful means of changing behaviour patterns in young offenders. JETS is based on Ellis's ABC model of irrational beliefs where A is the activating event (e.g. situations that led to the crime), B is the negative beliefs attached to the crime, C is the negative consequences that happen as a result of negative beliefs. Sara could introduce a JETS programme into a young offender institution, and this would involve 25 sessions of two-and-a-half hours.

Firstly, Sara would work with the young offenders completing exercises in a workbook, followed by a group session that focuses on support in the community. JETS focuses on the offenders' families and the Young Offending Team that attempts to reduce youth recidivism. JETS reduces reoffending in the short and long term for 14- to 17-year-old offenders. It can also be tailored to the specific needs of each offender. Research using JETS shows positive results in terms of recidivism after 12 months. Therefore, JETS would be a suitable strategy for Sara to introduce into a young offender institution.

(c) One way that Aleema could reduce Ellie's risk of reoffending is to use the idea of restorative justice (RJ). RJ is a process which will help Ellie and Aleema work together to deal with past offences

and their implications for the future. RJ would involve Aleema making herself familiar with each of the six principles and how she might apply them in her day-to-day work with Ellie. During the restoration stage, Aleema should aim to ensure that the harm that has been caused is repaired. It is essential that Ellie comes to a restorative intervention of her own free will. Aleema must be neutral so that neither Ellie nor the crime survivor feels disadvantaged or discriminated against during the RJ process.

Aleema should be appropriately trained to carry out risk assessments to ensure the safety of all parties. The process must be done with the consent of all parties and where it is safe to do so. And finally, it is important that Aleema shows respect towards both parties and indeed both parties are respectful of each other. RJ is often a highly emotional process that needs to be administered by Aleema in a neutral and measured fashion. By using RJ, Aleema can work with Ellie to ensure that she does not return to prison.

Page 165

Component 3 Section B part (a):

(a) The aim of Haney *et al*.'s study was to create a 'mock' prison which was a functional representation of a real prison. Participants were allocated to the role of prisoner or guard. All were college students, largely middle-class and strangers to each other. Guards and prisoners were issued with uniforms in order to promote feelings of anonymity. On arrival at the mock prison, prisoners were stripped naked, sprayed with delousing fluid and made to stand naked in the yard. The guards only referred to the prisoners by number, to further dehumanise them.

They found that the guards and prisoners showed increasingly negative feelings towards each other and towards themselves as the study went on. Prisoners expressed more intentions to harm others. Guards were prevented from using physical abuse but often expressed aggression using verbal affronts. When the experiment ended, the guards seemed distressed at the suffering of the prisoners; five prisoners had to be released early because of extreme emotional depression, crying, rage and acute anxiety. Some guards were fair and relatively passive, whereas others went far beyond the rules to engage in creative cruelty and harassment – for example, making prisoners clean toilets with their bare hands.

Haney *et al*. concluded that being confined within a prison environment can have great, negative effects on the feelings of both guards and prisoners. Prison guards can develop a pathology of power where they gradually begin to misuse the power they are given. Prisoners also develop pathological prisoner syndrome in response to the guards' behaviour. This research showed that ordinary individuals can play roles they are given to extremes and that there are individual differences in the way people cope with new experiences. Additionally, the study also demonstrates that prison is a stressful place.

Component 3 Section B part (b):

(b) Haney *et al.'*s. study has been criticised for low ecological validity because, for practical and ethical reasons, the simulated prison could not be completely realistic. For example, there were many unpleasant parts of prison life that were absent, such as racism and threats to life. This suggests that the study does not provide a meaningful comparison to real prison environments.

On the other hand, there is considerable evidence that the participants did react to the situation as though it was real. For example, 90% of the prisoners' private conversations (as monitored by the researchers) were about conditions in the prison, and only 10% of the time were their conversations

about life outside the prison. This suggests that the study did sufficiently represent imprisonment and had high ecological validity.

Further criticism of the ecological validity of the study concerns the fact that neither prisoners nor guards were acting on the basis of their real morals. They were acting a 'part' which may have been derived from how they imagined prisoners and guards should behave. If they were actual prisoners or guards, they might have behaved quite differently.

Furthermore, the research can be seen to be low in population validity. Both the guards and the prisoners were college students and not real criminals or prison guards. It could be argued that it is difficult to generalise the findings regarding the effects of imprisonment to real prisoners who may have spent years in prison previously and may be less affected by the conditions in prison. For example, they may find the prison conditions less stressful. Moreover, they may be used to the dehumanisation and power displayed by the guards. Therefore, the external validity of the research can be questioned.

(b) Ethnocentrism means evaluating other cultures according to preconceptions originating in the standards and customs of one's own culture. Using prison as an effective punishment can be viewed as an individualist response to criminal behaviour. For example, psychologists believe that punishment serves to reduce crime rates either by acting as a deterrent or by having a reforming effect. However, some cultures view imprisonment as a less effective means of punishment and may focus on delivering programmes aimed at reforming offender behaviour rather than punishing it. For example, countries such as Sweden, Japan and India have fewer prisoners in the population compared to England and Wales and the US.

The research by Haney *et al*. may be considered ethnocentric as it follows the principle that imprisonment is the most effective way to punish offenders. On arrival at the mock prison, the prisoners were stripped naked and the guards only referred to the prisoners by number. This type of dehumanising behaviour may not be present in other cultures and so can be seen as ethnocentric. Similarly, the conditions in which the prisoners were kept are only reflective of prisons in the US. It may be that prisoners in other cultures have more (or indeed less) room or different accommodation arrangements from those in the mock prison at Stanford. This further highlights the ethnocentric nature of the results.

The nature of imprisonment in an individualist culture led to very specific responses by both guards and prisoners. For example, extreme emotional depression, crying, rage and acute anxiety in the prisoners. Cultures where imprisonment is less dehumanising, or where guards do not exert pathological power, may present less extreme effects of imprisonment.

Component 3 Chapter 4 Environmental psychology

Page 167

Component 3 Section B part (c):

(c) A psychologist might suggest mindfulness to Mirka as a strategy to reduce her stress levels due to traffic noise. This would focus Mirka on the present situation rather than thinking of the past where she used to live, the future or where other people live. Mindfulness would involve Mirka concentrating on her own breathing and feelings at a particular moment and not letting external distractions, such as traffic noise from the road, interfere. Mirka could attend local mindfulness classes that are usually taught in an eight-week programme. These classes may involve group sessions of two to three hours a week.

Mirka would be encouraged to practise meditation and awareness techniques between her classes, so she can then easily use the breathing and relaxation techniques when a real stressor, e.g. traffic noise, occurs. Mirka would be told to practise mindfulness whenever she felt stressed and use it to effectively block out the traffic noise. After a while, the mindfulness activities would become second nature and Mirka could use them whenever the noise from the road becomes too loud. This would mean that Mirka would no longer notice the traffic noise or it would not cause her the level of stress that it does currently as she would have a strategy to deal with it.

(c) The psychologist might suggest stress inoculation therapy (SIT) to the residents to enable them to cope with the increased aircraft noise. SIT is a form of cognitive behaviour therapy (CBT). SIT would involve changing the thought processes of the residents so that they no longer perceive the aircraft noise as stressful. SIT has three main phases that the residents would be taught. In the conceptualisation phase, the aim is for the residents to understand that stressors (e.g. aircraft noise) are challenges that can be overcome. It allows them to recognise that the problems created by the airport can be successfully managed.

The next phase is the skills acquisition and rehearsal phase, in which the local residents would learn skills needed to cope with stress, tailored to their specific needs. An example is relaxation, which could be carried out whenever the aircraft noise is too loud. The final stage is the real-life application and follow-through phase. Here, therapists create opportunities for the residents to try out their skills in a safe environment, e.g. role play where the residents imagine the aircraft coming in to land, with the associated noise. The skills can then be gradually transferred to everyday life at home with the aircraft noise. This means the residents can practise SIT in their own homes to help them cope with the increased aircraft noise.

Page 169

Component 3 Section B part (a):

(a) Black *et al.* carried out research on two groups of residents in Sydney, Australia: one group living close to the airport and affected by aircraft noise; and a control group not living close and not exposed to aircraft noise. They gave the participants a questionnaire, which measured seven factors such as health-related quality of life (HRQoL), hypertension condition, noise stress and noise sensitivity.

They found that those living closest to the airport rated their physical and mental health lower than the control group. The noise-exposure group also reported higher levels of stress and hypertension. Participants chronically exposed to high aircraft noise levels were 2.61 times more likely to report

chronic noise stress. Chronic noise stress participants were 2.74 times more likely to report hypertension compared to those without chronic noise stress.

The research by Black *et al* showed the negative impact and health implications of environmental stressors such as aircraft noise. Environmental stressors influence biological responses which cause illness. It is clear there are negative health effects from exposure to aircraft noise. Individuals who are exposed long-term to high levels of aircraft noise are more likely to report stress and hypertension compared to those not exposed. This demonstrates the physical effects of stress. These individuals are also more annoyed by aircraft noise than individuals who do not live in such areas. Noise exposure reduced their levels of mental health suggesting that there were also psychological effects on health. Therefore, practical noise management possibilities should be considered to improve resident well-being in areas exposed to aircraft noise, but this may prove difficult.

Component 3 Section B part (b):

(b) Determinism is the concept that all human behaviour results from either internal or external causes that are not under our conscious control or free will. With this philosophy, our behaviour is the result of a chain of consequences. Stress arises when individuals cannot adequately cope with the demands made on them. As the stress response is biological, it is an example of biological determinism.

Cannon (1932) suggests a fight-or-flight model for stressful situations. This short-term response is controlled by the SAM system which is an inevitable reaction to a short-term stressor. The SAM system is where a stressor is perceived which then links to the sympathetic nervous system becoming aroused. Adrenaline is released from the adrenal medulla which causes increased heart rate and blood pressure leading to an instantaneous response. Short-term stress links to cardiovascular problems because sympathetic arousal leads to high blood pressure. Long-term stress can have immunosuppressive effects, making us more susceptible to illnesses, e.g. colds. Additionally, it is unlikely that people would choose to experience stress or related ill-health, so the role of free will seems irrelevant.

The research by Black *et al*. could be seen as determinist as it showed the negative impacts and health implications of environmental stressors such as aircraft noise. This is an example of environmental determinism where people have no control over the environment in which they live and the stress that it causes them. For example, Black *et al*. found that those living closest to the airport rated their physical and mental health lower. They also reported higher levels of stress and hypertension than those living further away from the airport. This would suggest that the airport determined the stress levels experienced by the residents.

However, individuals do have free will to choose how they deal with stress and can make positive steps to reduce the amount of stress in their lives. For example, people could choose to move away from environments with high levels of noise pollution, e.g. airports, if they found it stressful. However, things are rarely that simple as the ability to move away can be constrained by financial and practical considerations.

Overall, it can be considered that research into stressors in the environment is determinist as the stress response is biological and people are unable to choose *not* to respond. However, they can make active decisions about how to manage and minimise environmental stress, so free will is a factor too.

(b) Measurements and findings from research into stressors in the environment are valid if they are accurate and measure what they set out to measure. Black *et al*.'s use of self-reports was a useful way to gather information on how residents felt, but self-reports are subject to truth distortions such as social desirability bias, which could reduce the validity of the responses about environmental stressors. Participants were aware of the aim of the research, so demand characteristics could also be an issue. The residents would know that the researchers were expecting them to report the negative impact of aircraft noise and would respond by providing answers that gave lower scores for mental health and higher scores for stress. This reduces the validity of the findings as it suggests there may be other causes of the increased stress that the residents reported or that the stress was not as high as reported.

However, the research does have face validity. This means the findings agree with what we already know about the impact of aircraft noise on residents. This suggests it also has concurrent validity. Research by Stansfeld *et al.* (2000) found that environmental noise is associated with increased anxiety in adults. This supports the findings of Black *et al.* that showed the negative impacts and health implications of environmental stressors such as aircraft noise. Additionally, Lundberg and Frankenhaeuser (1978) revealed increased levels of stress in those participants who were not in control of noise played during a mental arithmetic task. This shows that the findings have construct validity.

The research by Black *et al.* is high in population validity as they wanted to investigate the effects of noise on people living with aircraft noise. For example, they used residents living in highly exposed, noise-affected areas near Sydney Airport, experiencing more than 50 aircraft per day. Their results were compared with people living 55 km away from the airport. This suggests the findings were valid as the respondents were people who lived in areas affected by aircraft noise and their responses reflected their levels of stress, both physical and psychological.

In conclusion, although self-reports methods can be low in validity, the research does have high population validity, suggesting that noise pollution does have negative effects on people.

Page 171

Component 3 Section B part (c):

(c) I might suggest to Elaine that she takes melatonin supplements to help with the jet lag she experiences from such a long flight. Travelling east to west is easier because we can stay up later (phase delay), but getting up earlier (phase advance) is harder to do. Phase advance travel (17 hours to Perth) might mean Elaine is not ready for sleep on arrival, but taking melatonin supplements can help to induce sleep.

Melatonin supplements are taken orally after dark on the day that Elaine arrives in Perth and may help her sleep and settle into the new time zone more quickly. This is particularly important when travelling east (phase advance travel) as taking the melatonin may help to induce sleep in people who are not yet ready to sleep. Once Elaine has had a good night's sleep, she should be ready to enjoy the visit to her sister in Perth without suffering the effects of jet lag.

(c) A psychologist might suggest to Lenka that she can reduce the effects of shift work by designing the new night shifts with the following in mind. If she is planning to change shift patterns (i.e. her staff will work different shifts at different times), she should ensure that shift patterns are rotated by phase delay rather than phase advance, so that workers stay up later each time their shift changes. A

psychologist could also advise that Lenka changes the shifts less frequently, to give workers' body clocks time to adjust. For example, she could change shift patterns every 21 days, instead of weekly.

Lenka could also attempt to use continuous shifts, where employees complete the same shift permanently rather than rotating between shift patterns. This also enables workers to adjust their body clocks and means they don't suffer the ill effects of constantly changing their body clocks. However, this may affect job satisfaction if employees are unable to have their choice of shift pattern and it may interfere with their family or social life.

These suggestions should decrease the ill effects of shift work on Lenka's employees, which will hopefully lead to increased productivity and job satisfaction.

Page 173

Component 3 Section B part (a):

(a) Czeisler *et al*. carried out a quasi-experiment. The IV was the shift pattern of the workers and the DVs were sleep attitudes and behaviours, and job satisfaction, measured by questionnaire. The participants were 85 men, aged 19–68 years, who worked on rotating shifts at the Great Salt Lake Minerals and Chemicals Corporation in the USA. There was also a control group of 68 men working on non-rotating shifts at the same plant, aged 19–56 years. All workers were asked to complete a questionnaire which included questions on their sleep–wake preference, schedule preference (shift rotation), job descriptive index and health index.

Before the study, workers were on a phase advance programme. The second stage of the study involved workers and managers attending a presentation on the sleep–wake cycle and they were given an information booklet on circadian rhythms. As a result, the experimental group had their rotating shifts changed to a 21-day phase-delay schedule. Initially, in stage 1, Czeisler *et al.* found that participants on phase advance rotating shifts reported significantly more problems with insomnia than the control group.

However, in stage 2, complaints about frequent shift changes dropped from 90% to 20% of workers on the 21-day phase-delay schedule. There was also a significant increase in satisfaction at work and an improvement in health measures for the 21-day schedule, and a reduction in staff turnover and a significant increase in productivity. This shows that the 21-day phase-delay schedule was better than the traditional rotating shift pattern.

Czeisler *et al.*'s research has been very useful as it has improved our understanding of the impact of shift work on biological rhythms. The negative effects on individuals' health, well-being and productivity are reduced through the principles of phase delay and therefore similar strategies should be implemented by other employers.

Component 3 Section B part (b):

(b) Measurements and findings from research into the impact of disruption to biological rhythms are valid if they are accurate and measure what they set out to measure. Czeisler *et al*.'s methodology raises questions about the validity of their findings. Czeisler *et al*.'s quasi-experiment meant they could not randomly allocate participants to conditions, so participant variables may have affected the results, reducing validity. It may have been that the participants in the groups already had strong positive or negative feelings towards shift work which would have been a confounding variable (individual differences).

Furthermore, Czeisler *et al*. used self-report to collect data. Using questionnaires means participants may have exaggerated their negative feelings towards shift patterns potentially reducing the validity of their responses. They also knew the purpose of the research, so demand characteristics could have been an issue, as they could have responded in the way they thought the researchers wanted, reporting low levels of job satisfaction, further reducing the validity of the results.

All the participants worked at Great Salt Lake Minerals and Chemicals Corporation in the USA. This means that the research may lack population validity as the results cannot necessarily be generalised to other workplaces, cultures or situations. However, we do know that shift work requires people to work against their natural circadian rhythms and this can have negative effects. A circadian trough occurs between midnight, when cortisol levels are lowest, and 4 am when core body temperature is at its lowest. The consequence is that we experience decreased alertness (Boivin *et al*. 1996). The known effects of shift work are shift lag which creates impairments in reaction times and decision-making abilities of shift workers, deteriorating as the number of night shifts increases (Tilley *et al.* 1982). This suggests the research did have external validity.

In conclusion, Czeisler *et al.*'s research is valid and has important practical implications for the management of shift work to increase both job satisfaction and productivity.

(b) Reliability refers to the consistency of a test or procedure. It is important to establish reliability when undertaking research. One aspect of reliability involves assessing the consistency of measurement between different observers (inter-rater reliability). Another aspect involves achieving consistent measuring instruments when developing tests. The results from Czeisler *et al*.'s different measures of satisfaction all demonstrated a similar pattern, suggesting high internal reliability. However, the research has not been repeated so we do not know if it is high in test/retest reliability. That said, previous research shows shift lag creates impairments in reaction times and decision-making abilities of shift workers, deteriorating as the number of night shifts increases (Tilley *et al*. 1982). This suggests that the findings were consistent with previous research.

Siffre's (1975) cave study showed circadian rhythms are biological, as his 'free-running' biological rhythm more-or-less remained the same when he stayed in a cave for two months. Internal cues governed his biological rhythms due to the absence of exogenous zeitgebers, e.g. light. However, as a case study, this lacks reliability as it is a snapshot in time and has not been replicated.

Czeisler *et al.*'s quasi-experiment had a very standardised procedure and therefore would be easy to replicate. For example, all shift workers completed the same questionnaires that had the same questions. We may be able to presume that if a replication gave similar results, it could be argued that their research findings about the effects of shift work on job satisfaction and productivity are reliable.

In conclusion, Czeisler *et al*.'s standardised procedure was reliable, however, there are some methodological issues which lower reliability. However, their findings have practical implications for managing shift work and improving job satisfaction and productivity in the workplace.

Page 175

Component 3 Section B part (c):

(c) Kaoru could discuss antecedent techniques in her presentation on water conservation to school pupils. These techniques encourage conservation before a person is faced with the decision to conserve or not. Kaoru would need to change pupils' perceptions about water conservation by

increasing their perception of the benefits and reducing their perception of the drawbacks of conservation behaviours. She would need to explain why water conservation is so vitally important.

Her advice should focus on the benefits of water conservation, e.g. financial benefits by reducing water bills and the wider benefits for the future. She could demonstrate to the children the consequences of drought by showing them videos. Her advice should also include small, easy-to-implement changes which enable households to save water, e.g. taking showers rather than baths, washing a full load of laundry. The children could then understand how to implement the changes in their own homes. Antecedent techniques have previously been shown to be effective through the use of promotional messages given to residents to improve recycling behaviour (Lord 1994). However, Kaoru would need to visit a lot of schools and children in order to make a more widespread difference.

(c) Joel could encourage his pupils to recycle more using consequent techniques. These are based on the principles of operant conditioning via reinforcement and rewarding changes in behaviour. Joel could reward recycling behaviours by providing incentives, e.g. raffle tickets with a prize for the class who recycles the most. Each class in the school could run a competition to see who recycles the most litter from their packed lunches or after-school snacks. This strategy uses operant conditioning as it increases the likelihood of recycling behaviour if pupils anticipate a reward for it (positive reinforcement).

Joel could also consider punishment, such as detentions for pupils who don't recycle or taking away 'golden time'. One problem with trying to change the children's behaviour is that a lot of recycling is habit-bound rather than being a thoughtful process in which children weigh up the pros and cons of recycling. Therefore, this is something that Joel should take into consideration when working with his pupils. However, by using a system of rewards and punishments, Joel should be able to increase recycling behaviour in his pupils.

Page 177

Component 3 Section B part (a):

(a) Lord carried out a field experiment with 140 households in Buffalo, USA. He investigated methods of encouraging recycling such as the impact of an advocacy message, the framing of the message and the interaction between framing and source of message. There were eight hypotheses. Research assistants counted the number of items recycled and sorted in kerbside collections and they left the participants advocacy messages (the control group did not get a message). They counted the items again the following week to see if there was any difference in the amount recycled. They also assessed attitudes to recycling via a questionnaire.

Lord found that any message encouraged a significantly more positive attitude towards recycling than no message. Also, that an advocacy message resulted in significantly more recycling behaviour than no message. Participants with a positively-framed message believed advocacy messages significantly more than those with negative messages or no message. Additionally, positively-framed messages led to significantly more positive attitudes and beliefs about recycling than negatively-framed messages. Lord also found that a positively-phrased personal appeal created significantly more positive attitudes towards recycling than when phrased negatively. Households with a negatively-framed personal letter recycled significantly more than all other groups.

Lord's research has important real-life implications, which can be used to increase conservation behaviours, as well as having implications in terms of how to frame messages to influence behaviour

in a wider context. The importance of recycling cannot be overstated; this study shows that the strategies used in the experimental conditions are all effective to some extent and therefore a combination of positively- and negatively-framed messages (including a negative message from an acquaintance) would be very useful in changing attitudes towards recycling.

Component 3 Section B part (b):

(b) Validity refers to the extent to which research actually measures what it sets out to measure. Lord's research involved both self-report and observation of recycling behaviours. The self-report section of the research could lack validity as demand characteristics and social desirability could affect the responses given by participants. For example, most participants realise that recycling is a desirable behaviour so may well exaggerate the actual amount of recycling they do. Furthermore, Lord could not be sure if the respondent of the questionnaire was involved in recycling or had even seen the information. This questions the validity of the responses in the questionnaires.

However, the observation of recycling behaviours in Lord's study was high in validity as normal recycling routines were monitored and participants were unaware they were being monitored, so recycling behaviour was natural. This is shown by the research assistants recording how many items households recycled. They also recorded how many different categories the items belonged to, e.g. glass, paper. This shows that this part of the research was a very accurate measure of actual recycling. However, some of the participants may have seen the research assistants counting their recycling and this may have led them to put out more recycling the next week, which would confound the results.

However, as Lord's research took place in Buffalo, USA, it may lack population validity. They only used one particular group of people and so it may not be possible to extrapolate the findings to other cultures or places. It may be that recycling behaviour in more collectivist cultures is greater as people see the benefits to the community as a whole.

In conclusion, the observational part of Lord's research was high in validity, but the self-report section was low in validity.

(b) Research like Lord's is very useful as it demonstrates that the way a message is framed will have a positive impact on recycling and conservation behaviours. For example, the promotional messages given to residents were shown to improve recycling behaviour in Lord's study. This is important as we need to find ways to encourage more people to recycle and conserve as the planet is running out of resources. Therefore, it is in everyone's interest to adopt these behaviours. Furthermore, Lord showed that messages phrased negatively are most likely to have positive behavioural impact. In addition, Uzzell (2014) suggested that if a whole community undertakes recycling behaviours, it encourages others and recycling becomes the 'subjective norm', increasing the amount of recycling. Both these pieces of research are useful to governments as ways in which they can provide public policy to the benefit of society.

However, advertising on a mass scale is very expensive and some people may not be physically able to move recycling bins, e.g. elderly people. This would limit the extent to which the research is useful. Nevertheless, some research has suggested that rewards and punishments are good ways to encourage recycling behaviour. Rewarding conservation behaviours by providing incentives (e.g. raffle tickets with a prize for each box of recycling that is left out) uses operant conditioning as it increases the likelihood of conservation behaviour if people anticipate a reward for it. These findings can be easily applied in educational settings so that children grow up with an increased sense of why

it is important to recycle and be involved in conservation behaviours. This increases the usefulness of research.

Other research has shown that punishments for not conserving can be limited in their usefulness. For example, systems such as 'pay as you throw' are used in over 4,000 communities in the USA, whereby households pay per bag of rubbish that isn't for recycling. However, research has shown that disincentives may not always be the most effective way to encourage conservation behaviours. However, they are likely to be more effective than creating regulations in the form of laws.

In conclusion, if society understands why people don't conserve, then governments can implement strategies to encourage it, thereby reducing the pollution caused by waste.

Page 179

Component 3 Section B part (c):

(c) A psychologist might suggest that Penny's manager adjusts the lighting in the boutique from fluorescent lights to something less bright. This is because it is easier to change the environment in which someone works rather than trying to change their cognitive abilities or performance as head of sales in the handbag boutique. Lighting is necessary for practical purposes at work, especially for Penny, as it is needed to help promote her handbags. However, lighting can also have a profound impact on people's productivity and well-being, which is shown by Penny feeling very tired. 'Cooler' light would have a positive effect on Penny's alertness, fatigue and productivity. Workplaces, such as the handbag boutique, could be redesigned to use LED lighting that emits 'cooler' light, rather than fluorescent lighting.

Hawes *et al*. found that 'cooler' lighting conditions were associated with positive effects on the speed of work and depression scores of participants than in the 'warmer' lighting conditions. By replacing the fluorescent lights with LED lights, Penny should feel less tired at work and so her productivity will increase, enabling her to sell more handbags, as the shop will be more welcoming for customers too.

(c) A psychologist might advise Ji-hyun to introduce closed offices rather than open-plan offices or using hot-desking. A closed office is where areas are sectioned off in individual rooms or cubicles. This reduces cognitive load as there are fewer people in closed offices which means reduced noise levels and stimulation from talking, technology and movement. This would mean that workers in the Korean bank are less likely to experience cognitive overload and so can remain better focused on their job without becoming distracted.

Furthermore, closed offices offer more privacy because fewer people can see the employee's work and behaviour. This might be very important for the Korean bank where customers are discussing their personal banking details with the staff. Closed offices also allow for more perceived control because the bank's employees do not all have to agree on elements of the office design that need adjustment, e.g. temperature and personalisation that is beneficial to mental health. Research has shown that employees dislike open-plan offices and hot-desking, therefore this layout would lead to increased employee satisfaction and productivity at the Korean bank.

Page 181

Component 3 Section B part (a):

(a) Drews and Doig carried out research to investigate whether a configural vital signs (CVS) display would enable nurses working in an intensive care unit (ICU) to evaluate a patient's condition more

quickly and accurately than when using a traditional display. They carried out their research in Utah with 42 nurses with a minimum of one year's experience. After a training session on how to use the new CVS display, which was designed to reduce cognitive overload by showing trends graphically and using colour coding and geometric shapes, nurses were allocated to a condition using either the new CVS display or traditional monitoring equipment.

All the participants were presented with four scenarios: early sepsis; septic shock; pulmonary embolus; and stable readings. They were given five minutes to give an interpretation and diagnosis from the data. It was discovered that the new CVS display improved speed and accuracy of data interpretation in ICU nurses. Nurses also reported less cognitive demand using the CVS screens compared to the traditional display. CVS displays put all the data in one place, using colours and geometric shapes to make the data more accessible.

Drews and Doig's research has obvious practical implications for nurses working in hospitals. CVS displays reduce cognitive overload in nurses and enable them to carry out their roles much more efficiently. It also improves patient safety as the new displays are much easier to interpret, so in fact, they could save lives. Anything that improves nurses' accuracy and efficiency and improves patient safety must be of value.

Component 3 Section B part (b):

(b) The term 'reliability' in psychological research refers to the consistency of a research study. Consistency can be achieved by having standardised procedures. The research by Drews and Doig was very standardised and can therefore be said to be reliable. For example, all the participants received the same training on the CVS system, were given the same instructions, the same four scenarios and the same time (5 minutes) to analyse the data.

As the experiment took place within the psychology department of the University of Utah it was possible to control extraneous, environmental variables. Therefore, Drews and Doig's research into ergonomics can be said to have good internal reliability. Additionally, if findings from research are replicated consistently, they are reliable. As the research by Drews and Doig was a highly controlled laboratory experiment, it would be easy to replicate to see if the same results were obtained. Therefore, if similar results were to be found, the research would be said to have high external reliability.

However, just because research is reliable does not mean that it is valid. Although, the CVS display was shown to improve nurses' efficiency and accuracy of interpreting data in the laboratory, this does not necessarily mean that the same results would be found in a real-life hospital setting. Therefore, it could be argued that the research lacks ecological validity to a degree. However, nurses rated the scenarios as realistic and they rated the CVS display as desirable, suggesting that the CVS would have good ecological validity. Moreover, the simulated scenarios in Drews and Doig's study allowed for tight control of variables and for all patient data in one condition to be standardised. This increases validity of the study.

Drews and Doig's study has sampling bias as the findings for ICU nurses may not apply to other users of CVS displays in hospitals as they are used differently and for different purposes by different groups of medical staff. In conclusion, when assessing research into ergonomics it is important to consider possible methodological limitations.

(b) When conducting psychological research into ergonomics there are many methodological issues which may reduce the reliability and validity of the findings.

One problem is finding a representative sample. This is important as it reduces any sampling bias that may be present. For example, Drews and Doig's study has sampling bias as the findings for ICU nurses may not apply to other users of CVS displays in hospitals, as they are used differently and for different purposes by different groups of medical staff. The same criticism can be levelled at Dashiell's research into audience effects. Students are used to performing cognitive tasks for an assessing audience and so Dashiell's results may not be applicable to other target populations. Therefore, when conducting research, it is important to maintain population validity.

The term 'reliability' in psychological research refers to the consistency of a research study. Another problem is that researchers need to ensure they use standardised procedures so that their findings are reliable. Drews and Doig overcame this problem by ensuring that their procedures were very standardised. For example, all the participants received the same training on the CVS system, were given the same instructions including the same four scenarios, e.g. septic shock. Additionally, researchers need to control extraneous, environmental variables. As the experiment took place within the psychology department of the University of Utah, it was possible for Drews and Doig to control variables and so their research into ergonomics can be said to have good internal reliability.

For research to be useful and have real-life applications, it needs to have good ecological validity. Trying to ensure this, whilst carrying out controlled research, can be problematic for researchers. The CVS display was used in simulated scenarios and therefore may not be true to life in improving nurses' efficiency and accuracy of interpreting data when placed in a real-life hospital setting. Therefore, it could be argued that the research lacks ecological validity. However, nurses rated the scenarios as realistic and they rated the CVS display as desirable, suggesting that the CVS display had good ecological validity.

In conclusion, carrying out research into ergonomics will always have methodological problems, however the way in which researchers address these problems is essential for the research to be useful in real-life settings.

Page 183

Component 3 Section B part (c):

(c) The psychologist could suggest to Emily that she considers 'walkability' in her plans to ensure the health and well-being of the new residents in the housing estate. Walking is the most common form of exercise in adults and walkability (Villanueva *et al*. 2013) is the number of attributes in the neighbourhood that make the area pedestrian-friendly, e.g. street lighting. Keeping this in mind will help Emily design the town's housing estate effectively.

Research has found that roads laid out in straight lines, like grids, and improved footpaths encourage short-distance walking. Emily should bear this in mind in her plan as this is likely to be the type of walking that the housing estate residents will do. Traditional town planning that uses 'high land use mix' areas, where residential and commercial properties are mixed in together, encourages walking. Therefore, Emily should also try to have a mix of land uses in her scheme.

Education should be provided to change people's attitudes towards walking, so that the new residents are more likely to use walking as a mode of transport or as exercise. If the new residents are encouraged to walk more, they are more likely to meet their neighbours and develop a sense of community and belonging. If Emily considers walkability, the new residents should benefit from increased exercise which will improve their health and well-being.

(c) A psychologist might suggest to Erik that he clearly marks out a defensible space around his house and encourages other residents to do the same.

'Defensible space', first defined by Newman (1973), refers to an area of physical space that can be perceived as clearly belonging to someone, e.g. the garden in front of a house. This represents territoriality. In multiple-occupancy homes, e.g. flats, residents often lack the feeling of defensible space in areas such as corridors and hallways as they are communal and shared with others. This can be improved by providing shared ownership of gardens which can lead to greater feelings of well-being.

Defensible space can also be achieved by having clear boundary markers such as fences for Erik's gardens. It will also help if there is clear access and visibility from the street so that any vandals can be clearly identified. This uses the principle of surveillance. Additionally, Erik's windows that overlook any communal areas in nearby blocks of flats give the sense of defensible space.

Brown and Altman (1983) suggest that defensible spaces may reduce crime. They found that houses which had not been burgled had territorial markers that indicated privacy. Burgled houses tended to have cues that they were unoccupied. Therefore, creating defensible space could address the issues with vandalism around Erik's house.

Page 185

Component 3 Section B part (a):

(a) Ulrich investigated whether having a view of a natural scene from a hospital window had positive effects on the recovery of patients. In a matched participants design, Ulrich studied 46 patients who had all had gall bladder surgery. After surgery, they were given a room with either a view of a wall or of a tree (this was the IV), and their hospital records (outcomes) were the DV. The data was analysed by an experienced nurse who was blind to the experimental conditions. Information for each patient was gathered, such as the number of days of hospitalisation and the number and strength of analgesic painkillers taken each day.

Ulrich found that the tree-view patients spent significantly less time in hospital after their operation. Although no difference was found in the number and strength of analgesics taken by the two experimental groups on the initial day after the surgery, on Day 2 to 5 after the operation, the tree-view patients took significantly fewer moderate and strong analgesics than the wall-view patients. There was no difference from Day 6 onwards in the number and type of analgesics taken between the two groups.

Tree-view patients had fewer minor post-operative complications. Finally, the nurse's notes showed significantly more negative notes were made about those patients with the wall view than the tree view. Therefore, Ulrich found that having a view of a tree did have an impact on the patients' recovery.

A large window that allows patients a clear view of trees or countryside has a positive physical and psychological effect on patient recovery. Hospital design should consider the views from patients' beds as a means of aiding recovery. Urban views that are more stimulating than a featureless wall, e.g. a lively city street, might be more interesting and have more therapeutic benefit.

Component 3 Section B part (b):

(b) The built environment refers to aspects of our surroundings that are man-made, e.g. buildings such as hospitals and roads. These urban areas often have high noise and population density, and

people living in urban areas are less psychologically healthy than those in rural areas (Alcock *et al.* 2014). This suggests that the built environment is a situational factor which can negatively impact our mental health.

The key research by Ulrich found that views from the hospital room affected patients' well-being and recovery rates. For example, Ulrich found that the tree-view patients spent significantly less time in hospital after their operation and, between days 2 to 5 after the operation, the tree-view patients took significantly fewer moderate and strong analgesics than the wall-view patients. This shows that situational factors can explain the psychological effects of the built environment. This therefore has implications for the way in which hospitals in particular are designed as clearly there can be a positive effect on physical and mental health simply by designing buildings with health benefits in mind.

However, not everyone is affected in the same way by the built environment. The negative impacts of environmental stressors, such as overcrowding, are only felt if the individual perceives it to be stressful, which supports an individual explanation. Many people who live close to busy roads or airports claim they become habituated to the noise, and it has very little impact on their day-to-day lives. This shows that not everybody is affected by the built environment in the same way. In conclusion, we need to consider both situational and individual factors when considering the psychological impact of the built environment.

(b) Determinism is the concept that all human behaviour results from either internal or external causes that are not under our conscious control or free will. Much of the research into the psychological effects of the built environment would be considered environmentally determinist. This is because the effects of the built environment on an individual's mental health and well-being is an example of environmental determinism.

For example, Moore (1975) found that military wives living in houses felt happier and healthier than wives living in flats. They also felt less isolated and lonely despite having the same number of friends as the women in flats. This shows that their built environment was impacting on their well-being. Similarly, Ulrich found that patients with a window view of a tree rather than a wall recovered in hospital more quickly and had more positive outcomes, requiring fewer strong analgesics.

However, individuals have free will and can choose their environment. For example, choosing not to live close to an airport or main road. They also have the ability to change and improve their own built environment, for example by fitting double glazing or other noise insulation. Ng (2000) showed that some students near to the construction noise chose to close windows, leave the room or speak louder, demonstrating an element of free will. Additionally, it may be argued that some people can choose to have private health care so that they have a room with a view, which Ulrich suggests aids recovery from surgery. However, not everyone has the ability or available finances to change their built environment or choose private health care.

In conclusion, determinism would suggest that although people may feel trapped in a built environment that is having detrimental effects on their psychological well-being, they do have free will to change their environment. However, determinism recognises that this is not always that simple or straightforward to achieve.

Page 187

Component 3 Section B part (c):

(c) A psychologist might advise Eta to consider changing the teachers' perceptions of open-plan spaces in the school. Members of staff should be encouraged to design the space in which they work within the new open-plan arrangement. Personalisation would give teachers a sense of territory and personal space. Furniture arrangement in the staffroom is also an important consideration. Fisher and Byrne (1975) found women felt more stressed when their personal space was invaded from the side, whilst for the men invasion of personal space from the front was more uncomfortable. This suggests that the gender of the teacher must be taken into consideration when planning the arrangement of furniture to increase personal space in the staffroom.

Eta should also make sure she maximises the natural light available. Offices that have more natural light and more windows lead to employees who are more satisfied at work, have better well-being and have lower intention to leave the job (Leather *et al*. 1998). Therefore, if Eta applied this to the school staffroom, she should try to improve the ways in which natural light enters the room, e.g. by having easy-to-open blinds rather than heavy curtains. If Eta follows these recommendations, then the staff should feel comfortable in their new open-plan staffroom and enjoy working in it. This will lead to increased job satisfaction and productivity.

(c) Insiya might consider activity-based working strategies when trying to create an effective team environment in her IT office. She could remove the opportunity for territoriality at work which may improve relationships, comfort levels and productivity at work. Making her IT office space public territory can be achieved through hot-desking, but activity-based working takes this a step further.

In order to achieve activity-based working, Insiya would set up her office with various different areas specifically designed for each activity, e.g. meeting spaces and team desks designed to serve different functions rather than people having their own desk. These areas support the current activities of the IT employees to enable greater efficiency and effectiveness. However, redesigning her office space into specially-designed areas is potentially expensive and it may not be feasible for all types of work required by the IT company. However, using these techniques would encourage her workers to work together as a more effective team.

Page 189

Component 3 Section B part (a):

(a) Wells carried out a self-report study with structured interviews with 338 employees in 20 companies in Orange County, California, USA. They also carried out in-depth case studies with 23 employees. Employees were asked questions about personalisation of office areas at work, e.g. number of items and type of items, their measures of satisfaction with their work environment and their measures of job satisfaction. Other well-being measures were taken, such as global well-being, physical health and mental well-being. For the case studies, Wells used short, structured interviews with open questions about personalisation, conducted at the employee's desk. Observations were also included, using a checklist of behavioural categories listing different personalisation items.

Wells found that women tended to personalise their spaces more than men. Personalisation was positively associated with satisfaction with the physical work environment. This was positively associated with job satisfaction, which was positively associated with employee well-being. Companies that allow more personalisation had a more positive organisational climate.

Wells' research tells us that employees should be allowed to personalise their workspace to keep workforces satisfied, productive and healthy. Allowing personalisation can help employers retain employees long-term. Employees will be happier with their own workspace which they are allowed to personalise. This will increase job satisfaction and productivity.

Component 3 Section B part (b):

(b) The research by Wells used a combination of questionnaires, interviews and objective data from photographs that allows for triangulation between research methods. This means that the research is valid, because using different research methods allowed for cross-checking of results about the workplace. However, participants may have felt this was an opportunity to complain about their workplace so may not be representative of their real feelings. For example, use of self-report methods means that demand characteristics and social desirability are issues, further lowering the validity of the results as respondents may have discovered the aim of the study and responded accordingly or may not have wanted to criticise the office layout of their employer.

Wells' use of structured case study interviews provides good internal reliability as there was consistency in the questions (all the participants were asked the same questions). As the interviews were structured, they could be easily replicated for test-retest reliability. However, survey data showed personalisation was no more important for women than men, but case study data found women did value personalisation more than men, indicating a lack of consistency in responses. This would suggest there are limitations in the reliability of the results.

There is an issue of sampling bias in Wells' research. In the study, only 20 companies out of 2000 possible companies responded to the request. This casts doubt over how representative the companies were of other employers as the sample was biased in favour of more supportive companies. It could also be argued that Wells' research is ethnocentric as she only used companies in California, USA. Negative reactions to personal space invasion or to being unable to personalise a workspace may not necessarily be found in a 'contact' culture, e.g. Italy and Spain, where people are comfortable with a smaller personal space.

In conclusion, although there are methodological issues with Wells' research, overall the findings are useful and they provide practical application for the design of workplaces to improve job satisfaction and productivity.

(b) Research with animals clearly demonstrates that defending territory and the need for this is innate, supporting the nature side of the nature/nurture debate. Territoriality is an adaptive behaviour, and Wells found that personalisation was positively associated with satisfaction with the physical work environment. Moreover, this was positively associated with job satisfaction, which was positively associated with employee well-being. Therefore, it would suggest that companies that allow more personalisation have a more positive organisational climate that plays to the nature argument.

However, Wells also showed that women tend to personalise their spaces more than men. This would support the nurture argument as it could be argued that territoriality is a learned behaviour; that we learn to defend our territory only when someone else tries to take it from us, and our gender socialisation may impact territoriality. For example, Wells' study found that women personalised to express their identity, emotions and improve the feel of the workspace, whereas men were more likely than women to personalise to show company status, and had more sport paraphernalia. Furthermore, Wells' research tells us that employees should be allowed to personalise their workspace to keep workforces satisfied, productive and healthy. Allowing

personalisation can help employers retain employees long-term. Employees will be happier with their own workspace which they are allowed to personalise. This will increase job satisfaction and productivity. All these points would suggest that territory and personal space in the workplace is supported by the nurture argument.

Human beings are creatures of habit and like to have their own seat and desk and this is one of the reasons why 'hot desking' is so unpopular amongst employees. Having your own clearly defined space is also an indication of power and status, something that humans seem to naturally crave. In conclusion, we need to consider the interaction between nature and nurture when discussing research into territory and personal space.

Component 3 Chapter 5 Sport and exercise psychology

Page 191

Component 3 Section B part (c):

(c) One strategy that a sport psychologist could suggest to Freddy to reduce his anxiety before swimming finals is to use pre-performance routines. Lidor and Mayan (2005) proposed three phases in a pre-performance routine. In phase 1 ('Readying'), Freddy could attempt to generate positive thoughts and emotions about his performance expectations. This would help reduce both cognitive and somatic anxiety. This phase involves the mechanical, mental and emotional aspects of his performance. For example, creating images of him having a good start at the beginning of the race or being able to control any negative thoughts he may have about his opponents. These would help Freddy's performance by increasing the expectations of success.

Phase 2 ('Focusing attention') would involve Freddy focusing his attention on one aspect of performance, such as his turn, or concentrating on his thoughts to block out internal distractions, e.g. symptoms of physiological arousal such as raised heart rate.

Phase 3 ('Evaluating') involves Freddy judging the outcome of his previous swimming performance. This means he would evaluate how good his start was and then assess the strategies that produced that swimming start. He can then use this information as feedback in order to make future improvements in performance. By using pre-performance routines, Freddy can reduce levels of anxiety and improve his performance.

(c) One area in which the golfers may need to improve is their control of arousal. One technique that Gary could employ with the top players is to use biofeedback. The principles of biofeedback mean that the golfers could learn to exert voluntary control over their autonomic movements. This would mean that they can identify and assess any muscle tension in their body and then use strategies such as the Wingate five-step approach (W5SA).

Firstly, Gary would help the golfers to learn self-regulation strategies such as imagery. These techniques could be carried out during evening sessions or with the golfers on the course. Gary could then help the golfers to identify the most effective types of biofeedback, most appropriate for them as individuals and for golf as a sport. The next step that Gary should take is to provide biofeedback training with simulated competitive stress of a golfer's performance. For example, this could be standing over an important putt to win a competition. This is important as the golfers can understand how to apply their strategy to their game and then transfer mental preparations to the golf course such as before and after warm-up.

The last step Gary should teach the golfers is 'realisation' where the golfers apply these self-regulation skills in precompetitive rounds and practice routines. By using biofeedback training, the top golfers should be able to manage their anxiety and arousal in order to improve their performance.

Page 193

Component 3 Section B part (a):

(a) In a sporting context, arousal involves both physiological activation, such as increased heart rate, and psychological activity, for example increased attention. Cognitive anxiety is the mental component characterised by negative expectations of success and negative self-evaluation, e.g.

negative thoughts and worry. Somatic anxiety is the physiological response that stems from arousal and manifests itself, for example, as sweaty palms or rapid heart rate.

The aim of Fazey and Hardy's study was to develop a new model based on previous research and criticisms of the inverted-U hypothesis, such as the lack of predictive validity in practical situations. Cognitive anxiety is proposed as a splitting factor which determines whether the effect of physiological arousal is gradual or catastrophic, or somewhere between these two extremes. When a performer is experiencing low cognitive anxiety, physiological arousal and performance show an inverted-U relationship but in a less dramatic fashion. When physiological arousal is low, the model predicts that there will be a positive relationship between cognitive anxiety and performance, such that as cognitive anxiety increases so does performance. When there is high physiological arousal, cognitive anxiety will have a negative relationship with performance, so as cognitive arousal increases performance will decrease. When cognitive anxiety is high, any increases in physiological arousal leads to a catastrophic drop in performance

Fazey and Hardy (1988) suggest that once a catastrophic drop in performance has occurred, a large reduction in physiological arousal is needed in order to return performance to pre-catastrophe level. They conclude that physiological arousal is not necessarily detrimental to performance. However, it will be associated with catastrophic effects when cognitive anxiety is high. Intermediate levels of performance are most unlikely in conditions of high cognitive anxiety.

Component 3 Section B part (b):

(b) An individual explanation of behaviour suggests that individual characteristics or predispositions, e.g. personality, affect the way we behave. The research explains how individual levels of arousal and anxiety can affect performance. For example, according to Hanin's individual zones of optimal functioning theory, an individual gymnast will have his or her own optimal arousal range that may be low, moderate or high. This is dependent on the individual gymnast and not on the complexity or type of activity such as a somersault.

Similarly, Fazey and Hardy explain the effect of a performer's cognitive anxiety and arousal on performance. Their explanation of the arousal–anxiety–performance relationship using the catastrophe model predicts that when physiological arousal is low then any increases in a performer's cognitive anxiety will lead to increases in performance. However, if a performer's physiological arousal level is high, their performance will decrease in line with any increase in their cognitive anxiety. Additionally, Fazey and Hardy indicate that cognitive anxiety determines whether or not the effect of arousal is smooth and small or whether the effect is large and catastrophic (the splitting factor). This suggests that it is the characteristics of the performer, such as arousal and anxiety, that are important in determining their sport performance. This means that arousal and anxiety research supports an individual explanation.

However, it could be argued that a performer's cognitive anxiety and arousal are affected by their perceptions of their current performance, in which case situational factors are also significant. Situational explanations take into account the environment and social factors that can affect performance in sport. For example, athletes are constantly evaluating their own performance, e.g. how effective their tennis serve is, and any worries that may stem from poor performance, such as double faults in tennis or the opposition playing better than expected. These concerns will increase cognitive anxiety and, according to Fazey and Hardy, when combined with high levels of arousal may lead to catastrophic declines in performance. In addition, Oxendine (1976) suggested that different

sports (such as weightlifting and archery) require different optimal levels of arousal, indicating a situational component that affects arousal and therefore performance.

In conclusion, as arousal and anxiety are characteristics of sport performers, an individual explanation of performance may be more favourable. However, we can see that changeable situational factors can have an impact on the individual characteristics.

(b) Research into arousal and anxiety in sport is useful, as the predictions of the catastrophe model help coaches and performers to understand when and how arousal and cognitive anxiety can affect performance, which means they can develop interventions to minimise their effect. For example, golfers can be given pre-performance routines in order to develop attentional focus and reduce distractions. This also helps them trigger well-learned movement patterns, e.g. shot set up, that reduces cognitive anxiety and increases self-confidence as the likelihood of success increases.

Research into arousal and anxiety in sport is useful as it shows that, for many athletes, their performance deteriorates when they are anxious. For example, catastrophe theory shows that when a performer's cognitive anxiety is high, any increases in arousal will lead to a massive drop in performance. This prediction is useful for tennis coaches, for example, as if they are aware of when and how arousal and cognitive anxiety can affect performance, they can identify which performers will require interventions or be most susceptible to the effects of anxiety. Further to this, research using SCAT and CSAI-2 is also useful, as these provide quantifiable measures of trait and state anxiety and allow coaches to identify which athletes may be more prone to high cognitive anxiety. This helps coaches to target and personalise their interventions to the benefit of their players.

However, the measures of anxiety, SCAT and CSAI-2, only provide quantitative data which lacks explanations of why trait, cognitive and somatic anxiety occurs in sport. For example, CSAI-2 measures cog A-state on a scale of 9–36, and whilst a footballer may have a high score of 32, we don't know why this score is high. This lack of qualitative explanation reduces the usefulness of the results. In conclusion, it can be suggested that research into arousal and anxiety in sport is useful because it allows a performer to work with sport psychologists to monitor their own arousal and anxiety levels so that they understand when performance may deteriorate. Similarly, research is useful for both coaches and performers in developing strategies to combat the negative effects of anxiety.

Page 195

Component 3 Section B part (c):

(c) Research by Lewis *et al.* (2014) showed that exercise can improve people's mental health. One way Mark might introduce exercise to his workers would be to provide them with membership to a gym so that they can undertake supervised workouts such as indoor rowing. Suggested workouts on an indoor rower vary from long steady workouts to interval exercise with rest periods between bouts of rowing. The gym instructor could use interval workouts that comprise of a warm-up for 5 minutes using stretches and light paddling. This would be followed by short intervals of rowing for less than 4 minutes in length: e.g. six sets of 2 minutes' rowing, with 2 minutes' rest between each set, followed by five sets of 3 minutes' rowing, with 3 minutes' rest between each set.

Alternatively, the gym instructor could recommend exercise with long intervals of four minutes in length and longer: e.g. four sets of 4 minutes' rowing, with 3 minutes' rest between each set, followed by four sets of 5 minutes' rowing, with 4 minutes' rest between each set. Mark's workers could then follow a warm-down for 5 minutes using stretches and light paddling.

Lewis *et al.* showed that their participants with Parkinson's disease had reduced levels of fatigue and depression following dance exercise and so Mark could expect to see positive benefits for his workers if they followed the exercise programme set out by the gym instructor.

(c) Nancy could suggest to her members that they take up dance classes. Nancy could employ a local dance instructor who could visit the over-60s club twice a week in the afternoon and lead the members through dance activities. The instructor could use different types of dance which may prove to be beneficial for positive mental health depending on personal goals, physical condition and health history of the members.

A dance session could comprise of a warm-up which would prepare the over-60s for aerobic activity, e.g. raised heart rate, and this should involve stretching the large muscle groups used during the dance session. The main session would usually last at least 30–50 minutes, twice a week for the most beneficial effects. The programme need be no longer than 16 weeks for maximum benefits to mental health. Following each dance session, the instructor would make sure the over-60s carried out a cool-down involving continuation of the dance activity for 5 minutes or so, but at a slower pace and reduced intensity. Lewis *et al.* (2014) showed that regular dance activity improves mental health and so Nancy might expect to see similar results and benefits for her members. It is also important to recognise the social benefits of dance that would also bring enjoyment to Nancy's over-60s members.

Page 197

Component 3 Section B part (a):

(a) The aim of Lewis *et al*.'s study was to examine the effect of dance on mood in the elderly, specifically a group of people with Parkinson's disease (PD). A volunteer sample of 37 participants (22 PD and 15 controls) was used. They used a repeated measures design with an IV of either PD or control and a second IV of the cycle time duration used: either long (12 weeks) or short (1 week). Mood scores (DV) were measured by POMS from week 1 to week 12. For the short-cycle time, BRUMS scores were compared before and after one session. A dance instructor ran weekly dance classes that the participants attended for a period of 10 weeks. Each class was based on 'rhythmic dancing to a strong beat', e.g. Bollywood.

The findings for the long cycle showed that total mood disturbance (TMD) was lower after the dance sessions but there were no significant differences between the PD and the control group. Anger was the only POMS subscale to show reduced levels. People with higher depression reported less fatigue following the dance classes. In the short cycle, BRUMS showed a reduction in TMD, but there was no significant difference between the PD and the control group.

This suggests that there are benefits of exercise to mental health as execise reduces anger and fatigue levels and improves total mood disturbance in people who are feeling depressed due to their PD.

Further research has shown that that BDNF activity reduces the effect of stress caused by exercise thereby increasing well-being, and that endorphins released during exercise lead to psychological well-being and positive mental health.

Component 3 Section B part (b):

(b) One way in which research into exercise and mental health can be evaluated is to look at its validity. Internal validity refers to whether the effects observed in a study are due to the

manipulation of the independent variable and not some other factor. The internal validity of Lewis *et al.*'s results is high as extraneous variables were controlled, e.g. all participants were rated as having mild to moderate Parkinson's disease (PD). This means that the researchers could be more certain that the differences they measured in mental health were due to the effects of the dance exercises and not due to chance. Also, the dance routines and the POMS questionnaires were standardised, suggesting that the validity of the results was high.

On the other hand, external validity refers to the extent to which the results of a study can be generalised to other groups of people. This can be reflected in the population validity of a study and the extent to which the sample is representative of the general population. The population validity of the Lewis *et al.* study can be considered good to an extent as they did study people who were predisposed to low mood and psychological disorders due to Parkinson's disease.

However, the research does show sampling bias as it was a volunteer sample from local advertisements and PD support groups. Thus, participants may have been more motivated to take part in dancing than other people with PD. Additionally, the sample only looks at the benefits of exercise to those people with PD and not people in other groups who may have low mood, such as those with HIV or cancer. Therefore, the extent to which the results have external validity can be questioned.

Lewis *et al.* used self-report techniques such as POMS and BRUMS to measure the mood of people with PD. This means that, although they are reflecting the feelings of the participants to some extent, the sample may have given socially desirable answers, e.g. reported positive mood in order to appear mentally stronger to their dance partners. This may limit the validity of the results into the effects of exercise on mental health.

Lewis *et al*.'s procedure was standardised, increasing the external reliability, e.g. there was always 30 minutes of dancing. This suggests that results into the benefits of exercise on mental health are likely to be consistent and can therefore be used to inform public health policy. Moreover, POMS is an established mood measurement tool with good internal reliability and external reliability.

(b) Reductionism looks to explain human behaviour in its simplest form, often breaking down complex behaviours such as mental health to more simple explanations, e.g. biological causes. The biological explanations for the benefits of exercise on mental health would support a reductionist point of view. This is because it is a very simplified argument to say that our mental health is only dependent upon the release of neurotransmitters such as brain-derived neurotrophic factor (BDNF) in our brain during exercise. Research suggests that BDNF activity in the brain reduces the effect of stress caused by exercise thereby increasing well-being (Erickson *et al*. 2012).

Similarly, the endorphin hypothesis provides a simple explanation as endorphins released during exercise reduce the sensation of pain and bring about a state of euphoria that leads to psychological well-being and positive mental health, e.g. 'a runner's high'. Further evidence that research into exercise and mental health supports a reductionist viewpoint is found in endocannabinoids (eCB). These are neurotransmitters that act as messengers to control pain and reward perceptions in the brain. Raichlen *et al.* (2012) found significantly heightened eCB levels following exercise on a treadmill, which shows a neurobiological reward for aerobic exercise and may explain why we are motivated to run 'through the pain barrier'. Although it may be argued that these explanations of mental health do not take into account lots of social or demographic reasons why people may have a psychological disorder, they do provide straightforward explanations for positive mental health.

Alternatively, there are also lots of psychological explanations for the benefits of exercise. Csikszentmihalyi's (1975) concept of flow suggests extreme enjoyment and engagement with the task, focusing on the intrinsic factors that explain why people enjoy exercise. Performers experience flow when their skills match the task difficulty. Moreover, the personal development hypothesis means performers can maintain or enhance their self-worth. The skill development hypothesis proposes that self-esteem changes due to task mastery and experiences. This would suggest that our mental health is due to more than just our biology and provides us with a more holistic explanation for the benefits of exercise on mental health.

Page 199

Component 3 Section B part (c):

(c) Kerry might find the use of imagery to be most effective to help the girl to improve her goal shooting in netball. One innovative imagery intervention that can involve the performer is PETTLEP imagery. PETTLEP is an acronym representing a seven-point checklist of guidelines to be followed when devising an imagery intervention.

The P stands for physical imagery which is a physical process with measurable physiological outcomes. This would involve Kerry working with the netballer to make imagery contain physiological responses, e.g. the netballer could imagine shooting a goal while wearing her netball team kit. The imagery is more likely to be effective if it takes place in the same or similar environment (E) as the performance environment. The task (T) imagery content refers to the athlete's skill level and the skill to be improved. This needs to be appropriate for the netballer and so she should imagine shooting a goal at the right speed, i.e. in 'real time' (T). As Kerry's netballer becomes more skilled, the netballer needs to learn (L) new imagery techniques. It will be most effective if Kerry encourages her netballer to imagine the emotions (E) involved (e.g. nerves or excitement) and also to view her imagery performance from her own perspective (P).

Using these PETTLEP steps will help the netballer to feel more certain of success, thereby increasing her motivation to practise.

(c) Carlos could decide to use positive self-talk as a means to increase the motivation of his tennis players. Positive self-talk is what athletes say to themselves to concentrate. For example, Carlos could ask the tennis players to come up with a short and special statement that can help to focus attention on an aspect of their game, e.g. their serve. One of the benefits of self-talk is that the tennis players could use it to control their anxiety and also to judge their performance. This is because it makes them focus on successful performance which has the effect of increasing motivation as they feel rewarded for good performance. Mikes (1987) suggested that positive words (such as 'relax') can control arousal levels which helps to optimise their tennis performance and would avoid any catastrophic decline in performance should cognitive state anxiety be too high (Fazey and Hardy 1988).

Another aspect of positive self-talk is that the tennis players could use it in an instructional way to help their technique. For example, they could say 'wrist, snap' for serve. The tennis players' motivation can be improved using talking-friendly techniques, such as affirmative statements (e.g. 'I can'), which helps the performer as motivational cues can build confidence. Repeating statements aids learning the message as a performance improvement tool for the tennis players. Positive self-talk is useful for creating confidence, motivation, effort and controlling anxiety and arousal. If Carlos understands the different types of self-talk he can personalise the intervention to the individual players.

Page 201

Component 3 Section B part (a):

(a) The aim of Munroe-Chandler *et al*.'s study was to examine the relationship between MG-M imagery use and self-confidence and self-efficacy in soccer players aged 11–14. They hypothesised that MG-M imagery is a predictor of both self-efficacy and self-confidence in youth soccer players and that the relationship between MG-M imagery use and self-confidence and self-efficacy would be stronger in competitive athletes than recreational athletes. An opportunity sample of 122 soccer players (boys and girls), aged 11–14, was recruited from Canada either playing recreational 'house' or elite 'travel' level.

A correlational design was used and data was collected over a two-week period in mid-soccer season with players completing questionnaires such as SIQ-C and SEQ-S before practice at their usual training sessions. Munroe-Chandler *et al.* showed that all the imagery subscales correlated significantly with self-efficacy and self-confidence and the MG-M subscale correlated most significantly with both self-efficacy and self-confidence.

This explains that the effective use of imagery in sport, at both elite and recreational levels, improves self-confidence and self-efficacy. Imagery is also effective in increasing self-confidence and self-efficacy in boys and girls no matter the number of years' playing experience. Additionally, the results suggest that encouraging young athletes to use more MG-M imagery is an effective way of enhancing their self-confidence and self-efficacy.

The greater the expectation of the success, the more performers are likely to be motivated to participate and have the drive to improve. The research by Munroe-Chandler *et al.* suggests that the use of imagery by sports performers is related to increased expectancy of success and therefore improved motivation to compete.

Component 3 Section B part (b):

(b) A strength of the method is that Munroe-Chandler *et al*. used questionnaires that have good construct validity. This means that the results from the questionnaires are valid representations of the characteristic they are seeking to measure. For example, Stadulis *et al*. (2002) confirmed the CTAI-2 measures trait self-confidence for children with items such as, 'I'm confident I will play well today'. They did this by making the language appropriate to children of 8–12 years old and by reducing the number of items on the test.

Similarly, the SEQ-S also has questions designed to measure self-efficacy specific to soccer, for example, 'I am confident I can be mentally tough throughout a competition'. Similarly, the SIQ-C uses items such as, 'I see myself being mentally strong' to provide valid measures of self-efficacy and sport imagery in children.

However, the fact that Munroe-Chandler *et al*. used a correlational design means that the method is limited as cause and effect cannot be established between the use of imagery and self-confidence and self-efficacy and only a relationship – albeit a strong significant one – is found. This reduces the validity of the study.

Furthermore, the fact that Munroe-Chandler *et al*. used self-reports as a means to collect their data means that respondents may have provided socially desirable answers. For example, they may have wished to appear more self-confident than they actually were. This would reduce the validity of the results with regard to motivation and sport.

The two major theoretical approaches to studying factors that affect motivation in sport are Bandura's self-efficacy theory and Vealey's concept of sport confidence. These differ in the extent to which they can be applied to sport and therefore their validity can be questioned. The general self-efficacy factors identified by Bandura, e.g. vicarious experience and verbal persuasion, are often *applied* to sport, however Vealey attempts to specifically explain confidence in sport settings, making her approach more relevant. In addition, her model has been tested using the Trait Sport Confidence Inventory, the State Sport Confidence Inventory and the Competitive Orientation Inventory on athletes across a range of sports such as basketball and tennis. This would suggest that Vealey's model has greater validity for helping us understand the role of self-confidence in motivation in sport.

(b) The nature side of the nature/nurture debate suggests that motivation would be due to inherited factors such as genetics whereas the nurture view suggests that motivation could be learned. Bandura (1997) suggests sources of information affecting self-efficacy stem largely from the environment, thereby supporting the nurture argument. Examples of such information through vicarious learning include a pole jumper watching other jumpers be successful or verbal persuasion and encouragement from a coach. This would suggest that self-efficacy can be developed through these interactions to improve motivation in sport.

On the other hand, research that supports the nature argument is that self-confidence that predicts motivation can be seen as a character trait. This suggests that self-confidence and therefore motivation is relatively stable and could come from genetic inheritance. For instance, Vealey's model explains self-confidence through self-confidence trait (SC-trait).

However, much of the research evidence points to the fact that motivation is largely the result of the interaction between nature and nurture. Nature (the person's natural ability) is influenced by nurture (how perceptions of their ability have been influenced by ways in which they have learned to develop self-confidence). For example, Vealey's model explains self-confidence from the perspective of SC-trait and SC-state. Additionally, Vealey's model represents how perceptions about ability affect success. This would support an interaction between nature and nurture for factors explaining motivation in sport. Moreover, other evidence, such as the use of imagery in Munroe-Chandler *et al.*'s study would also support the interaction of nature and nurture. Some athletes may naturally have a preferred type of imagery, for example MG-M, but can also improve this and other types of imagery such as MG-A, using practice to improve self-confidence in soccer.

Therefore, on the balance of evidence, it could be argued that research into motivation and sport tends to support the interaction between nature and nurture rather than any one singular viewpoint.

Page 203

Component 3 Section B part (c):

(c) One strategy that Lucie could use to support the selection of netball players would be to use personality questionnaires. This would benefit the team coach by helping support team cohesiveness. Performers' behaviour can be predicted from personality assessments (e.g. NEO PI-R), so Lucie could recommend that the netball coach gives each player the NEO PI-R before the start of the season. This can help the coach (in conjunction with Lucie) to select players to fit the team's needs, e.g. high levels of conscientiousness and agreeableness are associated with high levels of task cohesion. Netball is a sport that requires a high level of interaction and therefore these personality characteristics would be very important.

Lucie and the netball coach could also use personality questionnaires to support player position selections. Personality differences exist between playing positions as they require different personality characteristics. A coach could use personality assessments to confirm their selections and tactical formation. This supports the idea that success and participation in sport is partially dependent on the personality of the performer.

However, personality assessments often provide only quantitative data, so if Lucie suggested a more qualitative approach, it would let the netball coach engage in one-to-one meetings with her players to find out more about their positional preferences and how they perceive their role in the team. This suggests that Lucie should use personality assessments as part of a whole package of information about player performance that includes skill level, fitness and tactics.

(c) Sameena may use strategies such as support for team selection to help improve the performance of the team. The first step that Sameena must take is to make each cricket player take the NEO PI-R personality test to establish personality traits for each of her players. After obtaining this information, Sameena may initially decide to address the team so she can make sure that players in her cricket team are selected appropriately to provide high levels of agreement between her players. This is because certain personality traits can correspond to factors such as disagreeability, which can have detrimental effects on Sameena's team's performance. By removing these players from the team, Sameena's cricket team is likely to perform at a higher level.

Sameena then may decide to address where each player should be positioned, e.g. batting order, bowling order, fielding positions. Like cohesion, the NEO PI-R can help Sameena link each player's behaviours to their most favourable positions. By placing each player in their correct positions and orders, Sameena's cricket team will likely play at a higher level than before which will help the performance of her cricket team. However, support for team selection will only have limited benefit in helping Sameena decide where and which players should play, as it will not have a direct impact on the actual skill of her players.

Page 205

Component 3 Section B part (a):

(a) The aim of Kroll and Crenshaw's research was to analyse personality characteristics of national or regional level performers across four different sports. They did this using using Cattell's 16PF questionnaire. A total of 387 participants were studied from American football, gymnasts, wrestlers and karate players. Cattell's 16PF was administered to all participants and an independent measures design was used where comparisons were made between the personalities from each sport.

Results from the 16PF showed significant differences across the personality profiles of all four groups: American footballers, wrestlers, gymnasts and karate players, including social boldness and self-reliance. The only pair of sport comparisons that were similar was wrestling and American football.

Results from 16PF were used to show that personality characteristics, e.g. the self-reliance factor, showed differences between sports. Footballers and wrestlers scored highest on group dependence for the self-reliance factor and were significantly different from the gymnasts and karate players. Kroll and Crenshaw concluded that at regional and national level there is no single personality for sport, however there may be some association between personality and different sports. For example, gymnasts and karate players display different personalities from each other and from American footballers and wrestlers. Kroll and Crenshaw also showed that high scorers on group

dependence do better in team sports than individual sports, but the opposite is true for high scorers on self-reliance. Overall it may benefit players to select the right sport for their personality as success is related to personality.

Component 3 Section B part (b):

(b) Reliability refers to the extent to which the results of research are consistent. Standardisation of the procedure is a major factor for whether research results are reliable. Researchers need to make sure everyone gets asked the same questions, worded in the same way, in the same order. The fact that research into personality and sport uses standardised questionnaires means that results are reliable.

For example, Cattell's 16PF questionnaire can be considered to be reliable because the results are consistent when assessed again in similar circumstances. Kroll and Crenshaw's participants, e.g. gymnasts, were all asked the same questions about their personality. However, we are unsure whether or not they administered Cattell's 16PF in the same way each time, and so this may limit the reliability of the results. However, given the standardised nature of Cattell's 16PF, we can expect that if used with the same or similar participants, Kroll and Crenshaw would get consistent results with the gymnasts, wrestlers, American footballers and karate players.

Reliability of personality measures such as the NEO PI-R that measures the Big Five personality domains, can be assessed using the split-half method. This is done by comparing the results of one half of a test with the results from the other half. The split-half method assesses the internal consistency of a test and measures the extent to which all parts of the test contribute equally to what is being measured. Results suggest that the NEO PI-R test has good internal reliability as a measure of personality. The internal consistency coefficient has been calculated at .86 using the split-half method (Costa and McCrae 1992), which is high.

(b) The key research by Kroll and Crenshaw can be seen as useful because it tells us that participation in different sports is due to the personality profiles of the performers. For example, karate players scored highly for rule consciousness whereas gymnasts scored lowest for rule consciousness. This is useful to coaches and athletes, as the particular characteristics required to perform each sport successfully can be developed. For example, younger karate players can be taught to closely observe the rules due to the contact nature of the sport, whereas a gymnastics coach may wish to be less restricted and focus on developing the creative skills in their gymnasts.

Additionally, for personality profiles to be gathered, sport psychologists and coaches need to use psychometric tests. For instance, measures of personality such as Cattell's 16PF or the NEO PI-R are useful as they allow comparisons to be made between individuals or different sports. These measures are useful as they are relatively quick to administer as written tests or online which means large samples, such as Kroll and Crenshaw's, can be used that can lead to improved generalisability of the findings.

Research into personality and sport is also useful if it is valid. A strength of using Cattell's 16PF to measure personality is that its scales have been shown to have good construct validity which means it is consistent with other measures or theories of personality. This allowed Kroll and Crenshaw to make comparisons between sports. For example, the findings for gymnasts in Kroll and Crenshaw's study showed the lowest levels of tension and the karate players scored the highest level of tension compared to the other sports. However, research into personality may have limited usefulness if the responses given by sports people to questionnaires are affected by social desirability. For example, performers may wish to present themselves in a favourable way to impress their coach, e.g. they

may wish to appear relaxed and less anxious. To combat this, questionnaires such as Eysenck's EPQ-R contain a lie scale (L) so that participants who are 'lying' can be detected and their responses discarded. This means that the usefulness of the research is increased.

Page 207

Component 3 Section B part (c):

(c) The advice I would give to Vickie to help the basketball team is to improve the social cohesion. Social cohesion is how likely the team is to get together away from the sport context for social purposes. This depends on how integrated and motivated a team member feels towards making friends and spending time with others on the team. In order to improve this, Vickie could work together with her basketball players in small groups to establish an agreed team code of behaviour regarding how teammates would react to hypothetical yet realistic situations, e.g. arriving on time for training. Developing a shared set of principles for the team will give a sense of identity that can be carried over into team situations when the team may be losing, helping them to stick together and work hard to improve their performance.

Another piece of advice that could be given to Vickie is to improve the task cohesion of the team. This is the extent to which the team works together in order to win the game, for example how the basketball team might work together on the court. Vickie and the players should write down their perceptions of the player's ideal position on the team, e.g. guard in basketball, so that both coach and player have clear expectations of the player's role in team success. Vickie needs to be aware that team building is a longitudinal process and so strategies are most effective in the long term, e.g. a whole season.

(c) Locke and Latham's (2002) goal setting theory suggests that if performers achieve their individual goals, the combined effect is to help the team achieve its overall goals. Therefore, Hannah could challenge the netballers in her team to set their own individual goals so that they contribute to the overall performance of the team. Goal setting usually involves players working through a series of steps such as making sure their goals are directional. Each netball player is challenged to achieve their own goals that should be directed towards the team's goals, e.g. increasing the number of successful passes that they make. The effect of this is that the goals have an energising function.

Hannah must make sure that the goals are sufficiently challenging as this leads to greater effort than goals that are achieved easily. These difficult or challenging goals will improve persistence levels, and breaking long-term goals into shorter-term goals will be a strategy that Hannah should use with her netballers to maintain their motivation towards the team's goals. Hannah needs to work with each netballer to make sure they use or adapt their knowledge, skills and tactics to meet their goals.

In this way, goal setting will be useful for Hannah as it increases individual players' performance as well as the collective performance of the team. Goals need to be specific, measurable, agreed upon, relevant and time-based (SMART).

Page 209

Component 3 Section B part (a):

(a) The aim of Smith *et al.*'s experiment was to make coaches more aware of their behaviours and their consequences. The IV is whether the coach underwent the coach effectiveness training (CET) session or was assigned to the control group. DVs are the observed behaviours of the coaches during matches, players' perceptions of the coaches' behaviours and their attitudes towards their coach,

teammates and baseball. Players' level of self-esteem was also measured. Behavioural feedback was given to the coaches during the first two weeks using the Coaching Behaviour Assessment System (CBAS). The coaches were urged to encourage effort in the players in 25% of responses to players. Attitudes to coaches' behaviours were evaluated using structured interviews. Player self-esteem was measured using the Coopersmith Self-Esteem Inventory (SEI).

Results showed that reinforcement was a significant discriminator between the experimental and control coaches. They also found that experimental group coaches were rated as more frequently providing verbal or nonverbal rewards. There were higher levels of self-esteem in the children who had played for the CET coaches, and these players had a mean winning percentage of 54.5%, whereas the control group won 44.7% of their games.

Smith *et al.* concluded that the CET programme had a significant positive influence on the children's attitudes toward their coach, their teammates and to baseball. The CET programme had a significant positive influence on coaching and leadership behaviours, improving the self-esteem of Little League Baseball players. Therefore, this research showed that coaches can be trained to develop their leadership styles to suit situations and performers to the benefit of players and teams.

Component 3 Section B part (b):

(b) Reliability refers to the extent to which the results of research are consistent. Standardisation of the procedure is a major factor for whether research results are reliable. The structured interviews that were used by Smith *et al*. were standardised and allowed for easy replication as there was a fixed set of closed response questions. This allowed them to easily collect data on players' perceptions and attitudes about coaches' behaviours, and means that they could test for reliability. Similarly, they used a standardised questionnaire, the Coopersmith Self-Esteem Inventory, to measure the self-esteem of the minor league baseball players. This means that results could be replicated to demonstrate consistency.

In addition, Smith *et al*.'s use of the structured coding system in CBAS meant that observations of coaching behaviour could be recorded consistently. For example, they used standardised instructions for how to improve coaching, such as giving encouragement for effort and not to demand results. Moreover, 16 undergraduates conducted the observations using CBAS and were trained for four weeks on its use. This means that it is likely that there will be high inter-rater reliability between the observed coaching behaviours. This suggests that the research into performing with others in sport is high in reliability.

(b) The nature side of the nature/nurture debate suggests that the ability to perform and relate to others is due to inherited factors such as genetics, whereas the nurture view suggests that leadership and coaching could be learned. This provides us with a central question of whether leaders are born or made? This question is at the heart of the nature/nurture debate in relation to leadership in sport.

Trait theorists such as Stogdill would suggest that a leader's characteristics are central to their effectiveness and capacity to lead. For example, Stogdill's review of leadership theories, e.g. the great man theory, found that decisiveness in judgement, speech fluency and interpersonal skills were important qualities for stable leaders. This evidence would support the nature side of the debate and suggest that leaders are born.

On the other hand, the nurture argument would suggest that leadership skills, and the way in which teams are formed, comes from learning. The process of learning and improving leadership skills is

highlighted by the findings from Smith *et al*., who showed that CET can significantly increase the effectiveness of coaches to improve the interaction and self-esteem of Little League Baseball players. This evidence would support the nurture side of the debate. Additionally, Chelladurai suggests that effective leadership is a result of the interaction between the prescribed behaviour required by the sport situation, the actual leadership of the coach and the leadership style preferred by the team members. When all three of these factors align, then team performance and satisfaction should be high. This suggests that leadership in sport is due to nurture.

However, interactionist theories support the idea that situational factors influence the effects that specific traits, e.g. motivation, might have on the leadership process. Therefore, this would explain the way we perform with others is due to a combination of nature *and* nurture rather than nature *or* nurture.

Page 211

Component 3 Section B part (c):

(c) One strategy that Laura could use to help her hit a good tee shot is to use mental imagery. Mental imagery and rehearsal has been identified by Mackenzie as having five categories. Initially, Laura could use motivational-specific imagery, by visualising a specific event, e.g. hitting a successful tee shot with the ball landing in the middle of the fairway. Another aspect of imagery that Laura could use is motivational general-mastery. For this, Laura can visualise herself coping with and being successful in difficult circumstances, e.g. playing in front of lots of people watching on the first tee.

A way that Laura can learn to cope with the stress she may feel on the first tee is to use motivational general-arousal. This is imagery that reflects feelings of relaxation, stress or arousal. Many of these imagery techniques can be carried out in quiet areas either at home or in the clubhouse before a competition.

Another type of imagery that Laura could use is cognitive-specific, involving visualisation of specific skills e.g. her tee shot. And finally, Laura could use cognitive-general imagery, involving visualising her strategy or tactics. When Laura uses imagery, she should be relaxed and visualise detailed, colour images of her standing on the tee and hitting her drive. Mental imagery and rehearsal should typically last between three and five minutes to be most effective.

(c) The advice I would give to Emma is to improve her selective attention. The selective attention process is responsible for sifting stimuli presented to the performer so that only the relevant information for the task is processed. At the moment, Emma is becoming distracted by the audience when taking her free throws rather than focusing on the hoop. Emma needs to learn to attend to relevant information and this can be done by learning to ignore irrelevant stimuli through practising with distractions and with crowd noise playing in the background. This could be done by using loud speakers in training to play crowd noise or even music. Additionally, Emma could put a big video screen on the wall and play crowd distractions to simulate distractions in a match.

Similarly, it is important for Emma to learn those cues that help performance, such as identifying the free throw line and the hoop. This can be done by analysing videos of performance so that cues can be identified by the coach and then discussed with the player so that such cues can be better recognised during actual performance. For example, a coach can work with Emma to focus not simply on the basketball hoop but to look at either the front or back edge of the hoop. Another technique to help Emma improve her selective attention is to put some bright tape around the

basketball hoop in training to intensify the visual stimulus. This means her focus is more likely to be drawn to the hoop rather than to any potential distractions from the crowd.

Page 213

Component 3 Section B part (a):

(a) Zajonc *et al.* wanted to test the drive theory of social facilitation and whether the mere presence of other cockroaches would facilitate or inhibit performance times for a simple and a complex task. A light was turned on and the dominant response of the cockroach is to run. In experiment 1, 72 cockroaches performed a task of crossing a straight runway (simple task) or maze (complex task), either alone or in pairs (co-action), with or without an audience. The time taken to complete the tasks was recorded.

In a second experiment, 180 cockroaches had to cross a straight runway (simple task) or maze (complex task), with no distractions, with a distraction of mirrors along the walls of the runway (to represent an audience), or with the odour of other cockroaches to suggest the presence of other cockroaches. The time taken was again recorded.

The results showed that the maze (complex task) performance was impaired for co-actors and audience conditions, but runway (simple task) performance was facilitated for co-actors compared to solitary performance, with or without an audience. Cockroaches in the mirror and odour conditions took longer to cross the straight runway than those in the alone condition.

Well-learned behaviours tend to be our dominant responses. In sport, high arousal is beneficial to experts because their dominant response is likely to be the correct one. For example, the performance of an experienced golfer such as Justin Rose is likely to improve as his arousal levels increase in front of an audience. This demonstrates social facilitation. However, a more inexperienced player with an 18 handicap is more likely to become over-aroused standing on the first tee in the club championship, perhaps causing such a player to top their tee shot. This shows social inhibition.

Component 3 Section B part (b):

(b) Reliability involves results from research being consistent. The possibility of high control of variables in research means that the procedure can be easily standardised. For example, in Zajonc *et al.*'s research using cockroaches, there was always a one-minute inter-trial interval that was the same for all the cockroach trials. This is likely to increase the reliability of the study because the research can be replicated and is likely to produce similar results.

Similarly, Zajonc *et al*. always used the same apparatus of plastic tubes in the shape of a straight-line runway and maze which meant that the cockroaches always had to carry out the same task in each condition when the light was turned on. This standardisation will have increased the reliability of the results.

Another factor that would improve the reliability of research into audience effects in sport is the use of the quantitative approach. This approach, adopted by Schwartz and Barsky (1977), allows for information concerning home advantage to be replicated using numerical measurement. For example, they analysed the home outcomes of 1,485 college basketball games and this has been repeated in basketball, based on 13,686 matches where the home-winning percentage was 64.4%. This demonstrates the reliability of research into audience effects in sport.

(b) The characteristics of science involve the manipulation of an independent variable to show an effect on a dependent variable. Zajonc *et al.* used three conditions of an independent variable where cockroaches ran alone or in pairs with no audience; ran alone or in pairs with an audience; and ran across a maze or a straight runway. The results showed that time for the maze task was slowest for co-actors and audience conditions, but the runway task was fastest for co-actors compared to solitary performance, with or without an audience. This demonstrates a cause-and-effect relationship between the mere presence of other cockroaches and their performance on the running tasks.

Additionally, research into audience effects is scientific because of the high control of variables that can be used. For example, in the research by Zajonc *et al.* into the effects of an audience on performance, there was always a one-minute inter-trial interval and the apparatus used was always the same for all the cockroaches. Moreover, the high control of variables also means that the procedure can be easily standardised and can be replicated. This is likely to increase the reliability and scientific nature of the study.

The quantitative approach, adopted by Schwarz and Barsky, allows for information concerning home advantage to be replicated using numerical measurement. This is scientific as the data is objective and not open to interpretation. For example, Schwarz and Barsky analysed the home outcomes of 1,485 college basketball games and this has been repeated in basketball, based on 13,686 matches where the home-winning percentage was 64.4%. Similarly, Zajonc *et al.* used quantitative data with the times that it took the cockroaches to complete the runway tasks. This meant that Zajonc *et al.* were able to compare the times of the cockroaches in the different conditions, e.g. running alone or with an audience. This demonstrates the scientific nature of research into audience effects in sport.