



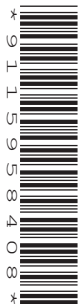
Oxford Cambridge and RSA

Monday 5 June 2023 – Afternoon

A Level Psychology

H567/03 Applied psychology

Time allowed: 2 hours



You must have:

- the OCR 12-page Answer Booklet

INSTRUCTIONS

- Use black ink.
- Write your answer to each question in the Answer Booklet. The question numbers must be clearly shown.
- Fill in the boxes on the front of the Answer Booklet.
- Answer **all** the questions in Section A.
- Choose **two** options in Section B and answer **all** the parts of the question for each option.

INFORMATION

- The total mark for this paper is **105**.
- The marks for each question are shown in brackets [].
- Quality of extended response will be assessed in questions marked with an asterisk (*).
- This document has **4** pages.

ADVICE

- Try to answer every part of each question you choose.
- Read each question carefully before you start your answer.

Section A**Issues in mental health**

1 Identify **one** specific disorder **and** outline an appropriate biological treatment for it. **[4]**

2 Charlie is the manager of an office with approximately 100 members of staff. She is worried about mental health problems experienced by some of the people in her office. Charlie wants to find out whether her workplace could be causing these mental health problems.

What might a psychologist say to Charlie about whether the workplace could be causing some of her employees' mental health problems?

Refer to **either** the humanistic **or** the psychodynamic **or** the cognitive neuroscience explanation of mental illness to inform your response. **[5]**

3 (a) Outline the genetic explanation of mental illness. **[3]**

(b) Evaluate the usefulness of the genetic explanation of mental illness. **[6]**

4 To what extent can historical views of mental illness be considered scientific? **[7]**

5* Assess the contribution that the key research by Szasz (2011) makes to the topic of alternatives to the medical model of mental illness. **[10]**

Section B**Options**

Choose **two** options and answer **all** the parts of the question in your chosen options.

OPTION 1**Child psychology**

- 6 (a)* Outline the key research by Wood et al. (1976) **and** explain what it tells us about cognitive development in children. [10]
- (b)* Discuss whether research into cognitive development and education is ethnocentric. [15]
- (c)* Nina helps run teacher training courses. She is planning a session for trainee teachers on how they can improve revision or learning among the children they teach. Nina wants some guidance on cognitive strategies that she could include within this session.

Outline **at least one** cognitive strategy to improve revision or learning that a psychologist might advise Nina to include in her session. [10]

OPTION 2**Criminal psychology**

- 7 (a)* Outline the key research by Wilson and Kelling (1982) **and** use it to explain how the features of neighbourhoods can influence crime. [10]
- (b)* Discuss the freewill/determinism debate in relation to research into crime prevention. [15]
- (c)* Many people travel to work by train. Some of these people cycle from home to their local railway station, and they leave their bikes at the railway station during the day. Taylor has the job of creating a cycle parking area at the local railway station. The bikes left there during the day need to be safe from being stolen.

Outline **at least one** crime prevention strategy a psychologist might advise Taylor to apply when designing this cycle parking area. [10]

OPTION 3

Environmental psychology

- 8 (a)* Outline the key research by Black and Black (2007) **and** use it to explain the impact of environmental stressors on our biological responses. [10]
- (b)* Discuss research into stressors in the environment in relation to ethical considerations. [15]
- (c)* Jamal is a student revising for his exams. He has tried studying at home and the town centre library, but he finds both environments stressful to revise in. Jamal is keen to do well in his exams and really needs somewhere suitable to do his revision.
- Outline **at least one** strategy a psychologist might suggest for how Jamal could manage environmental stress to be able to revise effectively for his exams. [10]

OPTION 4

Sport and exercise psychology

- 9 (a)* Outline the key research by Kroll and Crenshaw (1970) **and** explain what it tells us about the relationship between personality and sport. [10]
- (b)* Discuss the reliability of research into personality and sport. [15]
- (c)* The heptathlon requires female athletes to compete in seven sports over two days. Events include the 200-metre sprint, the high jump, and javelin throwing. Mia is in charge of improving the performance of her country's best heptathletes.
- Outline **at least one** strategy a psychologist might suggest for how Mia could use knowledge of personality to improve the performance of the heptathletes. [10]

END OF QUESTION PAPER

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Candidate name: *StemUp Model Solution*

- 1 *One specific disorder is depression (major depressive disorder). An appropriate biological treatment is a course of antidepressant drugs called SSRIs (selective serotonin reuptake inhibitors), such as fluoxetine (Prozac). The patient takes the drug daily and it works at the synapse: after serotonin has been released into the synaptic gap, the SSRI blocks the reuptake transporters on the pre-synaptic neuron so the serotonin cannot be taken back up. This increases the level of serotonin left in the synaptic gap, so more of it binds to receptors on the post-synaptic neuron and neural transmission in serotonin pathways is improved. Because low serotonin activity is linked to the low mood, poor sleep and loss of pleasure seen in depression, the increased serotonin activity lifts and stabilises the patient's mood over several weeks of treatment.*
- 2 *A psychologist working from the psychodynamic explanation would tell Charlie that, according to Freud, mental illness comes from the unconscious mind rather than from a person's present surroundings. The personality has three parts: the id (instinctive drives), the ego (the rational part that deals with reality) and the superego (the internalised moral standards of our parents). Mental illness arises when there is unresolved conflict between these parts, for example an over-harsh superego created by strict parenting in childhood leaving the ego unable to cope, so anxiety is dealt with by ego defence mechanisms such as repression or displacement.*
- The psychologist would therefore say that the office is unlikely to be the root cause of her staff's problems, because the causes lie in early childhood experiences and unconscious conflicts that the employees bring with them to work. However, the workplace could act as a trigger. If Charlie or her supervisors use a critical, authoritarian management style, this can unconsciously remind an employee of a harsh parent and reactivate childhood conflicts, so they become anxious or depressed at work. Conflict with colleagues or managers over deadlines could also strain an already weak ego so that defence mechanisms break down, and staff might displace frustration with managers onto other workers. So the psychologist would advise Charlie that the workplace may be bringing underlying problems to the surface rather than causing them, and that a supportive management style would reduce the triggering of these unconscious conflicts.*

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- 3(a) The genetic explanation says that a vulnerability to mental illness is inherited, being passed on from parents to children through their genes, so disorders such as schizophrenia and bipolar disorder run in families. Evidence comes from Gottesman et al. (2010), who used the Danish population register and found that when both parents had schizophrenia the risk of the child developing it was about 27 per cent, compared with about 7 per cent with one affected parent and about 1 per cent in the general population; the same pattern was found for bipolar disorder (about 25 per cent with two affected parents). Twin studies show higher concordance in identical twins, who share all their genes, than in non-identical twins, who share about half. The more genes a person shares with someone with a disorder, the higher their own risk, which points to inheritance rather than just the shared environment.
- 3(b) One way the genetic explanation is useful is that it allows risk to be identified early. Because Gottesman et al. (2010) showed that children of two parents with schizophrenia have a roughly 27 per cent chance of developing the disorder, families with a strong history could be offered genetic counselling and children at high risk could be monitored so that support and early intervention are put in place before a first episode. This is a practical application that could reduce the severity of the illness. However, this information has to be handled sensitively, as telling someone they are at genetic risk could itself cause anxiety and stigma, and could discourage people from having children, so its usefulness depends on how it is used. A second argument is that the explanation is less useful for treatment, because a person cannot change the genes they were born with. Knowing that a disorder is inherited does not by itself tell a clinician how to treat it, and it may lead patients to feel their condition is fixed and beyond their control, lowering their motivation to engage with therapy. In contrast, explanations that identify changeable causes, such as faulty cognitions, lead directly to treatments. Thirdly, the usefulness is limited because concordance is never 100 per cent: even with two affected parents, about 73 per cent of children in Gottesman's study did not develop schizophrenia, so genes only give a predisposition. The explanation is therefore most useful when combined with environmental factors in a diathesis-stress model, which can guide people at risk

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to avoid triggers such as stress or drug use. Also, adopted children may not know their biological family history, so the explanation cannot help them assess their risk. Overall the genetic explanation is useful for understanding and predicting risk but much less useful on its own for treating or preventing mental illness.

- 4 For a view to be considered scientific it should be based on empirical evidence gathered objectively through observation or controlled experiments, it should produce theories that are testable and falsifiable, its findings should be replicable, and it should offer explanations in terms of natural (rather than supernatural) causes that can be measured, ideally quantitatively. Against these criteria, historical views of mental illness can be judged to varying extents. The earliest view, that mental illness was caused by supernatural forces such as demonic possession or witchcraft, is clearly not scientific. The explanation cannot be observed or measured, it cannot be tested or falsified, and the evidence for it was subjective interpretation of behaviour by priests rather than controlled empirical observation. Treatments such as trephining the skull or exorcism had no empirical basis and their effects were not systematically recorded, so the view fails on every criterion of science. The humoral theory of Hippocrates and later Galen, which explained melancholia as an excess of black bile and mania as an excess of yellow bile, can be considered scientific to a greater extent. It located the cause of mental illness inside the body, in physiology, and so it was a natural, biological explanation that anticipated the modern medical model. Treatments such as bloodletting or changing diet followed logically from the theory and could, in principle, have been tested. However, the humours themselves were never observed or measured, the theory was based on reasoning rather than systematic evidence and there were no controlled trials or replication, so it remained speculation. The eighteenth century view that the mentally ill had reverted to animals, which justified restraint, cold baths and whipping in asylums such as Bedlam, was also unscientific, as it rested on assumption rather than evidence. In contrast, Pinel's moral treatment and the later asylum movement at least began to keep case records and observe which treatments helped, which is a step towards empirical method, and Kraepelin's attempt in the nineteenth century to

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classify disorders from careful observation of symptoms laid the ground for today's diagnostic manuals.

In conclusion, historical views can be considered scientific only to a small extent. The supernatural view fails entirely, the humoral view meets the criterion of a natural, physiological cause but not the criteria of measurement, testing or replication, and only the latest historical views began to use systematic observation. The extent to which a historical view is scientific therefore increases over time, but none meets the full standards of modern science.

- 5 In his 2011 article *The Myth of Mental Illness: 50 Years Later*, Szasz returned to his 1960 argument that mental illness does not exist in the way physical illness does. He argued that illness is defined by physical lesions or pathology in the body, and since the mind is not an organ it cannot be diseased; if a so-called mental illness were shown to have a brain cause it would become a neurological disease, like epilepsy. Mental illnesses are therefore metaphorical illnesses and are better understood as problems in living, which society has chosen to medicalise. He argued that psychiatric diagnosis is a social and political judgement about behaviour that others find disturbing, pointing out that homosexuality was removed from the DSM by a vote in 1973, showing that diagnosis reflects social values rather than discovered disease. He also attacked coercive psychiatry, such as involuntary hospitalisation and the insanity defence, as social control by the therapeutic state.
- Szasz's work makes a major contribution to the topic of alternatives to the medical model. He challenged the core assumption that mental disorders are illnesses with biological causes to be diagnosed and treated by doctors, and in doing so raised questions that others did not even recognise as questions. His position supports the social constructionist and labelling alternatives, as it suggests that diagnosis is a label applied by society that can be withdrawn by a vote. It also fits with the humanistic alternative, because viewing distress as a natural response to difficult life circumstances normalises it and encourages people to take responsibility for their own problems with help from a counsellor rather than a physician. He coined memorable concepts such as the myth of mental illness and the therapeutic state, and his critique was powerfully expressed, which is why it has influenced the anti-psychiatry and service-user

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movements for decades. Importantly, he did not deny that people suffer or that some would choose treatment; he argued that help should be voluntary and based on personal responsibility. However, the contribution can be assessed as overstated and imbalanced. Szasz's argument is philosophical and lacks supporting empirical evidence; it is essentially an essay rather than research. Furthermore, the empirical evidence that does exist contradicts his central thesis: Gottesman et al. (2010) showed that the risk of schizophrenia rises sharply with the number of affected parents, brain imaging shows differences in people with the disorder, and drug treatments acting on neurotransmitters relieve symptoms, all of which suggest a biological basis that his argument dismisses. Treating distress as merely a problem in living may also lead sufferers to feel their experience is being dismissed, and it could be used to justify withdrawing care from people who genuinely need it. His focus on the United States legal system also limits how far the argument applies elsewhere.

In conclusion, Szasz's contribution is more theoretical than evidential. He made a highly significant contribution by forcing psychology and psychiatry to question the medical model and by giving voice to alternatives based on social and personal meaning, but because the argument lacks evidence and ignores the biological findings, its contribution is best seen as a valuable critique that balances the medical model rather than a replacement for it.

- 6(a) Wood, Bruner and Ross (1976) investigated how an adult tutor helps young children solve a problem they could not manage alone. The sample was 30 children, ten aged three, ten aged four and ten aged five, with equal numbers of boys and girls. Each child worked one to one with the same female tutor on building a wooden pyramid made of 21 blocks. The blocks fitted together in pairs with pegs and holes to make square layers of decreasing size, topped by a single block, so the task was too difficult for the children to complete alone but could be learned. The tutor followed a set procedure: she let the child try first, intervened only when the child failed or stopped, and used verbal instructions where possible, moving to showing the child (demonstration) when words were not enough. Sessions were recorded and the tutor's interventions were scored as showing or telling, while the children's responses were scored as assisted or unassisted acts, and as correctly or incorrectly constructed. From the observations,

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the authors identified six functions of scaffolding: recruitment of interest, reduction in degrees of freedom, direction maintenance, marking critical features, frustration control and demonstration.

The results showed clear age differences. Three-year-olds largely ignored the tutor's verbal instructions, needed many interventions, and mostly needed to be shown rather than told; they often took blocks apart and built their own structures. Four-year-olds responded to verbal instruction but still needed correction and reminders. Five-year-olds could follow verbal instructions, made many more unassisted correct acts, checked their own constructions and needed the fewest interventions. Interestingly, even three-year-olds could recognise when a pyramid was wrongly built and would not rebuild a wrong one after taking it apart.

This tells us several things about cognitive development. First, it supports Vygotsky's idea of a zone of proximal development: with support from a more knowledgeable other children can achieve what they cannot do alone, and the support must be matched to the child's level.

Second, there is a developmental shift between three and five years from needing concrete demonstration (Bruner's enactive mode) to being able to use language to guide action (symbolic mode), so language becomes a tool of thought as children get older. Third, comprehension develops before production: three-year-olds understood what a correct pyramid looked like before they could build one. Finally, younger children's attention and self-regulation are less developed, so they need more interventions to stay on task, while older children begin to monitor their own performance, which is the beginning of metacognition.

6(b) Ethnocentrism is the tendency to see one's own culture or ethnic group as the norm and to judge other groups by its standards. In research it means that theories and findings produced in one culture, usually Western, individualist, educated societies, are assumed to apply to children everywhere, and children from other cultures may be judged as deficient when they differ.

Research into cognitive development and education can be discussed as ethnocentric in several ways, although it can also be defended.

First, the key research by Wood et al. (1976) used only 30 white, middle class American children working with a single tutor, yet the conclusions about scaffolding and the functions of

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tutoring are presented as general truths about how children learn. The way a child responds to an adult's intervention is likely to vary between cultures: in some collectivist cultures children learn mainly by observing adults and are not expected to speak with them during tasks, while in Western cultures one to one verbal tutoring is normal. Rogoff's research on guided participation among Mayan families in Guatemala shows that children there learn through watching and joining in adult activities with little explicit instruction, so the scaffolding described by Wood et al. may be a Western way of tutoring rather than a universal one. Research based on it is therefore ethnocentric to the extent that it treats Western tutoring as the model.

Second, Piaget's theory of stages was built on observations of Swiss children, including his own, and it has shaped Western education through discovery learning and child-centred classrooms. Cross-cultural research such as Dasen (1994) found that Aboriginal Australian children achieved concrete operational tasks like conservation of liquid later than Swiss children, but performed better on spatial tasks that matter in their nomadic culture. This shows both that the stages are influenced by culture and that judging Aboriginal children as behind on Piagetian tasks is ethnocentric, because the tasks are based on skills valued in European schooling. The idea that children should be left to be little scientists discovering knowledge for themselves is also a cultural choice reflecting Western individualism; in China and Japan highly structured, teacher-led whole class instruction is valued and produces very high attainment, which Western research tended to overlook.

However, the research can be defended. Theories of cognitive development aim to describe universal processes, not cultural ones. Piaget found the same sequence of stages across cultures even where the age of attainment differed, which suggests the underlying development is universal and only the timing is cultural. Vygotsky's theory explicitly states that cognitive development is shaped by the culture's tools, language and more knowledgeable others, so it is designed to be applied differently in different cultures and is arguably not ethnocentric at all. Furthermore, modern research into cognitive strategies such as spaced practice and retrieval practice has been replicated across many countries, suggesting that some educational findings genuinely cross cultures. A theory being developed in one culture does not automatically make it ethnocentric; it becomes ethnocentric only when its culture-specific assumptions are imposed on

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others without testing.

In conclusion, research into cognitive development and education has often been ethnocentric in its samples and in the educational practices it promotes, such as discovery learning and verbal scaffolding, and children from other cultures have sometimes been judged against Western norms. Nevertheless, the core sequences of cognitive development appear to be more universal than the ages and teaching methods attached to them, and Vygotskian theory has the cultural context built in. The research is therefore ethnocentric in its application more than in its basic claims, and cross-cultural studies are steadily reducing this bias.

6(c) A psychologist would advise Nina to include scaffolding within the zone of proximal development as her central cognitive strategy for improving learning. Based on Vygotsky and on the findings of Wood et al. (1976), she should tell trainee teachers to find out what each child can nearly do but not yet do alone, and then provide just enough support for the child to succeed, withdrawing the support as the child becomes competent. Nina could present the six scaffolding functions from Wood et al. as a checklist: recruit the child's interest in the task; reduce the degrees of freedom by breaking a topic like long division into small steps so the child only has to manage one decision at a time; maintain direction by keeping the child focused on the goal; mark the critical features, for example highlighting the key word in a question; control frustration so the child does not give up; and demonstrate the solution when words are not enough. The rationale is that Wood et al. found three-year-olds needed showing while five-year-olds could use verbal guidance, so teachers should match the type of support to the child's level of development and use demonstration with younger or struggling children and verbal prompts with older ones.

For revision, the psychologist would advise Nina to teach children mnemonic strategies based on how memory works. Elaborative encoding and dual coding mean that information processed for meaning and stored both as words and images is better remembered than information rote repeated, so children should turn their notes into mind maps that link ideas visually and make up acronyms or rhymes for lists, such as a rhyme for the order of the planets. The method of loci, in which children imagine placing each fact to be learned at a location on a familiar route

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such as their walk to school and then mentally walk the route in the exam, uses spatial memory and imagery as retrieval cues and has been shown to greatly increase recall.

Finally, Nina could include retrieval practice, because testing yourself strengthens the memory trace more than rereading, and children should be taught to revise using self-quizzing spaced out over several days, since Ebbinghaus showed that spaced learning slows forgetting. These strategies are cognitive because they change how children process and store information, and they give Nina's trainees specific, evidence based techniques to pass on to the children they teach.

- 7(a) Wilson and Kelling (1982) wrote an article called Broken Windows which reviewed evidence on how disorder in neighbourhoods affects crime. A key piece of evidence was the Newark Foot Patrol Experiment in New Jersey in the mid 1970s, in which police officers were put back on foot patrol in some neighbourhoods. The evaluation by the Police Foundation found that foot patrols did not actually reduce crime rates, but residents in the foot patrol areas felt safer, believed crime had fallen, took fewer precautions and had a more positive view of the police, while the officers themselves had higher morale. Kelling observed officers on patrol and described how they maintained order informally with the regulars on their beat: drunks could sit on steps but not lie down, panhandlers could not bother people waiting at bus stops, and strangers who broke these rules were moved on. The article also drew on Zimbardo's 1969 experiment in which an abandoned car was left in the Bronx and another in Palo Alto. The Bronx car was attacked within ten minutes and stripped within a day, whereas the Palo Alto car was untouched for a week until Zimbardo smashed it with a sledgehammer, after which passers-by quickly destroyed it. Wilson and Kelling concluded that order maintenance, through foot patrol and community involvement, is a vital police role, and recommended that police concentrate on neighbourhoods at the tipping point where order can still be restored. The research explains how features of neighbourhoods influence crime through broken windows theory. A physical sign of disorder, such as an unrepaired broken window, graffiti or litter, sends out a signal that nobody cares about the area and that no one is watching. Soon more windows are broken because breaking them costs nothing, and this physical decay encourages social

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disorder: drunks, rowdy teenagers and prostitutes gather. Law abiding residents respond by feeling more fearful, withdrawing from public spaces and avoiding confronting troublemakers, so informal social control collapses. This creates a vacuum that is filled by more serious criminals who see the area as a safe place to deal drugs, mug or rob, so a neighbourhood with visible disorder has rising crime even if the original disorder was minor. Conversely, well maintained neighbourhoods where residents know each other and police maintain order signal that behaviour is monitored, so crime is less likely. This links to Newman's idea of defensible space, where features such as clear boundaries and overlooked public areas allow residents to exert territorial control. The theory therefore explains why zero tolerance policing of minor offences and repairing damage quickly, as later applied in New York, can prevent an area tipping into serious crime.

7(b) The free will and determinism debate concerns whether our behaviour is chosen freely or is caused by factors beyond our control, such as the environment, biology or upbringing. A determinist view says that behaviour is the inevitable result of prior causes, so if we change the causes we change the behaviour, while a free will view says people make conscious choices for which they are responsible. Research into crime prevention sits right at the centre of this debate, because prevention strategies assume that criminal behaviour can be caused or prevented by changing the situation.

Much of the research into crime prevention is environmentally determinist. Wilson and Kelling's (1982) broken windows theory argues that visible disorder in a neighbourhood causes fear, the withdrawal of residents and then more serious crime, almost as an automatic chain reaction. Zimbardo's abandoned car study, where a car in the Bronx was stripped within a day, is taken to show that cues of neglect cause people to vandalise. Newman's defensible space theory similarly argues that features of the built environment such as anonymous high rise blocks and unsupervised spaces cause crime, while clearly bounded, overlooked spaces prevent it. The strength of this determinist approach is that it leads directly to practical, testable interventions: Kelling and Sousa (2001) found that the zero tolerance order maintenance policing introduced in New York in the 1990s was associated with a large fall in violent crime,

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suggesting that changing the environment does change behaviour. If offenders were simply free agents, altering lighting, locks or litter would make no difference, so the success of situational crime prevention is evidence for at least some determinism.

However, the picture is not this simple, and the research can also be read in terms of free will. Rational choice theory, which underpins situational crime prevention, assumes offenders weigh up the costs and benefits of a crime and choose whether to commit it. Target hardening and CCTV work by changing the choice, not by removing it. This explains displacement: when one area is protected, offenders often choose to move to a softer target elsewhere, which is a free decision rather than a determined response. Offenders can also choose to mend their ways, as shown by the effectiveness of programmes that aim to change thinking. Furthermore, the New York fall in crime happened at the same time in cities that did not adopt zero tolerance, and Harcourt and Ludwig (2006) found that when disorder was controlled for, broken windows policing had little effect, so the deterministic claim that disorder causes crime may be overstated and other factors, including people's choices, matter.

Free will also appears in the role of residents. Wilson and Kelling noted that order depends on citizens choosing to intervene and to support patrols, and residents freely decide whether to set up Neighbourhood Watch schemes, target harden their homes or report crime. These choices then shape the environment that is said to determine offenders' behaviour, so the two sides interact.

A soft determinist position probably fits the research best: features of the environment make crime more or less likely by shaping the choices available, but people still make the final decision.

In conclusion, research into crime prevention leans towards determinism in its theories and its interventions, and its practical successes support the view that situations shape behaviour. Yet displacement, mixed evidence for zero tolerance and the active choices of both offenders and residents show that free will cannot be ignored. The most useful conclusion is that crime prevention works by influencing the decisions people make, which combines both sides of the debate.

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7(c) A psychologist would advise Taylor to design the cycle parking area using Newman's principle of defensible space and natural surveillance. The parking area should be placed where it is overlooked, for example next to the ticket office window, the platform entrance or a busy footpath, rather than hidden behind the station or in an underpass. Sightlines should be kept open with low fencing, no solid walls or dense shrubs, and bright, even lighting so that anyone tampering with a bike can be seen by passengers and staff at all times. The rationale is that offenders avoid areas where they feel watched, and clear territorial markers such as a painted boundary, a canopy and a sign saying the area belongs to the station make it obvious that this is a cared for space that commuters and staff feel responsible for, increasing the chance that someone would challenge a thief.

Second, drawing on Wilson and Kelling's (1982) broken windows theory, the area should be designed so it does not send the signal that nobody cares. Taylor should use tough, galvanised steel Sheffield stands anchored in concrete, graffiti resistant coatings and no glass panels that could be broken, and should build in litter bins and a design that is easy for staff to maintain, because litter, graffiti and broken fittings signal neglect and invite theft and vandalism to escalate.

Third, the psychologist would recommend CCTV cameras covering the stands together with signs stating that the area is monitored. Nettle, Nott and Bateson (2012) found that posters showing a pair of eyes with the words Cycle thieves, we are watching you reduced bike thefts at those locations by 62 per cent, because cues of being watched reduce deindividuation and trigger self-awareness and social norms about honesty. Taylor could display these eye posters above every rack.

Finally, access should be controlled by making part of the area a secure compound that only registered commuters can open with a smart card, with sturdy locking points so that frames and both wheels can be locked. This target hardening increases the effort and risk for a rational offender, and the registration system means staff know who should be there, so a stranger cutting a lock stands out. Together these design features make the bikes a hard, well watched and cared for target, so theft is far less likely.

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8(a) Black and Black (2007) investigated whether long term exposure to aircraft noise around Sydney Airport in Australia was linked to stress and hypertension. They used a survey design comparing two groups of residents. The noise exposed group lived in suburbs under the flight paths where there were more than fifty aircraft noise events a day louder than 70 decibels, and the control group lived in an area of similar socio-economic make-up that was not exposed to aircraft noise. Around 700 residents in the exposure area and over 300 in the control area returned a postal questionnaire. The questionnaire measured health related quality of life using the SF-36, a standardised 36 item scale covering dimensions such as physical functioning, general health, vitality and mental health. It also measured noise stress and annoyance on a rating scale, asked whether a doctor had ever diagnosed the person with hypertension (high blood pressure), and recorded confounding variables such as age, smoking, education and how long they had lived there. Noise levels were also measured and modelled across the suburbs. The results showed that residents near the airport scored significantly lower than controls on the SF-36 for physical functioning, general health, vitality and mental health. Their mean aircraft noise annoyance score was far higher, 6.27 compared with 1.03 for the control group, and they reported much higher chronic noise stress. Importantly, after controlling for other variables, people exposed to aircraft noise were 2.74 times more likely to report hypertension than the control group, and those who were most annoyed and most noise sensitive were the most affected. The authors concluded that long term aircraft noise is a chronic environmental stressor with a measurable effect on health, and recommended that airport management include noise insulation, curfews and health monitoring.

This research shows that environmental stressors have real biological responses. Noise that is loud, frequent and, crucially, unpredictable and outside a person's control activates the body's fight or flight response through the sympathetic nervous system, releasing adrenaline and raising heart rate and blood pressure. When the stressor is chronic, as with fifty flights a day for years, the hypothalamic pituitary adrenal axis keeps cortisol high and blood pressure stays elevated, which over time becomes hypertension, so the 2.74 times greater risk is a direct biological consequence of noise stress. Chronic arousal also explains the lower vitality and poorer general health, as sleep and recovery are disrupted. The study also shows that the biological

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impact is mediated by appraisal: residents who were more annoyed or more noise sensitive showed a stronger effect, so the same decibel level produces a bigger physiological response in people who perceive it as a threat. Finally, the fact that the effects persisted after controlling for smoking, age and other factors shows that the environmental stressor itself, rather than lifestyle, was responsible for the biological outcomes.

8(b) Ethical considerations are the standards psychologists must follow to protect participants, set out in the British Psychological Society's code of ethics. They include informed consent, the right to withdraw, protection from physical and psychological harm, confidentiality, avoiding deception where possible and debriefing, and for animal research the principles of replacement, reduction and refinement under the Animals (Scientific Procedures) Act. Research into stressors in the environment raises particular ethical issues because the whole point is to study people exposed to something unpleasant, and this can be evaluated in several ways.

The key research by Black and Black (2007) on aircraft noise around Sydney Airport can be defended as highly ethical. It was a questionnaire study of people already exposed to noise, so the researchers did not create any stress themselves; residents gave informed consent by choosing to return the postal survey, could withdraw simply by not completing it, and data on hypertension and health were kept confidential. The research also had clear social benefit, as it provided evidence used to argue for noise insulation and curfews to protect residents' health. However, there are still considerations. Asking people about hypertension and poor health may have raised anxiety about living under a flight path, and publishing that an area is unhealthy can lower house prices and distress residents, which is a form of socially sensitive research. The study is therefore ethical but not entirely without cost.

In contrast, laboratory research such as Glass and Singer (1972) deliberately exposed participants to loud bursts of predictable or unpredictable noise at 110 decibels while they did tasks, then measured their frustration tolerance afterwards. Participants consented and could withdraw, but the study was designed to cause stress, which challenges protection from harm. It can be defended by the end justifies the means argument: the noise was short, participants were debriefed, and the finding that unpredictable, uncontrollable noise is most damaging has

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informed noise policy, so the costs seem acceptable only because the harm was minor and temporary.

Research using children is more problematic. Evans, Bullinger and Hygge (1998) studied children living near the old and new Munich airports, measuring stress hormones and blood pressure before and after the airport moved. The children could not give fully informed consent themselves and, as a natural experiment, they could not withdraw from the noise; the researchers knew that the children near the new airport would be harmed by it yet could only observe. However, the researchers did not cause the exposure, parental consent was gained, and the evidence of raised cortisol and blood pressure in children has protected many others by informing airport planning, so it can be argued that it would have been unethical not to study it. Similarly, Bronzaft (1975) found that children on the noisy side of a school next to an elevated railway were nearly a year behind in reading; the ethical strength of this research is that it led to an intervention, with rubber pads on the track and acoustic ceilings, after which the gap disappeared, showing research that directly benefited its participants.

Animal research into stressors, such as studies exposing rats to crowding or noise and measuring adrenal changes, raises different considerations: animals cannot consent and may be permanently harmed, so the work must be justified under the three Rs and a cost-benefit test, and because generalising from rats to humans is questionable the benefit side of that test is weaker.

In conclusion, research into environmental stressors is mostly ethical because it studies stressors that already exist in people's lives rather than creating them, and the findings have a strong protective value for public health. The main ethical tensions arise where stress is deliberately induced, where children cannot consent or withdraw, and where socially sensitive findings affect communities. On balance the end has usually justified the means, provided harm is minimised and the research leads to real improvements for those exposed.

8(c) A psychologist would first suggest that Jamal chooses or creates a revision environment that removes the stressors that make his home and the library stressful, based on research into environmental stress. Black and Black (2007) showed that uncontrollable noise raises stress

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and blood pressure, and Glass and Singer (1972) found that unpredictable noise is far more stressful than predictable noise, especially when the person has no control over it. Jamal should therefore find somewhere away from traffic, televisions and other people's conversations, such as a quiet school study room or a corner of a university library booked in advance, and he could use noise cancelling headphones or steady white noise to mask unpredictable sounds. Crucially, the research shows that perceived control reduces the stress response, so simply knowing he can put the headphones on or move gives Jamal a sense of control that will lower his stress even when some noise remains.

Second, the psychologist would advise Jamal to manage the other physical features of the space. He should revise where there is natural daylight or warm LED lighting rather than flickering fluorescent tubes, keep the room at a comfortable temperature, and avoid the crowded parts of the town library, since research on crowding shows that high social density raises arousal and reduces concentration. He should keep his desk clear and simple to avoid cognitive overload, and ideally sit where he can see trees or the sky. Ulrich (1984) found that hospital patients with a view of trees recovered faster and needed fewer painkillers, and Kaplan's attention restoration theory explains that natural scenes let our directed attention recover, so short breaks walking in a park between revision sessions would restore Jamal's concentration and lower his stress.

Third, because Jamal finds both environments stressful, the psychologist would suggest changing how he responds to the environment using stress inoculation training (Meichenbaum). In the conceptualisation phase Jamal would identify exactly what stresses him in each place, such as noise at home or feeling watched in the library. In the skill acquisition phase he would learn relaxation breathing and positive self-statements such as I can focus for twenty minutes despite this noise, and in the application phase he would practise these in gradually more distracting settings until he can revise calmly almost anywhere. A short mindfulness exercise before each session would also lower his physiological arousal. Together these strategies tackle the stressor itself, the setting and Jamal's appraisal of it, so he can revise effectively for his exams.

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9(a) Kroll and Crenshaw (1970) investigated whether athletes from different sports have different personality profiles. The sample was 387 high level male athletes who competed at a national or collegiate level in the United States in four sports: 94 American football players, 141 gymnasts, 94 wrestlers and 58 karate participants. Each athlete completed Cattell's Sixteen Personality Factor questionnaire (16PF), a standardised self-report measure of 187 items that produces scores on sixteen source traits such as emotional stability, dominance, tough-mindedness, self-sufficiency and tension. The researchers then used multivariate discriminant function analysis, which compares the whole profile of sixteen scores across groups at once rather than looking at each trait separately, to test whether the groups could be told apart by their personality profiles.

The results showed that there were significant differences in personality profiles between sports. The gymnasts and the karate participants each had a profile that was significantly different from every other group. However, the American football players and wrestlers could not be distinguished from one another: their profiles were very similar, although both differed from the gymnasts and the karate group. Overall, therefore, the personality of a high level athlete was related to the sport they took part in, but the relationship was between types of sport rather than every individual sport having its own unique profile.

This tells us that there is a relationship between personality and sport, but a complex one. Sports that share similar demands appear to attract or shape similar personalities: football and wrestling are both physically combative, contact sports requiring aggression and toughness, which may explain why these two groups shared a profile, whereas gymnastics, an individual, aesthetic sport requiring precision and self-control, and karate, an individual combat art with a strong discipline element, produced distinct profiles. This supports the credulous view that personality is linked to sporting involvement and that it may be possible to identify suitable sports for a person from their traits. However, because the study is correlational and compared existing athletes, it cannot tell us whether people with certain traits choose certain sports (self-selection) or whether years of training in a sport shape personality (socialisation). The findings also show that trait differences only emerge when whole profiles are analysed, so simple single trait claims, such as that all athletes are extroverts, are too crude. Finally, as only

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elite male athletes were tested, the relationship found may not apply to women or to recreational sport.

9(b) Reliability refers to consistency: a measure or a finding is reliable if it produces the same result when repeated. Test-retest reliability means the same people score similarly when a questionnaire is given again, internal reliability (assessed by split-half methods) means items measuring the same trait agree with each other, and inter-rater reliability means different observers record the same behaviour. A finding is also reliable if it is replicated by other studies. Research into personality and sport relies heavily on self-report questionnaires, so its reliability can be discussed from several angles.

On the positive side, the key research by Kroll and Crenshaw (1970) used Cattell's 16PF, a standardised questionnaire with 187 fixed items and a set scoring procedure. Standardisation means every one of the 387 athletes completed exactly the same measure in the same way, so differences between the football players, wrestlers, gymnasts and karate participants cannot be due to variations in how the test was given. Using many items per trait improves internal consistency because a single odd response has little effect on a factor score, and the large sample of 387 reduces the influence of unusual individuals, making the group profiles more stable. The 16PF itself has published test-retest reliabilities, so the researchers knew the tool was consistent before using it. In this sense the research is more reliable than observational or interview studies of athletes' personality, where inter-rater reliability would be a concern.

However, the reliability of personality questionnaires in sport can be questioned. Trait theory assumes personality is stable, but Mischel argued that behaviour varies with the situation, and an athlete completing the 16PF the night before a championship may answer very differently from the same athlete in the off season, lowering test-retest reliability. Mood, fatigue and social desirability also affect self-report, and athletes may present themselves as tough and confident because that is what their coaches expect, so the consistency of the profile reflects consistent self-presentation rather than consistent personality. Kroll and Crenshaw only tested each athlete once, so the study itself did not demonstrate test-retest reliability.

Replication is a further issue. The sport personality literature is notoriously inconsistent. Schurr,

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Ashley and Joy (1977) tested nearly 1,600 students with the 16PF and found that team sport athletes were more extroverted and less anxious than individual sport athletes, which partly fits Kroll and Crenshaw, but many other studies have failed to find reliable differences between sports, which is why Morgan (1980) distinguished between the credulous and sceptical positions. Where findings do not replicate, the research as a whole lacks reliability even if each individual measure is consistent. By contrast, Morgan's iceberg profile using the Profile of Mood States, which shows elite athletes scoring high on vigour and low on tension, depression and fatigue, has been replicated across many sports, suggesting that some findings in this area are reliable, although mood states are by definition less stable than traits.

Different studies also use different instruments, such as the 16PF, Eysenck's EPI and later Big Five inventories, so the same athlete can be classified differently depending on the test, which reduces the consistency of conclusions across the field.

In conclusion, research into personality and sport scores well on reliability of measurement, because it uses standardised, multi-item questionnaires with large samples, as Kroll and Crenshaw did. It is weaker on reliability of findings, because single testing sessions, situational influences on self-report and inconsistent replication mean that the claimed differences between sports are not consistently reproduced. The research is therefore reliable in method but only partly reliable in its conclusions, and future studies should test athletes on more than one occasion and use the same instruments so that results can be properly compared.

9(c) A psychologist would suggest that Mia first builds a personality profile of each heptathlete, using a standardised measure such as Cattell's 16PF as used by Kroll and Crenshaw (1970) or Eysenck's EPI, and then uses the profile to tailor the psychological preparation for each athlete and each of the seven events. The rationale is that Kroll and Crenshaw showed that athletes in different sports have different profiles, and a heptathlete must perform in sprints, jumps, throws and an 800 metre run, events whose demands suit different traits, so no single approach will work for everyone.

First, for heptathletes who score low on emotional stability or high on neuroticism and tension, the psychologist would recommend anxiety management. Eysenck's theory says these athletes

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have a reactive autonomic nervous system, so under the pressure of a two day competition their arousal can climb past the optimum and, as Hardy's catastrophe theory predicts, performance in a precision event like the high jump or javelin can suddenly collapse. Mia should train these athletes in progressive muscular relaxation, controlled breathing and imagery before technical events, and give them a set pre-event routine so arousal stays manageable, especially in the javelin, where a tense arm ruins technique.

Second, Mia should use knowledge of introversion and extroversion to manage arousal in the other direction. Extroverts have a less aroused cortex and seek stimulation, so an extroverted heptathlete may be under-aroused before the 200 metre sprint; she should be psyched up with energetic music, loud encouragement and a dynamic warm-up to reach the optimum level described by the inverted U. An introverted heptathlete, by contrast, is easily over-aroused, so Mia should give her a quiet warm-up space away from the crowd and calm, low key coaching before each event, and keep motivational talks short.

Third, for athletes who score low on conscientiousness or self-discipline, the psychologist would suggest a behaviourist approach to training adherence, because a heptathlete must train seven events and it is tempting to neglect weak ones. Mia could use goal setting with short term, measurable targets for each event and positive reinforcement such as praise or rewards when training sessions are completed, while high conscientiousness athletes can be given more autonomy. Finally, for venturesome or impulsive athletes who tend to rush recovery from injury or take risks in the long jump run-up, Mia should use cognitive strategies such as self-talk cues to help them stay patient and follow the plan. By matching preparation, arousal control and training management to each heptathlete's personality, Mia can help every athlete produce her best score across all seven events.