



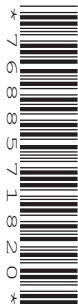
Oxford Cambridge and RSA

Friday 14 June 2019 – Morning

A Level Psychology

H567/03 Applied psychology

Time allowed: 2 hours



You must have:

- the OCR 12-page Answer Booklet (OCR12 sent with general stationery)

INSTRUCTIONS

- Use black ink.
- Section A: Answer **all** the questions in this section.
- Section B: Choose **two** options and answer **all** parts of the question in the options you have chosen.
- Write your answers in the Answer Booklet. The question number(s) must be clearly shown.

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 with an asterisk (*).
- This document consists of **4** pages.

Section A: Issues in mental health

Answer **all** the questions in Section A.

- 1 Outline **one** way of categorising mental disorders. [3]

- 2 When people feel unwell, they often consult the website of the National Health Service (NHS). The way illnesses are described on the NHS website needs to be extremely clear.

Describe the characteristics of an affective disorder in a way that could be included on the NHS website. [5]

- 3 Explain how the key research by Gottesman et al. (2010) contributes to the medical model [5] mental illness.

- 4 Assess the usefulness of the key research by Szasz (2011). [6]

- 5 Compare the behaviourist explanation of mental illness with **either** the humanistic **or** the psychodynamic **or** the cognitive neuroscience explanation of mental illness. [8]

- 6 Discuss ethical considerations concerning the biological treatment of **one** specific disorder. [8]

Section B: Options

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

OPTION 1

Child psychology

- 7 (a)* Explain how the key research by Ainsworth and Bell (1970) could be used to help parents of young children. [10]

- (b)* Discuss sampling bias in research into the development of attachment. [15]

- (c)* Alice is the manager of a nursery school for children aged from 3 months up to 5 years. She wants to ensure that children joining the nursery are comfortable with the staff who are caring for them.

What advice might a psychologist give Alice about how to ensure that her nursery is [10] attachment

OPTION 2

Criminal psychology

- 8 (a)* Use the key research by Haney et al. (1973) to explain how prison can affect prisoners. [10]

- (b)* Discuss whether research relating to the effects of imprisonment is ethnocentric. [15]

- (c)* Lola is the governor of a prison. She is concerned that too many of the inmates released from her prison go on to reoffend.

What advice might a psychologist give Lola about how to reduce reoffending by inmates released from her prison? [10]

OPTION 3**Environmental psychology**

- 9 (a)* Explain how the key research by Drews and Doig (2014) could be used to help nurses working in hospitals. [10]

- (b)* Discuss the reliability of research into ergonomics (human factors). [15]

- (c)* Ranjit is setting up a call centre to deal with customer queries. He wants staff to be able to give their

What advice might a psychologist give Ranjit about how to apply ergonomic research to [10] design of

OPTION 4**Sport and exercise psychology**

- 10 (a)* Use the key research by Lewis et al. (2014) to explain the positive benefits of dance on mental health. [10]

- (b)* Discuss the social sensitivity of conducting research into exercise and mental health. [15]

- (c)* Andy is the manager of a large company. He is concerned about the mental health of his staff.

What might a psychologist suggest to Andy about an exercise strategy to improve the mental health of his workers? [10]

END OF QUESTION PAPER

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Candidate name: *StemUp Model Solution*

1 *One way of categorising mental disorders is the Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association and now in its fifth edition (DSM-5, 2013). It groups disorders into around twenty categories based on shared symptoms, such as depressive disorders, anxiety disorders, and schizophrenia spectrum and other psychotic disorders. For each disorder it lists diagnostic criteria: the specific symptoms that must be present, how many of them are needed, how long they must have lasted, and the exclusion criteria that rule out other causes such as substance use or a medical condition. A clinician compares the patient's presentation with these criteria to reach a diagnosis, which gives a standardised label that can be used for treatment decisions and research.*

2 *Depression (also called major depressive disorder) is an affective disorder, which means it is a disorder of mood. For the NHS website the characteristics should be written as a clear, plain-English list of signs that a reader can check against their own experience.*

The central characteristic is a persistent low, sad or empty mood that lasts most of the day, nearly every day, for at least two weeks. Alongside this, people lose interest or pleasure in activities they used to enjoy, including hobbies, socialising and sex. Other common characteristics include changes in appetite and weight, sleeping much more or much less than usual, feeling tired and lacking energy, finding it hard to concentrate or make decisions, feeling worthless or excessively guilty, moving or speaking more slowly than usual or being agitated, and having thoughts about death or suicide.

The website could explain that doctors look for at least five of these characteristics, including low mood or loss of interest, lasting for two weeks or more and affecting everyday life at work or at home, and that in some people depression can alternate with periods of unusually elevated mood and energy, which is called bipolar disorder. It should end with clear advice: if these characteristics apply to you, book an appointment with your GP, and if you are having thoughts about harming yourself, contact a crisis service straight away.

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3 *Gottesman, Laursen, Bertelsen and Mortensen (2010) used Danish national population registers to follow a cohort of around 2.7 million people and identify everyone whose parents had both been admitted to a psychiatric hospital. They compared the risk of being diagnosed with a severe mental disorder in offspring according to their parents' diagnoses. Where both parents had schizophrenia, 27.3 per cent of children were diagnosed with schizophrenia and 39.2 per cent with schizophrenia or a related disorder, compared with about 7 per cent where one parent had schizophrenia and 0.86 per cent where neither parent had been admitted. Where both parents had bipolar disorder, 24.95 per cent of children developed bipolar disorder, compared with 4.4 per cent with one affected parent and 0.48 per cent in the general population.*

This contributes to the medical model because the medical model treats mental illness like physical illness, as having a physical cause in the body, in this case genes inherited from parents. The fact that risk rises steeply as the number of affected parents rises, far beyond the population rate, shows a substantial genetic component to severe mental disorder, and the slightly higher concordance for schizophrenia than for bipolar disorder suggests the genetic contribution may be greater for some disorders than others. The study therefore supports the medical model's assumption that disorders such as schizophrenia are biological conditions that can be diagnosed and treated medically, for example with antipsychotic drugs, although the fact that about 70 per cent of children with two affected parents did not develop the disorder shows environmental factors also play a part.

4 *Szasz (2011), in "The Myth of Mental Illness: 50 Years Later", restated his argument that mental illness is a metaphor rather than a real disease. Only bodies can be diseased, so the problems psychiatry labels as illnesses are really problems in living, and psychiatry has become a form of social control, coercing people through involuntary hospitalisation and treatment and, through the "therapeutic state", relieving people of responsibility for their behaviour.*

One way the research is useful is that it exposes the politicisation and medicalisation of psychiatry. Szasz points out that homosexuality was a mental illness in the DSM until 1973 and

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that psychiatric diagnoses have been used to detain political dissidents, which shows that diagnosis can reflect social values rather than objective pathology. This is useful because it encourages psychiatrists to reflect on their power, supports limits on coercive practices such as compulsory detention, and promotes "contractual" psychiatry in which voluntary clients work with a therapist to take responsibility for their own lives.

However, the usefulness of the research is limited by its central contention that there is no such thing as mental illness. Evidence such as Gottesman et al.'s (2010) register study showing a strong genetic component to schizophrenia and bipolar disorder, and brain imaging research, suggests that at least some disorders do have a biological basis, so dismissing them as myths is not supported by evidence. In addition, Szasz's work is a polemical essay rather than empirical research, and its very negative portrayal of psychiatrists and mental hospitals could discourage people who are seriously unwell from seeking treatment that would help them. Overall it is useful as a critique that keeps psychiatry accountable, but far less useful as a guide to understanding or treating people in distress.

5 I will compare the behaviourist explanation of mental illness with the cognitive neuroscience explanation.

One difference is the level of explanation each uses. The behaviourist explanation is purely environmental, explaining mental illness as learned behaviour acquired through classical conditioning, operant conditioning and social learning, and it ignores anything inside the person. For example, Watson and Rayner (1920) conditioned Little Albert to fear a white rat by pairing it with a loud noise, showing how a phobia could be learned by association, and Mowrer's two-process model adds that avoidance is reinforced because it reduces anxiety. In contrast, the cognitive neuroscience explanation looks inside the person, combining cognitive and biological components: mental illness is explained by faulty thinking, such as Beck's negative triad of negative views of the self, world and future in depression, and by the brain activity underlying these cognitions, for example reduced prefrontal cortex activity and hyperactive amygdala

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responses in people with depression shown in neuroimaging studies. So the behaviourist explanation is on the nurture side of the nature-nurture debate while cognitive neuroscience incorporates nature through brain structure and function.

A similarity is that both explanations are reductionist and both lead directly to effective treatments. Behaviourism reduces mental illness to stimulus-response associations, and this is reflected in treatments such as systematic desensitisation and flooding which work by extinguishing the conditioned fear response, as seen in Wolpe's successful treatment of phobias. Cognitive neuroscience reduces mental illness to faulty thought patterns and neural activity, and this is reflected in cognitive behavioural therapy, which Beck developed to challenge negative automatic thoughts, and in brain-imaging studies showing that successful CBT is accompanied by normalised activity in the prefrontal cortex. In both cases the explanation of the cause of the disorder is very closely tied to the treatment, and both explanations are supported by scientific, largely laboratory-based evidence that allows cause and effect to be inferred, although the behaviourist evidence relies heavily on animal and single case studies while cognitive neuroscience relies on brain scans of clinical samples.

6 Biological treatments of depression include antidepressant drugs such as SSRIs (for example fluoxetine), which increase the availability of serotonin at the synapse, and electroconvulsive therapy (ECT) for severe, treatment-resistant depression. These raise several ethical considerations.

The first is protection from harm. SSRIs have side effects including nausea, insomnia, weight change and sexual dysfunction, and in people under 25 they have been linked to an increased risk of suicidal thoughts, which is why the medicines regulators require warnings. ECT can cause confusion and memory loss, which some patients report as permanent. Prescribing a treatment that may harm the patient is ethically questionable, especially when Kirsch et al.'s (2008) meta-analysis of drug company trials found that antidepressants were little better than placebo for all but the most severely depressed patients, meaning some patients risk harm for little

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benefit. On the other hand, the end may justify the means: untreated severe depression carries a serious risk of suicide, and for many patients drugs relieve symptoms quickly and cheaply enough for them to function and engage with talking therapies, so withholding effective treatment could itself be harmful.

A second consideration is informed consent and the right to withdraw. A severely depressed person may lack the capacity to weigh up the risks of ECT, and under the Mental Health Act treatment can in some cases be given without consent. This conflicts with the patient's autonomy, although it can be defended as acting in the patient's best interests when they are at risk and when safeguards such as second medical opinions are used.

A third consideration is social sensitivity. Treating depression with drugs can imply that it is a purely medical problem inside the individual, which may lead to over-prescription and the medicalisation of normal sadness, and it benefits pharmaceutical companies financially, which raises questions about whose interests are served. Yet the biological approach also reduces blame and stigma by framing depression as an illness rather than a weakness, and NICE recommends combining antidepressants with CBT so that the social and psychological causes are not ignored.

In conclusion, biological treatment of depression involves real ethical concerns about harm, consent and social sensitivity, but these can be managed through careful prescribing, monitoring and combining medication with psychological therapy, so it can be defended ethically as long as it is used responsibly.

7(a) Ainsworth and Bell (1970) studied 56 white, middle-class American infants aged 49 to 51 weeks using the Strange Situation. This is a controlled observation in an unfamiliar laboratory playroom made up of eight episodes of about three minutes each in which the infant is left with the mother, joined by a stranger, left alone with the stranger, left completely alone, and reunited with the mother twice. Observers recorded exploratory behaviour (locomotor,

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manipulatory and visual), crying, and interactive behaviours directed at the mother and the stranger: proximity and contact seeking, contact maintaining, proximity and interaction avoiding, and contact and interaction resisting.

They found that exploration was high when the infant was alone with the mother in episode 2 but fell sharply when the stranger entered and when the mother left, and it did not recover fully even when she returned. Crying was low with the mother present but rose steeply during the separation episodes, especially when the infant was left alone. Proximity seeking and contact maintaining towards the mother rose strongly in the reunion episodes, and some infants also showed proximity avoiding or contact resisting on reunion. Ainsworth and Bell concluded that the mother acts as a secure base: attachment behaviour and exploratory behaviour are incompatible, and stress heightens attachment behaviour at the expense of exploration. They also stressed that attachment behaviour is not the same as attachment, because a securely attached infant may show little attachment behaviour in a familiar, low-stress setting.

This research could be used to help parents in several ways. Parents should understand that staying close and available in a new environment, such as a playgroup, actually promotes independence, because a child only explores confidently when the secure base is present, so parents should not leave quickly in order to "toughen up" the child. Separations should be managed carefully: because the stranger reduced exploration and increased crying, a child should be left only with carers who have first become familiar, and introductions should happen while the parent is still present. After a separation, parents should expect intense clinging and crying and should allow enough time for comforting rather than hurrying the child back to play, because reunion is when attachment behaviour is highest. Finally, parents should not be upset if a child briefly ignores or pushes them away on reunion, as some infants in the study did; this is a normal response to stress and does not mean the child is not attached, since attachment behaviour is not a simple measure of the strength of attachment.

7(b) Sampling bias occurs when the participants in a study are not representative of the target

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population the researcher wants to generalise to, usually because of how or from where they were selected, so that the findings may apply only to the type of people (or animals) studied. Research into the development of attachment has been accused of several kinds of sampling bias.

The first issue is cultural and socio-economic bias. Ainsworth and Bell (1970) tested 56 white, middle-class American infants, yet the Strange Situation and the classification of secure, avoidant and resistant attachment have been treated as universal measures of attachment. Van IJzendoorn and Kroonenberg's (1988) meta-analysis of 32 Strange Situation studies in eight countries found that avoidant attachment was more common in Germany and resistant attachment more common in Japan, suggesting that what counts as "secure" behaviour reflects American middle-class child-rearing norms. Infants raised in collectivist cultures or by multiple carers may be misclassified as insecure. This is a serious problem because the Strange Situation is used clinically to judge parenting. However, the same meta-analysis found that variation within cultures was greater than variation between them, and secure attachment was the most common pattern everywhere, which suggests that Ainsworth's core finding about the secure base does generalise reasonably well despite the biased original sample.

A second issue is species bias. Much of the evidence behind Bowlby's theory comes from animals: Lorenz (1935) showed that goslings imprint on the first moving object they see in a critical period, and Harlow (1958) showed that infant rhesus monkeys preferred a cloth "mother" that offered contact comfort to a wire one that provided milk, and that monkeys reared in isolation became socially and sexually abnormal. Generalising from a sample of birds and monkeys to human infants is questionable, because human attachment involves language, culture and a far longer period of dependency. On the other hand, these animal samples were used precisely because deliberately depriving human infants would be unethical, and the findings converge with human evidence such as Bowlby's work, which strengthens confidence in the conclusions.

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A third issue is the use of unusual clinical or institutional samples. Bowlby's (1944) 44 thieves study compared children referred to his own child guidance clinic for stealing with other referred children; this sample was already emotionally disturbed and was selected and diagnosed by Bowlby himself, so the link between maternal deprivation and affectionless psychopathy may not apply to ordinary children experiencing separation. Rutter et al.'s English and Romanian Adoptees study followed children from Romanian orphanages who had suffered extreme global deprivation, so its findings about disinhibited attachment and quasi-autistic patterns describe an extreme sample rather than typical day-care or hospital separations. In defence, these samples are the only ethical way to study severe deprivation, and the Romanian study used a comparison group of UK adoptees and found clear dose-response effects of age at adoption, which strengthens its conclusions.

A fourth issue is attrition in longitudinal research. Hodges and Tizard (1989) followed 65 children raised in institutions until the age of 16, but a considerable number were lost from the sample over time, and those who remained may have been the families most willing to be studied or the children doing best, which biases the comparison between adopted and restored children. Similarly, Schaffer and Emerson's (1964) sample of 60 Glasgow infants was entirely working class and mostly reported on mothers, reflecting a wider gender bias in which fathers' role in attachment was neglected.

In conclusion, attachment research has relied heavily on small, Western, middle-class, mother-focused or non-human samples, which limits how far the conclusions can be generalised and may have pathologised normal variation in other cultures. However, the convergence of findings across very different samples, from goslings and monkeys to Romanian orphans and Baltimore infants, suggests the basic conclusion that early, sensitive and continuous care matters for development is robust even if the detail of attachment classifications is culturally biased.

7(c) A psychologist would first advise Alice to introduce a key person approach. Every child from 3

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months to 5 years should be allocated one named member of staff who greets them each morning, carries out feeding, nappy changing and comforting, and communicates with the parents. The rationale comes from Bowlby's idea of monotropy and Ainsworth and Bell's (1970) finding that infants explore and play only when a familiar attachment figure is present as a secure base. A rota of constantly changing staff would be like the "stranger" episodes of the Strange Situation, reducing play and increasing crying, whereas a consistent key person can become a secondary attachment figure. To make this work, Alice should keep ratios low, for example one adult to three babies, so that each key person is responsible for only a small number of children and can respond sensitively to them.

Second, Alice should run a gradual settling-in programme. For the first week a parent should stay in the room while the child plays and the key person interacts with them, so that the key person becomes familiar while the parent is present, in line with Ainsworth and Bell's finding that a stranger is tolerated far better when the mother is in the room. Separations should then be short and increase gradually, and at each reunion the parent should be given time to comfort the child, because attachment behaviour peaks at reunion. Children could bring a comfort object or a photo of their family to help bridge the separation.

Third, she should train staff in sensitive responsiveness. Ainsworth found that mothers who responded promptly and appropriately to signals tended to have securely attached infants, so staff should pick up crying babies quickly, offer plenty of physical contact and cuddles (Harlow's monkeys showed that contact comfort, not feeding, builds attachment), and get down to the child's level to talk and play. Each child should also have a named "buddy" member of staff who spends time with them, so that if the key person is ill the child is still cared for by someone familiar rather than a stranger.

Finally, Alice should ensure good communication with parents, for example daily diaries and consistent routines for sleep and meals matching those at home, so that the nursery and home environments are predictable and the child feels secure in both.

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8(a) Haney, Banks and Zimbardo (1973) set up a simulated prison in the basement of the Stanford University psychology department. From 75 male volunteers who answered a newspaper advertisement, 24 of the most psychologically stable college students were selected and randomly assigned to be prisoners or guards for 15 dollars a day in a study planned to last two weeks. The prisoners were arrested unexpectedly at home by real police, blindfolded, stripped, deloused, given smocks with ID numbers, a nylon stocking cap and a chain on one ankle, and locked three to a cell. The guards wore khaki uniforms and mirrored sunglasses and carried batons and whistles, and were simply told to maintain order. The study was abandoned after six days.

The prisoners' behaviour went through stages. At first they reacted with disbelief at the oppressive atmosphere, then on the second day they rebelled, ripping off their numbers and barricading their cells, which the guards crushed with fire extinguishers and by setting up a privilege cell to divide them. After the rebellion failed they tried to work together through an elected grievance committee, but when this achieved nothing they became passive, dependent and flattened in their emotions, with 90 per cent of their conversations about prison life rather than their real lives. Five prisoners had to be released early because of extreme emotional depression, crying, rage and acute anxiety; the first, 8612, after only 36 hours. When one prisoner, 416, went on hunger strike, the other prisoners sided with the guards against him. At a mock parole hearing most said they would give up all their pay to be released, yet when their requests were refused they walked quietly back to their cells.

This can be used to explain how prison affects prisoners. Haney et al. called the prisoners' reaction "pathological prisoner syndrome" and explained it with three factors. First, loss of personal identity: being referred to by number and wearing identical uniforms deindividuated the prisoners so they stopped behaving as individuals and conformed to the role. Second, arbitrary control: the guards enforced rules inconsistently and punished prisoners with push-ups, solitary confinement and the removal of blankets for no clear reason, which produced learned

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helplessness and passivity because nothing the prisoners did changed their outcomes. Third, dependency and emasculation: prisoners had to ask permission to go to the toilet or smoke, and the smocks made them feel feminised and powerless. This suggests that real prisons, which share these features, can cause depression, anxiety, loss of self-respect and institutionalised dependence in even psychologically healthy people, which may explain why prisoners find it hard to cope on release.

8(b) Ethnocentrism is the tendency to see one's own culture as the norm and to judge other cultures by its standards. In research it occurs when findings from one cultural group, usually white Western samples, are assumed to apply to all humans, so that other cultures appear deficient or are simply ignored. Research into the effects of imprisonment can be assessed against this.

Haney, Banks and Zimbardo's (1973) Stanford Prison Experiment is a clear example of a culturally narrow sample: 24 white, middle-class, male American college students in a mock prison modelled on the US system. The "pathological prisoner syndrome" of passivity, dependence and depression may reflect American prisoners facing an authoritarian, punishment-oriented regime rather than a universal response. Whether prisoners would have risked rebellion as they did on day two, or whether guards would have become as sadistic, could depend on cultural norms about authority and obedience. Evidence that culture matters comes from Reicher and Haslam's (2006) BBC Prison Study in Britain, where the prisoners developed a strong shared identity and overthrew the guards, who refused to impose their authority; the very different outcome suggests the Stanford findings are not a universal law. In defence, prison conditions that strip identity and impose arbitrary control exist worldwide, and the processes identified, deindividuation and learned helplessness, have support from research in many countries, so the explanation may apply beyond the USA even if the exact behaviour differs. The BBC study also differed in design, being televised and ethically monitored, so the difference may not be entirely cultural.

Research into alternatives to imprisonment is also open to the charge of ethnocentrism.

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Sherman and Strang's (2007) review of restorative justice found that face-to-face conferences reduced reoffending, particularly for violent crime, but their evidence came from the UK, USA, Canada, Australia and New Zealand, all English-speaking Western nations with similar legal systems. However, restorative justice itself has roots in Maori and other indigenous traditions of family group conferencing, so this is an area where research has arguably borrowed from other cultures rather than imposing Western assumptions, and its emphasis on community reintegration may transfer more easily to collectivist societies than to individualistic ones.

Gillis and Nafekh's (2005) analysis of over 23,000 Canadian offenders found that those on planned employment programmes were more likely to remain in the community and took longer to reoffend. Whether such programmes would work elsewhere depends on cultural and economic factors such as the availability of jobs and attitudes of employers towards ex-prisoners, so generalising this finding to developing countries or to cultures where family rather than employment is the main route to reintegration would be ethnocentric. Similarly, Ireland's (2004) evaluation of anger management with young offenders in a UK prison measured success using a Western cognitive-behavioural framework, and the psychometric checklists used may be culturally biased in their language and in what counts as acceptable expression of anger.

A further point is that samples within Western research often fail to reflect the ethnic make-up of the prison population. Black and minority ethnic prisoners are overrepresented in UK and US prisons, yet the classic studies have mostly used white participants or have not analysed findings by ethnicity, so effects of imprisonment such as discrimination by staff or separation from community are overlooked. On the other hand, large register studies like Gillis and Nafekh's include all offenders regardless of ethnicity, which reduces this problem.

In conclusion, much research into the effects of imprisonment is ethnocentric in its samples and in the Western prison systems it assumes, with the Stanford Prison Experiment as the clearest example, and it is unwise to assume that programmes effective in Canada or England would transfer unchanged to other cultures. However, the underlying psychological processes of

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identity loss, helplessness and reintegration have broad cross-cultural support, and restorative justice shows that the field is capable of drawing on non-Western traditions, so the research is not uniformly ethnocentric.

8(c) A psychologist would first suggest that Lola introduces a restorative justice programme in her prison. Before release, offenders who are willing would meet their victims face to face in a conference run by a trained facilitator, hear how the crime affected them, take responsibility and agree how to make amends. The rationale is that this builds empathy and reduces the techniques of neutralisation offenders use to justify crime, and Sherman and Strang's (2007) review found that restorative justice reduced reoffending more than prison alone, especially for violent offenders, and that victims were more satisfied. Lola could prioritise this for inmates convicted of violent and acquisitive offences and run conferences in the final months of a sentence so the effect is fresh at release.

Second, Lola should run a cognitive-behavioural anger management course such as the one evaluated by Ireland (2004) with young offenders. Inmates identified by staff as having anger problems would complete around twelve sessions in three stages: cognitive preparation, in which they learn to recognise the triggers and thoughts that lead to aggression; skill acquisition, in which they learn relaxation, self-talk and assertiveness; and application practice, in which they role-play provoking situations such as being insulted. Ireland found that 92 per cent of the treated group improved on at least one measure of aggression compared with no improvement in the control group, so this should reduce the violent reoffending that may be returning Lola's inmates to custody.

Third, because reoffending is strongly linked to unemployment and homelessness, Lola should set up a planned employment scheme. Inmates would gain qualifications and work experience in prison workshops and, in the last six months, be matched with local employers through a "through the gate" scheme so that they have a job to go to on release. Gillis and Nafekh (2005) found that Canadian offenders who had planned employment on release were far more

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likely to remain in the community, so this directly tackles the reasons for reoffending. Lola could extend this by working with the local council to rehouse released inmates away from the areas and peers associated with their past offending, which breaks the conditioned associations between those places and criminal behaviour, and by inviting former inmates who have stayed crime-free to talk to prisoners as role models, drawing on social learning theory. Finally, inmates with drug or alcohol problems should be referred to substance misuse programmes before release.

9(a) Drews and Doig (2014) investigated whether a redesigned patient monitor could help intensive care nurses interpret vital signs more quickly and accurately. Forty-two ICU nurses from a university hospital in Utah, with an average of about eight years' experience, were randomly allocated to use either the traditional numerical display found on existing monitors or a new Configural Vital Signs (CVS) display. The CVS display kept the numbers but added graphical information: a trend line showing how heart rate, blood pressure, oxygen saturation and respiratory rate had changed over the previous hour, and a current state object whose colour, shape and position showed the patient's present values against a solid white rectangle for the patient's own recent variability and an outline grey rectangle for normal thresholds, so that an abnormal pattern could be seen at a glance. Each nurse worked through four computer-simulated scenarios, early sepsis, septic shock, pulmonary embolism and a stable patient, and was asked to think aloud, say what was happening to the patient and what treatment they would give, while response time and accuracy were recorded. Nurses using the CVS display were significantly faster, in some scenarios nearly twice as fast, and made more correct interpretations of the patient's condition, and they reported the task as less mentally demanding.

This research could help nurses working in hospitals in several ways. Hospitals could replace numeric monitors in intensive care units with configural displays so that nurses can recognise deteriorating patterns such as the falling blood pressure and rising heart rate of septic shock in seconds rather than having to remember and mentally compare a string of numbers, which

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would speed up treatment and could save lives. Because the display reduces mental workload, it would particularly help nurses on busy night shifts or those caring for several patients, when cognitive overload and fatigue make errors more likely, and it would support less experienced nurses who have not yet built up the pattern-recognition skills of experts. The same design principles, showing trends and normal ranges graphically with colour coding, could be applied to other hospital equipment such as infusion pumps and electronic observation charts on wards. Finally, the study shows that hospitals should test new equipment in realistic simulations with nurses before introducing it, and should train nurses on the new displays, because the benefits depend on users understanding what the shapes and colours mean.

9(b) Reliability refers to the consistency of a measure or a procedure. A study is externally reliable if it produces the same results when repeated, internally reliable if its measures are consistent with each other, and observational research is reliable if different observers produce the same records (inter-rater reliability). Research into ergonomics, or human factors, can be judged on these criteria.

One strength of reliability in ergonomics research is the use of standardised, technology-based procedures. In Drews and Doig's (2014) study of Configural Vital Signs displays, all 42 nurses worked through the same four computer-simulated scenarios of early sepsis, septic shock, pulmonary embolism and a stable patient, and response times were recorded automatically. Because the simulation presented identical data in the same order to every participant, another researcher could repeat the procedure exactly, and the use of precise timings rather than subjective judgement removes experimenter bias. Using four scenarios to measure the same variable also increases internal reliability, because a display that improved performance on only one scenario would be exposed. This is a clear advantage over the field studies that dominated early human factors research.

However, the reliability of Drews and Doig's findings is limited by the sample and setting. Only 42 nurses from a single hospital took part, so random variation in individual skill could affect

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the results, and the think-aloud responses had to be coded by researchers as correct or incorrect, which depends on inter-rater agreement that is not always reported. It was also a one-off study and the display has not been widely replicated across other hospitals, so its external reliability is unknown. In defence, random allocation and a large effect size make the result more likely to replicate than a small difference would be.

Field research into observation in the workplace raises more serious reliability problems. The Hawthorne studies carried out at the Western Electric plant in Chicago between 1924 and 1932 found that productivity rose whatever change was made to lighting and rest breaks, which was explained by workers responding to being observed. This Hawthorne effect itself undermines reliability, because the behaviour measured depends on the presence of observers, and later re-analyses have reached different conclusions about the data, showing the findings are not consistent. Similarly, Czeisler et al.'s (1982) study of shift rotation at Great Salt Lake Minerals found that changing to forward-rotating, 21-day shifts improved health and productivity, but it was a field study in a single workplace with uncontrolled variables, so replication elsewhere could easily produce different results.

By contrast, the laboratory research on cognitive overload that underpins ergonomic design is highly reliable. Miller's (1956) finding that short-term memory holds about seven items and Baddeley and Hitch's working memory experiments have been replicated many times with consistent results, which is why designers confidently limit the number of items on a display. The same applies to research on noise and performance such as Glass and Singer's experiments, where standardised tasks produce consistent effects. Yet high laboratory reliability can come at the price of validity; a consistent laboratory result may not predict how workers behave over a full shift with real consequences, so reliability alone is not enough.

In conclusion, modern ergonomics research such as Drews and Doig's benefits from standardised simulations, objective timing and multiple scenarios, which makes it considerably more reliable than the early observational field studies, but small single-site samples and a lack of replication

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mean many findings remain unconfirmed. The most trustworthy conclusions in human factors are those where reliable laboratory findings, such as working memory limits, have been shown to hold up in applied studies, and the field should prioritise replication in different workplaces before redesigning equipment on the strength of one study.

9(c) A psychologist would advise Ranjit to apply both cognitive and physical ergonomics to the call centre.

On the cognitive side, every piece of information a call handler needs should be on a single integrated screen rather than spread across several windows and systems, following Drews and Doig's (2014) finding that nurses interpreted patient data faster, more accurately and with less mental demand when numbers were supplemented by graphical displays. For example, a customer's account history and current issue could be shown as a colour-coded timeline, with red flags for overdue problems, so that staff grasp the situation at a glance instead of holding many numbers in their heads. Screens, scripts and menus should respect the limits of working memory, which Miller (1956) estimated at about seven items, so drop-down menus should have no more than five to seven options and scripts should be short, with the system automatically logging call details so staff are not performing a secondary typing task while listening to the customer. Headsets with noise cancelling would free their hands and attention for the call.

On the physical side, Ranjit should reduce noise, because research on cognitive overload shows that unpredictable background noise increases arousal and reduces attention and performance on complex tasks. Desks should be arranged in small clusters separated by acoustic partitions, with carpet and ceiling panels to absorb sound, and no more than about six staff in each pod so that neighbouring calls do not intrude. Each workstation should have an adjustable chair, a monitor at eye level and enough desk space to prevent discomfort that distracts from calls, and staff should have a small amount of personal space they can personalise, meeting their territorial needs and reducing stress. Temperature should be kept around 21 degrees with good natural lighting, since both heat and glare impair concentration.

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Finally, because attention declines over time, shifts should be designed with short breaks every hour and a quiet break room away from the floor, and if the centre operates around the clock, shifts should rotate forwards, from morning to afternoon to night, over a 21-day cycle as Czeisler et al. (1982) found reduced fatigue and improved productivity in shift workers. Together these measures would allow Ranjit's staff to give their full attention to each call.

10(a) Lewis, Annett, Davenport, Hall and Lovatt (2014) investigated whether social dance improved mood in people with Parkinson's disease (PD), who have high rates of depression and anxiety, the two most common psychological problems in both people with PD and in older people generally. Participants with PD and an age-matched control group of older adults without the disease attended one-hour partnered social dance classes once a week for twelve weeks, learning a range of styles including ballroom and Latin dances such as the waltz, tango and cha-cha to music. Mood was measured using the Brunel Universal Mood States (BRUMS) questionnaire, which gives scores for tension, depression, anger, vigour, fatigue and confusion and a Total Mood Disturbance (TMD) score. The researchers used two cycles of measurement: a short cycle, comparing mood immediately before and after individual one-hour sessions, and a long cycle, comparing mood at the start and end of the twelve-week programme. They found that TMD fell significantly after a single session, with reductions in negative states such as anger, tension and depression, and that it also fell across the twelve weeks, and these improvements occurred for both the PD group and the control group.

This explains the positive benefits of dance on mental health in several ways. First, a single hour of dance produces an immediate lift in mood, which is consistent with the general finding that aerobic activity releases endorphins and reduces tension, so dance offers a quick way of relieving low mood and anxiety. Second, the long-cycle improvement shows that regular dance has a cumulative effect, suggesting it could be used as an ongoing intervention to reduce depression in older adults rather than a one-off boost. Third, because both groups improved, the benefits are not restricted to people with PD; dance is good for the mental health of older

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people generally. Lewis et al. suggested that the benefits come from more than just exercise: dance is sociable, involving physical contact with a partner and a supportive group, which combats the isolation that contributes to depression; it is mentally challenging, as learning steps and sequences demands concentration and gives a sense of achievement and mastery; and music itself is known to improve mood. For people with PD, who often withdraw from activity because of their symptoms, dance also provides a safe form of exercise that improves balance and movement, so it is likely to improve self-esteem and reduce anxiety about falling. Dance is therefore a cheap, enjoyable intervention with no side effects that can be recommended alongside medication to improve mental health.

10(b) Socially sensitive research, as defined by Sieber and Stanley (1988), is research with potential consequences or implications either for the participants or for the class of people represented by the research. Research into exercise and mental health might seem harmless, but it raises several issues of social sensitivity that can be examined.

One issue concerns the participants themselves. Studies such as Lewis et al. (2014) measured mood in people with Parkinson's disease using the BRUMS questionnaire, and other studies screen participants with depression inventories. Participants, or their relatives, may discover for the first time that they have symptoms of depression or anxiety they were not aware of, which can be distressing and can carry stigma, especially for older people who may see mental illness as shameful. Researchers must therefore plan how to feed back findings and signpost support. On the other hand, identifying undiagnosed depression can be a benefit, allowing treatment that otherwise would not have happened, so the sensitivity can be managed through careful debriefing rather than avoiding the research.

A second issue is the treatment of control groups. To show that exercise improves mental health, randomised trials such as Blumenthal et al.'s (1999) comparison of aerobic exercise with the antidepressant sertraline in older adults with major depression need a group who do not receive the exercise intervention, or who receive a treatment thought to be inferior. If exercise is

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reasonably expected to help, withholding it from depressed people for sixteen weeks raises ethical concerns about protection from harm. In defence, waiting-list controls can be offered the intervention afterwards, and without control groups we could not know whether the improvement was due to the exercise rather than attention or the passage of time, so the research would be worthless. Lewis et al.'s design, with a PD group and a matched control group who both danced, avoided denying anyone the activity, but at the cost of not having a non-exercising comparison.

A third issue concerns the class of people represented. Research showing that exercise reduces depression could imply that depressed people are to blame for their condition because they do not exercise, and could be used by policymakers to cut funding for medication and psychological therapy in favour of cheap "exercise on prescription". People with physical disabilities, chronic illness or living in poverty may not be able to access exercise, and reading about interventions they cannot have could be upsetting. Equally, research like Lewis et al. identifies people with PD as a group with mental health problems, which could add to the stigma of the disease. However, such findings can also empower people by giving them a drug-free way of improving their own mental health, and NICE already recommends structured exercise for mild to moderate depression on the basis of this evidence, so the research has done real good.

A fourth consideration is the way findings are reported. Media coverage that exaggerates results, for example claiming that dancing cures depression, could lead people to abandon medication, so researchers have a responsibility to report effect sizes and limitations accurately. Lewis et al. were careful to describe their findings as improvements in mood rather than a treatment for depression.

In conclusion, research into exercise and mental health is socially sensitive because it involves vulnerable participants, control groups who may miss out on benefits, and wider implications about blame and funding for the groups represented. Nevertheless, the potential benefits are considerable: a cheap, enjoyable, low-risk intervention that could improve the mental health of

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very many people. The sensitivity is a reason to conduct the research with care, debriefing participants, offering interventions to controls and communicating findings responsibly, rather than a reason not to do it.

10(c) A psychologist would suggest that Andy puts an exercise strategy in place that is built around regular, social and enjoyable activity, because the research shows these features have the strongest effects on mental health.

First, Andy should introduce a daily "green exercise" walk. Staff would be encouraged to take a 20 to 30 minute brisk walk in a nearby park or green space during their lunch break, led by volunteer walk leaders so that it is social. The rationale is Barton and Pretty's (2010) finding that even five minutes of exercise in a natural environment improves self-esteem and mood, with the biggest gains for people who were already low, and that water and greenery add to the effect. If the company is in a city centre, Andy could plant and landscape the grounds or use a nearby canal path.

Second, Andy should offer weekly group classes on site or subsidised nearby, such as social dance, yoga or a lunchtime fitness class. Lewis et al. (2014) found that one-hour weekly social dance sessions produced an immediate drop in Total Mood Disturbance and a cumulative improvement in mood over twelve weeks in both people with Parkinson's disease and healthy older adults, and suggested the benefits came from the sociable nature of the activity, the mental challenge and the music. A dance or yoga class at 5 pm on a Wednesday would therefore not only provide exercise but also build social support among colleagues, which protects against work stress and depression.

Third, Andy should aim for staff to meet the recommended level of around 30 minutes of moderate aerobic exercise on at least three to five days a week, because Blumenthal et al. (1999) found that sixteen weeks of supervised aerobic exercise reduced depression in older adults as effectively as antidepressant medication, with lower relapse at follow-up. To make this

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achievable he could offer a cycle to work scheme, showers and bike storage, a subsidised gym membership, and flexible start times so staff can exercise before work. A company five-a-side football or netball league would add the social and competitive element that sport brings.

Finally, the strategy should be voluntary and inclusive, with options for staff with disabilities such as chair-based exercise or swimming, and Andy could monitor its effect using a short, anonymous mood questionnaire such as the BRUMS before the programme starts and after three months, so he can see whether his workers' mental health has improved and adjust the programme accordingly.