MCAT Psychology and Sociology 2 Homework

Passage I (Questions 1-6)

This passage presents a study that aims to determine whether there are observable differences in presentation style between people who in childhood lost a sibling to cancer and people who did not.

P1 Psychological trauma, repression; study whether certain Psychoanalytic ideas may be right after all.

P2 Study design and details

P3 Study results and data

Question 1

Question 1 asks about flaws in the study. The correct answer is the flaw that is not supported directly by the passage.

Answer A We literally don't know enough about the unconscious experimental bias to say that the study can be criticized on these grounds. Additional controls or other clever experiments would be required to know that this is an issue in this study. The passage simply doesn't contain information to let us level this charge at the study. Correct.

Answer B addresses the idea of sample size. Each of the 'rater' groups has three participants. The larger the size of the sample, the more similar that sample is to the larger population. The perfect (and usually unrealistic situation) is to measure the entire population. In the opposite direction, imagine the extreme example of a sample size of one. How representative of the general population is this? Not very. The 'rater' groups in the study are not much larger than a sample size of one, so the criticism of this study based on sample size is supported. Incorrect.

Answer C considers whether the researchers are accurately addressing the constructs they wish to study. The passage tells us that what the study started out to determine is whether people who had experienced the death of a sibling may show an effect of that experience, based on the psychoanalytic idea that a surviving sibling would experience guilt from having wished to be free from a competing sibling and then having, in effect, that wish come true. The study is constructed, however, using individuals who lived with a sibling with cancer, not people who experienced the death of a sibling. Therefore the intellectual construct under consideration is not represented in the study, so this in fact is a supported flaw. Incorrect.

Answer D leads us to consider whether the passage supports the criticism of the study that the researchers did not investigate whether the control group of 'patients' had suffered some childhood trauma besides the death of a sibling. The danger of such a flaw is that the control group would be more like the treatment group (i.e., those who lost a sibling) and if a real difference exists between such samples, the study would tend to miss this difference. That is, the study could produce a false-negative result. We

are not told that the control group was screened for childhood traumas besides loss of a sibling, so the study is open to this criticism. Incorrect.

Question 2

This question asks us to evaluate the study in light of the criteria for correlation and causation developed by Dr. Austin Hill in the mid twentieth century. Let's look at each answer choice and see how Hill's criteria apply to this study.

Answer A asks us to consider the strength of the correlation. This means considering how tightly are two events correlated. When the proposed independent event happens, does the proposed dependent event always occur? Sometimes? Never? The study doesn't present data that allows us to criticize it on this basis, so this is incorrect.

Answer B is Hill's criterion of temporality. This means that if a correlation is in fact causation, there should be a time sequence that makes sense. For example, if going outside is correlated with getting insect bites and we want to say going outside causes insect bites, then insect bites should occur after going outside, not the other way around. There's not a temporal sequence in this study, so this is incorrect.

Answer C is Hill's criterion of coherence. This means that we can feel more confident that a correlation is causative if the correlation is coherent with other areas of knowledge. In this case, the study is coherent with ideas of repression presented in the passage, so this is incorrect.

Answer D is the criterion of plausibility. The study does not propose a plausible biological mechanism for the effect under consideration, so the study is open to criticism under this criterion. Correct.

Question 3

Question 3 asks us to pick the answer that is the least likely explanation for the difference in performance between the PSYAN and CBT groups. The keyword here is 'likely,' which clues us in to the idea of probability. Where do we have information about the probability regarding the differences between groups? In the p values of the chart.

Answer A says the difference is due to the fact CBT professionals have less experience with the interpretation of free association. Free association is a technique of psychoanalysis but not of CBT, so there may be something to this explanation. Incorrect.

Answer B suggests the CBT group did worse than the PSYAN because the CBT group may have been more accurate but less certain. We don't have enough information to evaluate the CBT group in terms of their certainty, so this is OUT OF SCOPE. Incorrect.

Answer C suggests that the PSYAN group has more experience dealing with patients' childhood traumas than the CBT group would. Since CBT focuses on patients' current thoughts and how these thoughts impact emotion and behavior, it's less likely the CBT group would deal with childhood trauma as much as the PSYAN group, since psychoanalysis, we're told, delves into repressed memories. Incorrect.

Answer D says the difference between the groups is merely chance. Given the p values associated with the data ($p = 0.002$ and $p = 0.04$), this is very unlikely, so D is correct.

Question 4

Question 4 asks us to identify which of the listed defense mechanisms are illustrated by the premise of the study. Since the researchers are looking for evidence of a childhood event in the behavior of adults, the adults would be using past experiences to shape their present behaviors and emotions. This is projection, and that's out prediction.

Answer A is the defense mechanism Repression, which means to keep past painful events out of present consciousness. It's a defense mechanism, but the wrong one, so this is incorrect.

Answer B is our prediction and is correct.

Answer C, Rationalization, is to consciously develop reasons to explain one's behavior or thinking to oneself in a way that the self finds acceptable. It's a defense mechanism, but not what we're looking for, so this is incorrect.

Answer D, Reaction Formation, is a defense mechanism that has to do with dealing with painful emotions by converting them into emotions more acceptable to the self. This is not what's happening in the study, so this is incorrect.

Question 5

This question shows the MCAT expects us to be familiar with major schools of psychological thought—in this case, Jungian Psychoanalysis. Carl Jung posited, among many ideas, the existence of a collective unconscious and the notion of psychological archetypes. Recalling Jung's ideas will get us in a mind to evaluate the answer choices for a plausible explanation a Jungian may give for the results of the study.

Answer A suggests the PSYAN group was better at looking past the patients' persona, or outward presentation of an inner self, and discovering the true and perhaps hidden emotional essence of the person to see whether or not the person had experienced the trauma of a sibling with cancer. This answer uses Jungian terminology to describe just what the study aimed to test, i.e., whether childhood traumas, though they may be repressed behind an outward presentation, or persona, are actively expressed in behavior. Correct

Answer B says the PSYAN group was able to tap into the collective unconscious. While this is a Jungian idea, this is a FAULTY USE OF DETAIL because the collective unconscious has to do with what is common to all people, not what would distinguish one group from another, which this study purports to have done.

Answer C mentions the Jungian idea of anima, or feminine qualities. The corresponding Jungian idea for masculine energy is animus. While Jung did ascribe the quality of emotional attunement to feminine energy, this doesn't apply to the study in question. Regardless of how much so-called feminine energy a subject may possess or lack is not what is under study here. OUT OF SCOPE, so incorrect.

Answer D contains another Jungian idea, that of introversion, or a tendency to be inwardly-directed. The companion idea, extroversion, is a tendency to be outwardly-directed. How introverted or extroverted a subject may be is not what's under consideration in this study. This misses the mark and is incorrect.

Question 6

This question asks us about the probability of the inexperienced professionals (INXP) being able to correctly distinguish between groups of patients, given the power of the observed effect is 12%. Answering this question requires us to recall ideas from elementary hypothesis testing in statistics. In particular, that Power = 1 – Beta, where Beta is the probability of a Type II error in our hypothesis testing. Type II errors are those in which we say something isn't so when in fact it is. This is the kind of error the question is describing, so our prediction is 0.12 = 1- Beta, which means Beta = 0.88.

Answer A is a miscalculation, incorrect.

Answer B is a miscalculation, incorrect.

Answer C has the right value and is correct

Answer D is incorrect because we do have the information we need to arrive at an answer.

Passage II (Questions 1-5)

This experimental passage describes a study evaluating the effect of a false-positive test result on the mothers of infants who had received such a result.

P1. Introduces the study.

P2. Describes newborns in Experiment 1. None actually had disease, just above half had a false-positive test result. Describes the reliability of the test.

P2 Describes the mothers of the newborns in Experiment 1 and the stress outcomes they experienced.

P3 Introduces Experiment 2 and the infants that had false-positive 'soft markers' (e.g., ultrasound features that may be—but often are not—indicative of an actual disease condition such as Down's syndrome). Also presented are the anxiety and depression data for the mothers of these infants and normal infants from birth to three months.

Question 1

A quick scan of the answer choices reveals this question centers on types of errors. We're asked to pick the type of error in the studies. The passage describes false positives, which in a legal analogy means to 'convict the innocent' or to say something is so when it actually isn't. Statistically, this is known as a Type I error, also associated with an alpha value in several statistical calculations.

Answer A Random errors are those that have unknown and unpredictable effects on measurements in an experiment. They often have a normal distribution and are just a part of making measurements. Incorrect.

Answer B Systematic error is the kind of error that happens when, e.g., a measuring instrument is not properly set to zero before being used for measurements. All measurements will be systematically high or low, depending on which way the original offset was.

Answer C This is our prediction. Correct.

Answer D Type II error is false negative error, or 'letting the guilty go free.' Incorrect.

Question 2

The passage tells us positive predictive value (PPV) is '# of true positives/total # of positive tests.' So, if a newborn has a positive test and the test has a PPV of 0.53% then the probability of that newborn (or any newborn in the group that has a positive test) is 0.53%.

Answer A gives the rate of CAH in the entire population, not just in the group that has had a positive test. Incorrect.

Answer B uses the correct ratio from the question stem. Correct.

Answer C Miscalculation. Incorrect.

Answer D Miscalculation. Incorrect.

Question 3

This question describes study participants who had a negative experience and then, upon evaluating their abilities to cope with that stress, received help in coping. This second stage of appraisal of stress is, well, secondary… so that's our prediction.

Answer A. Primary Appraisal is the initial appraisal of a stressor as irrelevant, benign-positive, or stressful. Incorrect.

Answer B describes the Secondary Appraisal of stress, which matches our prediction. Correct.

Answer C Social Readjustment is a scale by which stress can be measured in 'life changing units.' Incorrect.

Answer D is the exhaustion stage, when stress has become overwhelming and disease and even death occur. EXTREME, incorrect.

Question 4

Here we're told that a meta-analysis (a study of the studies) was done and researchers concluded that yes, false-positive test results have a negative impact on patients. Notice the scope shift. The passage is about the mothers of newborns or infants up to three months old but the question stem describes all 'patients.' This points us to the flaw in

this meta-analysis: the populations of the study aren't representative of the population in general. Let's find the answer choice that matches this prediction.

Answer A is an OPPOSITE answer because it goes the wrong way in evaluating the meta-analysis.

Answer B matches our prediction. Correct.

Answer C says the conclusion of the meta-analysis is flawed because of statistical concerns. The flaw is structural, as discussed above. Incorrect.

Answer D is tempting because it's plausible that women and infants are under closer medical scrutiny than most population groups. That's what observation bias is. However, the flaw in the meta-analysis isn't that these subjects are being observed very carefully, it's in the conclusion of the study which extrapolates the results to the general population. Incorrect.

Question 5

This is a scattered detail question asking us which of the following would increase the accuracy of prenatal and neonatal testing. Comparing the statistical power of the two experiments, Experiment 1 has a much larger sample size and we know the false positive rate. Both of these factors make the genetic test more appealing if we want to design more accurate prenatal and neonatal testing. The correct answer will favor the genetic testing.

Answer A is way OUT OF SCOPE. We know nothing about the impact of mandatory vs. opt-in testing on the accuracy of the testing. Incorrect.

Answer B Increasing the resolution of ultrasounds may or may not improve the accuracy of the testing. We can imagine how it might but we don't have details from the passage to support that it is so. Incorrect.

Answer C focuses on the detail of apparent positive impact of low socioeconomic status on false-positive results in Experiment 1. The answer choice, however, suggests just testing patients in higher socioeconomic groups. Since the question is about increasing the accuracy of the testing, merely ignoring populations that, for whatever reason, tend to have a higher false positive rate merely skews the results away from a valid part of the population which for unknown or undisclosed reasons isn't statistically tidy. Incorrect.

Answer D gets at the right issue: the genetic test, from what we're told, has more statistical rigor and therefore its use should increase the accuracy of testing. Correct.

Passage III (Questions 1-6)

Passage III discusses Kohlberg's theory of personality known as Moral Reasoning and the response of later theorists to that theory.

P1 Background on moral reasoning and its scholarship.

P2 Haidt's work similar to Kohlberg; Social Intuition Theory

P3 Haidt’s further work and Moral Foundations Theory

Question 1

This question provides us with a new scenario and asks us to say which of Kohlberg’s phases of moral reasoning apply. There’s a distracter in the question stem—disgust—which gets us thinking about Haidt’s innate elements of moral reasoning. What the question is about, however, is what, in Kohlberg’s theory, it is called if an individual does what others expect him to do. This is conformity, which is part of the conventional phase.

Answer A is too early in Kohlberg’s scheme and so is incorrect.

Answer B is just right and so is correct.

Answer C is too late in Kohlberg’s scheme and so is incorrect.

Answer D is a trap answer that may be tempting given that ‘disgust’ is part of the question stem. Knowing the content means we know what Kohlberg’s phases are, so conformity is one of these phases, so this is incorrect.

Question 2

This question takes us to psychologist Erik Erikson’s theory of psychosocial development. In Erikson’s thinking, as individuals resolve existential questions they move from one stage to another via their interactions with their social world. So we’re looking for an answer choice that has these themes.

Answer A does describe a child gaining political insight through role play. This placing oneself in a larger social context is part of Erikson’s stage of identity vs. role confusion during adolescence and so is incorrect.

Answer B tells of an adolescent practicing an abstract intellectual skill. For adolescents, Erikson’s model describes the task of answering questions of identity vs. role confusion, so this is not consistent with this model. Incorrect.

Answer C describes an adolescent who is questioning and developing her own political beliefs, distinct from those of her parents. This is an example of Erikson’s stage of identity vs. role confusion and so is correct.

Answer D In Erikson’s model, adults are resolving questions of intimacy vs. isolation and generativity vs. stagnation. This answer describes an adult but not in the context of these stages. Incorrect.

Question 3

Answer A describes preconventional moral reasoning: something is wrong because it’s wrong. This is consistent with Kohlberg’s stage for young children and is correct.

Answer B describes a postconventional phase of moral reasoning. Incorrect

Answer C describes a conventional phase of moral reasoning. Incorrect

Answer D describes a conventional phase of moral reasoning. Incorrect

Question 4

Since the passage doesn't discuss socialization directly, this is a pseudo-discrete question. Scanning the answer choices shows we need to describe the behavior in the question stem in terms of the type of socialization represented. From our review of sociology, recall that socialization that occurs in small social units outside the primary family is secondary socialization. That's our prediction.

Answer A refers to the socialization that happens in the primary family. Incorrect.

Answer B matches our prediction and is correct.

Answer C refers to socialization that one undergoes in preparation for entering a social environment, incorrect.

Answer D is not specific enough; the question stem refers to socialization that occurs in a secondary social environment. Incorrect.

Question 5

This question gives us new information (inference beyond the passage) and asks how the Moral Foundations Theory would apply to this information. First, review what the passage tells us about this theory. Paragraph three tells us that Moral Foundations Theory describes how identity and socialization shape the innate building blocks of morality. So, let's look for an answer that matches this prediction. Scanning the answer choices, we see Answer C, which is a perfect match.

Answer A does not match the passage's description of Moral Foundations Theory, incorrect.

Answer B does not match the passage's description of Moral Foundations Theory, incorrect.

Answer C matches prediction. Correct.

Answer D does not match the passage's description of Moral Foundations Theory, incorrect.

Question 6

Here we're asked that if moral reasoning is the result of group identity and observation, which group would have the biggest impact for an adolescent's moral decision making? Who compose adolescents' groups? People most like themselves, so we're looking for an answer that indicates this. Scanning the answer choices, we see they have to do with peers, parents, same and opposite sex characteristics, and celebrities. Most like an adolescent would be a same-sex peer.

Answer A matches our prediction, and is correct.

Answer B mentions parents, who are not part of an adolescent's group, so incorrect.

Answer C also mentions parents, who are not part of an adolescent's group, so incorrect.

Answer D mentions a celebrity. While adolescents often idolize celebrities, these are not part of their group, so incorrect.

Discrete Questions 1-6)

Question 1

Question 1 describes a study result that has been generalized to a broader population. At this point, researchers would be wondering if their conclusions, which were drawn from a smaller sample of that population, are in fact valid for the whole population. Why wouldn't they be? Well, despite making every effort to have the sample be representative of the population, there's always a probability that the sample differs in some unforeseen way. Researchers try to account for this, for example, by randomly assigning subjects to groups and selecting the demographics of the sample to be as near those of the population as possible. Even so, once the generalizations to the whole population are made, the researchers need to keep an eye on exactly how representative their conclusions are, and that's known as external validity.

Answer A misses the point by referring to a different ethical concept, maleficence (which is the flip side of beneficience).

Answer B is exactly what we're looking for, external validity.

Answer C refers to observation bias, which is an effect of the observer, or researcher, on the outcome of the study. Let's say that two different researchers conduct interviews as part of a study. If one interviewer has a style that subjects tend to respond to positively, that may influence the survey results compared to the results obtained to the second researcher who has a style that subjects tend to respond to negatively. The observer biases the outcome. That's not what the question describes, so this is not what we're looking for. Incorrect.

Answer D refers to selection bias, which means that the way the sample participants were chosen grossly misrepresents the general population. This study is beyond the sample selection since conclusions have already been made and the results expanded to the general population. This is OUT OF SCOPE and so is incorrect.

Question 2

Question 2 describes a study in which a minor but very real type of harm is inflicted on study subjects: an electric shock is delivered if they guess incorrectly. The principle of beneficence dictates that if inflicting harm is a necessary aspect of a study, the subjects must provide informed consent and the benefit of the study must far outweigh the harm caused in the experiment. There is not great gain to society here but merely a rehashing of a long-settled question. Our prediction for an answer to the question, 'why is this an unethical study?' will be along these lines.

Answer A is an exact match for our prediction. Correct.

Answer B gets it wrong because even though informed consent is an important aspect to any clinical study, that's not the issue here. We're told they subjects give informed consent, so this isn't in question. OUT OF SCOPE.

Answer C too is off target. What population would benefit from this study providing a shock to subjects who guess incorrectly? We're not told anything about a population that would benefit so this is OUT OF SCOPE and incorrect.

Answer D is wrong because the ethical issue in this study isn't the best use of financial resources, its causing harm to subjects without a very large payoff in knowledge.

Question 3

Question 3 presents a scenario in which a clear result emerges from a drug trial that is still underway. The ethical consideration is one of equipoise. This means that researchers cannot conduct a study if they already know that one treatment provides a benefit. Once such a benefit becomes clearly established, a study cannot ethically continue. Our prediction is an answer of 'no, the study should not continue.

Answer A Says 'yes' the study should continue. This is OPPOSITE and therefore incorrect.

Answer B says 'yes' the study should continue. Again, OPPOSITE and incorrect.

Answer C is exactly what we're looking for and is correct.

Answer D, while it does say 'no, the study shouldn't continue,' gets wrong the reason for discontinuing the study. The ethical issue in the scenario isn't one of maximizing financial efficiency, it's one of maximizing the overall good to society. OUT OF SCOPE, incorrect.

Question 4

Question 4 describes a survey intended to measure the rate of unemployment in a certain city. Investigators make phone calls in the early afternoon—when employed people are very likely to be at work—and ask respondents about their employment status. Guess what happens when you ask people who aren't at work on a workday if they're unemployed? The answer is very likely to be skewed towards a 'yes' response (compared to a survey of people not biased in this way). In fact, the 72% unemployment the study finds is very extreme but perhaps understandable given the way the survey participants were selected. So we predict the source of error in this study to have to do with the way this selection of participants occurred.

Answer A refers to the Hawthorne Effect, which is the phenomenon in which merely making a change—any kind of change—in a subject's environment results in a change in the dependent variable of the study. This is not what happened in this study, so A is incorrect.

Answer B refers to Systematic Error. This is the kind of error that would occur if a measurement made with an instrument was incorrect because the operator neglected to

set the instrument to ‘zero’ before taking the measurement. If the initial reading is above zero, all the measurements taken on this instrument will be systematically high. This doesn’t apply to the study in the question, so B is incorrect.

Answer C brings up Selection Bias, and that’s exactly what we saw in the study here. Correct.

Answer D refers to Detection Bias. An example of detection bias is an over-estimation of diabetes in obese people simply because doctors are likely to think of diabetes when examining obese people. Cases of diabetes in thin people may be missed or under counted simply because doctors aren’t as likely to check for diabetes in thin people as in obese people.

Question 5

Question 5 describes a nutritional study performed on a specific population: 50-year old women. The results are such that there is a moderate reduction in heart disease in this population. Women who ate the breakfast cereal under study had a 44% incidence of coronary heart disease, while 46 % of the women who did not eat the cereal (the control group) developed coronary heart disease. This might seem like a very slight decrease—and it is—but the p value of 0.002 gives us a measure of how likely this outcome is to have arisen by chance: 2/1000. That is to say that if we performed the study 500 times, one of those times, by chance alone, would we see such a result. So, the study has a good deal of ‘statistical significance.’ The study population is narrow. Only women were studied and only 50 year-olds at that. What would have happened if men were also included? What if people in other age ranges were included? They weren’t, so we don’t know how broadly applicable this study is to a more general population. The correct answer will contain elements of these ideas.

Answer A is EXTREME. It says the study is ‘irrelevant’ because of its narrow study population. That’s going too far. The study is relevant to 50 year-old women but we just don’t know the study’s relevance beyond that group.

Answer B asks us to consider ‘confounding variables.’ These are variables—besides the independent variable under study—that vary between the control and the study groups. For example, imagine that the control group (didn’t eat the cereal being studied) had a very high-fat diet for lunch, whereas the treatment group (did eat the cereal being studied) had a low-fat diet for lunch. Could this have had an impact on the rates of coronary disease? Maybe. This would be a confounding variable and would need to be controlled for us to conclude that the decrease in disease was due solely to the independent variable, i.e., the breakfast cereal in the study. Do we know anything about confounding variables in this study? No. So, this answer choice is OUT OF SCOPE and is incorrect.

Answer C asks whether we can conclude that the brand of breakfast cereal is an ‘important factor’ in reducing heart disease. While the 2% decrease is statistically significant, it is very modest. How big would the decrease have to be for it to be ‘important?’ A lot bigger than 2%. This is EXTREME and is incorrect.

Answer D gets it just right. It says the study is statistically significant but the relevance to a broader population is uncertain. This matches our prediction and is correct.

Question 6

Question 6 considers, by analogy to a dart game, the concepts of precision and accuracy. Accuracy is a measure of how near a set of outcomes is to a target value. Precision is a measure of how consistent a set of outcomes is with regard to their dispersion; that is, are all the outcomes very much like each other or are they very different from each other? If the former, they are precise. If the latter, they are imprecise. The paragraph describes person A's darts as being contained within the dartboard but sometimes near the bulls eye and other times not. Person A is accurate but not precise. Person B is great at getting the darts to the same spot—but that spot is not the dartboard. So, person B is precise but inaccurate.

Answer A has the situation OPPOSITE for person B, so is INCORRECT.

Answer B has the situation OPPOSITE for person A, so is INCORRECT.

Answer C has the situation OPPOSITE for both person A and person B, so is INCORRECT.

Answer D matches our prediction for person A and for person B, so is CORRECT.