Thesis: Memory and Test Taking

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Author Note

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Abstract

Both memory and testing are important aspects of society. Relating social distraction to test scores may provide a deeper understanding of the factors that contribute to student success. As a consequence, both have been studied extensively. The embedded-process model provides an explanation of how distracting environments may impair test performance by disrupting memory retrieval and the focus of attention. Disrupted memory would in turn cause anxiety, adding another variable explaining poor test performance. Previous literature has examined the effect of emotions and strategies on testing success, but has not specifically examined social distraction. The present study compared students in a distracting environment and students in a non-distracting control environment on test performance. Investigating test-taking performance, distracting environments and anxiety created a better understanding of student success and failure. The results of this study could change how teachers teach and test.

Introduction

Testing

Testing is a critical aspect of life for millions of people all over the world. It is a process that often starts early in childhood and continues on throughout one's secondary education and permeates their postsecondary experience as well. Within the context of ongoing education, standardized tests are common, some of them being the SAT, ACT, GRE, LSAT, OAT and others that are required for educational advancement. In higher education, the GRE has been used for predicting first-year grades of graduate students and dissertation ratings (Darlington, 1998). The GRE and other tests all are used to make distinctions on the basis of academic ability. They offer students the chance to enter colleges or graduate schools, but also can be used to prevent them from being accepted.

The field of psychometrics is entirely dedicated to creating and evaluating assessments and tests. Psychometrics emphasizes making predictions and making distinctions on the basis of tests. Tests are used to predict one's future success, to act as a measure to allow or disallow entrance to positions and they show whether or not someone understands a topic. For example, Hays, Kornell and Bjork, (2012) expressed the value of tests by stating, "Tests are perhaps the most ubiquitous element of formal education" (p. 290). In the United States, tests are used to determine if an individual is suitable for a job or career.

Perhaps more important than how tests are designed is how they are taken. Much of the research on testing has examined test anxiety, emotion students face approaching tests and personality on test performance. However, little research has been done on the interaction that takes place between the environment and memory while examining anxiety. In this study, the

researcher intends to further examine how environmental stimuli influence memory function and anxiety to determine an impact on exam performance.

Memory

Researchers have investigated many models of working memory in detail. A search of "models of working memory" in the psycArticles database shows 16,128 results since 1980 alone. The embedded-processes model is different from the other models in two main ways. First, it accounts for the effect of distractors on working memory. The distractors will be discussed more shortly, but their impact on the focus of attention, executive control and activated memory is evident. The model supports the idea that anxiety could be problematic. If anxiety is the result of an impaired executive function (Derakshan and Eysenck, 2009) or intrusive thoughts (Sarason, 1984) then the model's integrative design explains how anxiety could cause a breakdown in processing. Second, within the embedded-processes model, not only is there a description of individual inputs or stimuli, but there is also a description for how those inputs come together. As will be discussed later, accounting for type of input is important because not all inputs act as distractors.

To understand why the model is useful for explaining test performance with the presence of distractors, it is important to understand the design of the model. This model consists of a brief sensory store, an activated memory component, a long-term store, the focus of attention and a central executive control (see Figure 1) (Cowan, 1999). The integration of the individual parts within the model is a unique feature that describes how cognitive processes are often the result of the combined work occurring between multiple pieces of the model.

Many tasks involve the brief sensory store, activated memory and the focus of attention. Stimuli are constantly entering the brief sensory store as an initial holding place for information. The brief sensory store is an aspect of memory that can be thought of as a waiting room for sensory information with a brief wait lasting only several hundred milliseconds (Cowan, 1999). The information located here fades after a short interval of time but if an individual uses it then it is sent to activated memory or the focus of attention.

Activated memory can be described as short-term memory and thought of as memory that directly pertains to an individual's current circumstance. With the use of activated memory, individuals are able to use information from their environment to accomplish tasks. It is able to hold information longer than the brief sensory store, but not as long as the long-term store.

The long-term store is similar to that of other models; it contains memories accumulated from the past. Some information enters long-term memory even if a person isn't dedicating their attention to that information. The long-term store isn't used in all tasks requiring memory, but it is used when a person needs to use information that isn't immediately available to them in the present situation.

The central executive acts as a manager of information processing. It guides attention and intended processing (Cowan, 1999). The primary purpose of the central executive is to keep working memory working. If it is functioning properly, the central executive unifies the other parts of working memory so that they are performing as a whole, rather than working as a series of compartmentalized parts.

As previously stated, the parts of the memory model work together. Because the parts work together, they form an effective, efficient, multitasking system. Memory is the result of

several processes working together, those being the long-term store, the focus of attention, the activated memory and the brief sensory store. The long-term works in a combined effort with the activated memory to become the focus of a person's thought, so information is taken out of a storehouse of information and brought to the person's awareness. An individual has information in their activated memory because it moved there from the brief sensory store. Moving information from the long-term store to the center of a person's thoughts requires the assistance of the executive control, which regulates and maintains the processes that the other parts of memory are in charge of.

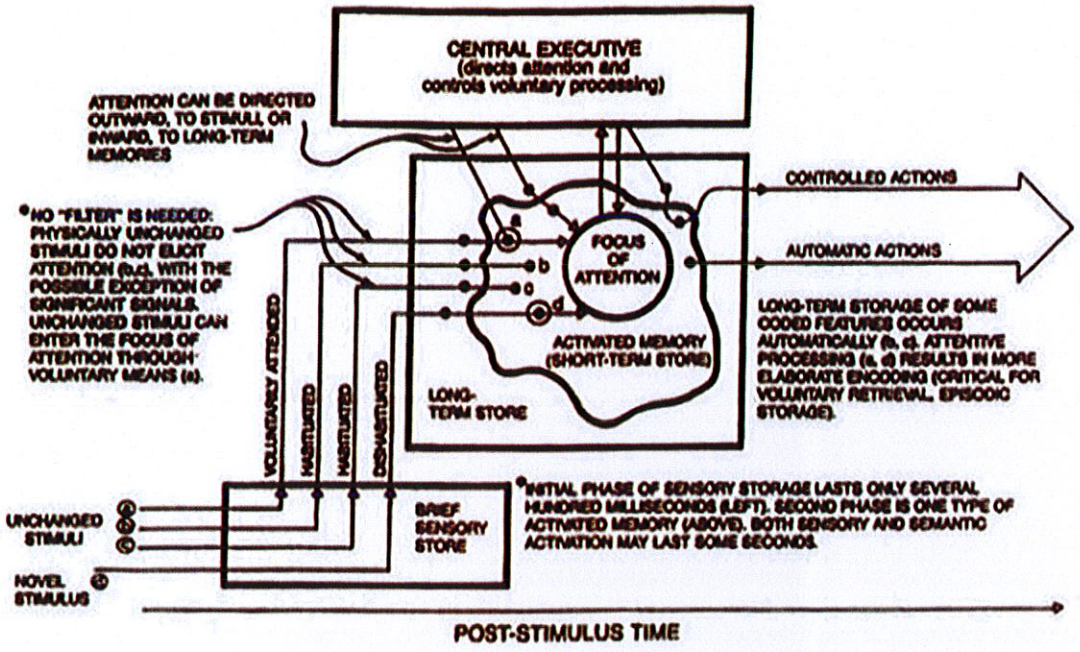

Figure 1. The embedded-processes model.

Movement of information is due to the work of the focus of attention. Stimuli are constantly entering the brief sensory store; some stimuli enter the brief sensory store with the aid from the focus of attention and some items enter without it. From the brief sensory store, information transitions into what is an individual's activated or short-term memory. In addition

to the brief sensory store and the activated memory, there exists an executive control to keep working memory from being a disjointed, random process. The role of the executive control is important at this point since it serves as a gatekeeper, letting in information that is attended to and generally preventing information that isn't attended to from entering the focus of attention. Information from the activated memory is translated into voluntary and automatic actions, and this information moves into the long-term store when it is combined with other sensation from the activated memory (Cowan, 1999). Stimuli may enter working memory either centrally, spread across multiple sensations, or peripherally through one sensation.

To account for the ways that stimuli enter working memory, central and peripheral processing are included in the model. Each of these mechanisms takes up space and they do not overlap. The central mechanism processes information from multiple sensory modalities (e.g. tasting and smelling at the same time) and is more limited in capacity than the peripheral mechanism that processes information from a single type of sensation (Cowan, Saults & Blume, 2014).

To describe a common scenario using an explanation of the parts, a trip to the grocery store will be considered. A person may feel a pang of hunger, which would enter the brief sensory store since it fades quickly. Then it would automatically move into the activated memory. The hungry shopper would have the ability to do tasks necessary to get to the store (e.g. get the keys, start the car and drive to the store) because they are in the focus of attention and maintained there by the central executive. The individual would access their long-term memory to retrieve the location of the grocery store. The central executive that allows the location of the

store to enter the focus of attention assists the retrieval process. With the parts previously listed cooperating, the shopper was successfully able to coordinate a trip to the store.

Research on working memory and the embedded-processes model however limited it may be has shown some support for the model. In investigating the interaction between storage and processing, Barrouillet, Portrat and Camos (2011) found that the model explained a linear trend relating memory span and cognitive load. Cognitive load refers to excessive work being performed by working memory. Other research has confirmed the existence of parts described in the model. The existence of the executive control has been demonstrated in a task designed to test the effect of alcohol use on working memory. Rehearsal, an aspect of activated memory, was impaired by alcohol use and the executive control was less effective (Saults, Cowan, Sher & Moreno, 2007). According to research on central and peripheral processing, central processing has a slightly smaller capacity than previously believed, and peripheral processing has a larger capacity than previously stated. The findings indicated that the total capacity of both types of processing described by previous research and new research are equal (Cowan, Scott & Blume, 2014).

Given these parts, the model is well suited to investigate the role of distractors in working memory. This model proposes that people have limited capacities for attention and that distractors may negatively impact retrieval by interfering with memory activation. In this scenario, retrieving information may fail if a person is unable to fully attend to getting the information from their long-term memory. (Cowan, 1999). Applying this model may provide insight on how test taking could be affected by external stimuli.

In a test-taking scenario, an individual's performance may be hindered by disruptions in the focus of attention. The focus of attention may be suddenly redirected to novel stimuli (e.g. loud or unpleasant noises) in what is called an orienting response (Bell, Röer, Dentale & Buchner, 2012). Additionally, issues may result if anxiety causes the focus of attention to be on negative thoughts or feelings that remove attention from the task. This mechanism of memory is especially important in regulating task performance, because without sustained attention it's difficult to put information into memory and hard to access stored memory too.

While all novel stimuli result in an orienting response, work by Jones and Macken (1993) found that not all result in distractions. They found that changing sounds can disrupt participants in a performance task, but sounds that do not vary are not effective at disrupting. Additional work with auditory distractors shows similar results. In a study conducted by Berti, Roeber and Schröger, (2004) tones were presented to participants and as the intensity of the tone increased so did the degree of distraction. In other words, undesirable shifts of attention may take place due to failures in the focus of attention and executive control.

There are other reasons why distractors may be effective at interrupting working memory. Distractors in memory tasks may be effective due to their intrusion into working memory because working memory has a limited capacity. This limited capacity is due to the filtering of information by the central nervous system as it only allows some sensory information to be processed while other information is lost (Hsia, 1971). Research suggests that central processing is more limited than peripheral processing (Cowan, Saults & Blume, 2014). However, there have been contradictions to the research supporting the notion of distractors affecting individuals through limited capacity issues in processing. Auditory distractors were ineffective at

distracting in a visual task administered by Elliott and Cowan (2001) indicating that distractors vary in effectiveness.

The model also proposes a way in which anxiety may negatively affect exam performance. Derakshan and Eysenck (2009) claim that anxiety negatively impairs the executive control component of working memory and the effectiveness of performance declines. Their findings suggest processing becomes less efficient when anxiety is present. Dendato and Diener (1986) further showed a relationship between anxiety and test scores, and with future research using this model these findings could be better explained. Performance on a Stroop task, Weschler subtests and information processing and attention tests are inversely correlated with scores on anxiety measures (Hopko, Hunt & Armento, 2005), which suggests impaired functioning in the focus of attention. Using the Reactions to Tests Scale, Sarason found that those measured higher on the anxiety construct performed worse in a digit task (1984). Participants with high anxiety levels faced more intrusive thoughts that prevented them from thinking about the task they were performing, thus performance was worse than what it would have been without the anxiety.

Further research on how environments affect anxiety level and result in lower test scores will provide a more comprehensive picture of what influences student success and difficulty in testing situations. The benefits of this study would extend to students who take tests in classroom settings offered in the U.S. and to those that review the tests, so they may better understand how to help their students.

The purpose of this study will be to test the ability of the embedded-processes memory model to explain test performance and will compare students in two different conditions: a scenario with distracting confederates and a control group to determine the distractors' effect on

test scores. Distracting refers to repeated and incessant cell phone alarm activation. The research will be conducted at a university setting.

Students with higher measures of anxiety are expected to have a negative correlation with test scores since past research has provided evidence for cognitive test anxiety and it having a negative effect on test performance (Cassady & Johnson, 2001). Poor performance will be due to the limited capacity of working memory (Cowan, 1999) the orienting response taking place in response to newly presented stimuli, or anxiety's introduction of intrusive thoughts.

Method

Participants.

The participants were 23 volunteers from Bemidji State University recruited from Intro to Psychology courses. 39.1% were male (n = 9) and 60.1% of participants were female (n = 14). The data from 19 were used, since 4 participants were missing data. This reduced group was 42.1% male (n = 8) and 58.9% female (n = 11). Students were in the second semester of the school year.

Participants were randomly assigned to one of two different conditions. The experimental condition included 52.6% of the participants (n = 10) and an examination with three noisy confederates. The second was in a nearby, similar setting without the confederates and was comprised of 47.4% of the participants (n = 9). Two TAs administered an abbreviated version of a psychology practice test. This test was followed by a full-length practice test. The presence of the TAs helped to create similar conditions to test taking environments in class. Students were told that the practice tests give an accurate measure of how they will perform on the upcoming test in class. The randomly selected students were placed in either the control condition or the experimental condition with the noisy confederates.

Materials, design and procedure.

A questionnaire regarding test anxiety was administered before and after the students were tested. This scale was one that has already been established, the Reactions to Tests scale, which contained four subscales and high total scale reliability ratings through an earlier and a later study (.78 and .95 respectively). (Cassady & Johnson, 2001). The approach to the design of this study was to seek a balance between internal and external validity.

In this study, participants were given a room number they are to go to upon signing up for participation. Upon arrival they were given an informed consent form letting them know that this study is a minimal risk scenario in which they will be taking a shortened, 10-item multiple choice, practice test and a 50-item, multiple choice, full-length practice test to determine their readiness for an upcoming exam in their class. This form contained the phone number of the lead researcher and an email address to facilitate communication if participants felt they experienced harm or are interested in being informed of the results of the study. They also completed a demographic sheet and the Reactions to Tests Scale at this time. The demographic sheet had a code assigned to the participant given the form, which was used to create anonymity for the students. The code also assigned them randomly to the control or experimental condition based on whether the first digit is odd or even. Evenly coded students were meant to participate in the experimental condition in a nearby and similar room, whereas the students with odd first digit codes were remain in the room they were told to go to for the control condition. The entirety of the study took less than an hour. Two TA's administered the tests from the separate rooms concurrently. In the experimental condition three confederates were placed equidistant throughout the room in a triangular formation and will play an alarm sound on their phones two times at 60-second intervals. Their phone alarm episodes will be staggered by 15 seconds, so the

first confederate began 15 seconds after the test begins, with the second confederate starting 15 seconds later and so on.

Following the completion of the test, students were given the Reactions to Tests Scale a second time and an extra credit ticket for their Intro to Psychology course. They were, thanked for their time and if they noted that they would like to be notified of the results of the study they will be sent results following the statistical analyses.

Since this is a study in part about the effect of anxiety on test performance, it is possible that students experienced anxiety. To reduce the risk of anxiety becoming excessive, students were given practice exams that gave students an opportunity to attempt a test with similar items that they may see on an actual test. They did not have their grade affected by their performance on the test. The test performance in the conditions did not affect their grade in their Intro to Psychology class, nor did withdrawal from the study.

There were several threats to validity that were possible with this study. Diffusion of treatment was the largest one, with the possibility of group members communicating with other groups and changing results. I worked to prevent this by minimizing the contact between the groups through asking them to remain confidential or adjusting the intervals between experimenting with the groups to reduce the likelihood of this threat to internal validity. I kept as many variables as possible constant to prevent error through having different situations or measurements in effect. Reducing variability this way helped to avoid the instrumentation threat to internal validity. I kept inferences relevant to the population that has characteristics similar to the sample, thus avoiding the interaction of selection and treatment error.

Results

Long test reliability figures

This study was not intended to be an evaluation of the psychometric properties of any tests. Even so, Guttman's Split-Half and Cronbach's Alpha were calculated to determine the reliability of the long test used in this study to evaluate if it was an adequate measurement tool. Initial calculations initially showed poor internal consistency (relation of test items to each other), with a Cronbach's Alpha of .65 and a Guttman's Split-Half value of .58. A modification of the items used to calculate student long test scores by only keeping the 14 highest correlated items with the long test total performance resulted in better reliability figures; new calculations resulted in a Cronbach's Alpha of .78 and a Guttman's Split-Half of .75. Following these calculations, anxiety and total test performance with the best items were correlated.

Equality between groups

This study used the short form test to determine that the control ($M = 7.56$) and experimental ($M = 6.30$) groups were the same at the start of the study by examining short test scores. An independent samples *t*-test was conducted assuming variances were unequal due to small group sizes, and it was not significant, $t(17) = 1.67$, $p > .11$; $\eta^2 = .16$ indicating a small effect of group placement.

Distracting test environment and total test performance

An independent samples *t*-test was conducted, and it assumed variances were unequal to determine if the test condition had an effect on full-length test performance. There was no significant difference in test scores for those in the control condition ($M = 6.11$) and those in the experimental condition ($M = 5.00$), $t(17) = .76$, $p > .44$; $\eta^2 = .03$, indicating a small effect of test condition.

Distracting test environment, time of test and anxiety scores

A 2 x 2 mixed design factorial analysis of variance (ANOVA) was conducted to determine if a distracting test environment and time of test affect anxiety scores (refer to Table 1). There was not a significant interaction between testing environment and time of test on anxiety, $F(1, 17) = 1.00$, $p > .33$; partial $\eta^2 = .06$, indicating a small effect of the interaction. There was not a significant main effect of testing environment, $F(1, 17) = .15$, $p > .70$; $\eta^2 = .01$, indicating a very small effect of test environment. There was a significant main effect of time of test, $F(1, 17) = 8.80$, $p < .01$; partial $\eta^2 = .34$ indicating a strong effect of time of test. Participants experienced more anxiety in the pretest ($M = 70.87$, $SD = 17.99$) than in the posttest ($M = 65.22$, $SD = 18.96$).

Anxiety

A correlation of posttest anxiety and full-length test performance was conducted, but did not show a significant relationship, $r(17) = .07$, $p > .76$; $r^2 = .005$ indicating an extremely small, positive relationship. The scale had several subscales of anxiety (tension, worry, irrelevant-thinking and bodily symptoms), and each of these were tested for significance. Tension ($M = 16.58$, $SD = 6.64$) and full-length test performance were not significantly related, $r(17) = .24$, $p > .33$; $r^2 = .06$, indicating a very small, positive relationship between tension and full-length test performance. Worry ($M = 19.50$, $SD = 6.20$) and full-length test performance were not significantly related, $r(17) = .01$, $p > .96$; $r^2 = .001$, indicating that there was not a relationship between worry and full-length test performance. Test irrelevant-thinking ($M = 16.84$, $SD = 6.80$) and full-length test performance were not significantly related, $r(17) = -.29$, $p > .22$; $r^2 = .08$, indicating a very small, negative relationship between test irrelevant-thinking and full-length test performance. Bodily symptoms ($M = 12.26$ $SD = 4.01$) and full-length test performance were not

related but approached significance, $r(17) = .44$, $p < .07$; $r^2 = .19$, indicating a moderate, positive relationship between bodily symptoms and full-length test performance.

Discussion

The purpose of this study was to better understand the connection between working memory, distractors and anxiety. The findings were in some ways surprising, and in other ways, expected. The long-term test was adequate from a psychometric standpoint allowing conclusions about working memory and anxiety to be reached.

The Cronbach's Alpha improved score determined that the items in this test were sufficiently related to each other to be used. Even though Intro to Psychology Knowledge is a broad domain to measure, the test showed that the items were similar enough to be justified in their usage. Likewise, the Guttman's Split-Half test, which takes half of the test items and correlates them with the other half, showed that the items could be used with each other. This was the case after the less effective items had been removed, shortening the test to 14 items.

Like determining the test's efficacy to be used as a tool in the experiment, it was important to determine that the control group and experimental group were equal upon entrance to the experiment. The groups were not shown to be different, allowing for any effects of the experiment to be due to the experiment rather than differences in individual knowledge of Intro to Psych material.

In this study, there was no effect of test condition on test performance. There are a number of reasons this may have happened, among those being that participants habituated to the cell phones, that the cell phone frequency was not enough, the volume of the phones may have been too low or that the participants did not find cell phones to be novel stimuli. Additionally,

the group sizes were small, limiting the researcher's ability to find significant results. This study may have lacked internal validity.

There was no interaction between the test condition and anxiety. Test condition was shown to be ineffective as well, since participants in the test condition had no more anxiety than those that were not. Participants were shown to have more anxiety in the anxiety pretest than the posttest. This finding was surprising, because it was believed that the experiment would increase anxiety; anxiety was not expected to decline or remain constant.

Anxiety and the subscales presented in the Reactions to Tests scale were not correlated with test performance, another surprising result. In terms of the embedded-processes model, functioning continued with disruption. Anxiety has limited performance before, but test scores in this study were unaffected by anxiety, likely indicating that the central executive and focus of attention were being used without problems. With this being said, bodily symptoms were close to being found related to test scores. However, the direction of this relationship was interesting, because higher test scores were almost related to higher bodily symptoms. The research did not support the findings on anxiety and test condition. Research did not support the findings on the test condition and performance either.

Typically, auditory distractors inhibit performance on tasks and this is by affecting cognitive functioning. This is likely due to the orienting response that takes place when novel stimuli are introduced and people automatically shift their attention to it. The increase in performance errors occurs during the distracting stimulus' appearance and after it in what is called postnovelty distraction (Parmentier & Andrés, 2010). Getzmann, Falkenstein and Gajewski suggest the delay this reorienting response causes may be the source of the performance decline. In this study, cell phones did not cause a decline in test scores. Referring

back to the embedded-processes model, participants may have been able to ignore the cell phone noise through use of their central executive managing the focus of attention in a positive way. Participants may simply have failed to have their attention oriented to the new stimuli, or as previously stated, they may have simply adapted and became used to it. The test condition and anxiety were not related, but the time of test and anxiety were.

Anxiety decreased following the short-form test and the full-length test. Previous studies have shown that individuals with test anxiety perform worse than those that do not have it. They also experience more negative thoughts (Hunsley, 1987). . It was initially believed that anxiety would increase after the test, but the results were the opposite of the hypothesis. This may be because the upcoming tests raised anxiety in the participants, but following the test there was no residual anxiety. Anticipation of the test may have been worse than the testing experience itself. Additionally, it is possible that the Reactions to Tests Scale did not distinguish between facilitating anxiety and debilitating anxiety, essentially positive and negative anxiety respectively (Raffety, Smith & Ptacek, 1997). Anxiety levels may have decreased because at least in part what was measured was facilitating anxiety, something only necessary during the test. The Reactions to Tests Scale was used to determine anxiety levels, though it does not offer a cut off for categorizing individuals as having test anxiety or not having test anxiety. Without knowing a point in which individuals have test anxiety, it is only possible to state that individuals in one group were more anxious than in the other, not that either group had test anxiety.

Limitations

Even with the pretest-posttest design and attempts at controlling the study, it was not flawless in its execution. One of the more problematic aspects of this study was the small sample size. Only being able to use data from 19 participants limited the researcher's ability in drawing

any conclusions, especially in a two-group design. Secondly, participants, though given codes informing them to go to the control room or stay in the experimental room did not always follow directions. Perhaps they intentionally chose one room over the other, which would be a source of error, reducing the researcher's ability to control the experiment. Another was that the room sizes were of unequal size; participants in the experimental condition were in room roughly twice as large as the room for the control group. A confound was presented with the room sizes being unequal. It can't be said that distractions had an effect since it is possible that the room size was actually what influenced anxiety or test scores. It should be noted that there was a weak effect of group placement on short test performance. Though there was not a significant difference, the effect may be indicative that the groups were not the same. A final source of error would be the confederates' use of cell phone alarms. Following the study's completion, the researcher was informed that the alarms did not always go off when they should have; the confederates were not precise in their timing. Fortunately, more often than not, the cell phone alarms were sounded at the proper times or in close proximity.

Conclusion

Working memory has been explored heavily over the past few decades, but the embedded-processes model has been understudied. In this study, cell phone distractors were used in one group to determine if auditory distractors would lead to increases in anxiety or lower test performance. Neither of these conclusions was supported, with anxiety actually found to be lower following the test. Research is necessary to determine if test anxiety is more of a temporary state or if it is a longer-lasting trait that affects students outside of the testing environment. More research is necessary with the embedded-process model to determine which

distractors are effective and how they affect the cognitive processes of working memory whereas others fail to do so.

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Appendix A

Informed Consent Form

You are invited to participate in an experiment titled "Memory and Test Taking" conducted by Ryan Chanen doing research for the Honors Program at Bemidji State University. You will be asked to fill out a demographic form, a scale about anxiety and take a test. Following the test you will be asked to take the anxiety scale a second time.

The information from this study will be used to better understand memory. Benefits from this study include contributing to psychological research and extra credit for your Intro to Psychology class.

All data from this study will be confidential. Your name will not be on any of the test materials and it will not be associated with individual test data. All results will be reported in group format only. If one of your instructors has agreed to provide extra credit for participating in this study, only your name will be provided to the instructor to verify participation.

The risks that are part of this experiment are minimal. It is not expected that you will face any stress that is greater than that found in every daily life. In a test taking setting, it is possible that you may face some degree of anxiety. However, the tests are only for practice and in no way determine your grade.

You are free to decline to participate or to withdraw your consent and discontinue participation at any time. There are no penalties for withdrawing, however, if you are receiving extra credit, your instructor may require an alternate activity before granting credit.

If you have any questions about this study, you may ask them before, during, or after participation.

_____ _____ _____

Name (please print) Signature Date

(Tear here for contact information)

If you have any questions you may contact the researcher of this study by email at Ryan.chanen@live.bemidjistate.edu or by phone at (952)-649-7753

Demographic Questionnaire

1. Your four-digit code _____ (please remember this because you will reuse it)
2. Age (If under 18, please refrain from participation in this study unless you obtain a parental signature) _____
3. Gender _____
4. Your expected grade in Intro to Psych _____
5. Your professor for Intro to Psych _____
6. Do you feel confident about your ability to perform well on tests in your Intro to Psych class? Yes ___ No ___
7. Would you consider yourself to be easily distracted? Yes ___ No ____

NAME:_____

AGE:_____ SEX:_____

YEARS OF EDUCATION:_____

REACTIONS TO TESTS

Almost everybody takes tests of various types and there are differences among people in how they react to them. The purpose of this survey is to gain a better understanding of what people think and feel about tests.

In filling out this survey, for each item please circle the response alternative that reflects your typical reaction to the situation described.

1- Not at all typical of me
2- Only somewhat typical of me
3- Quite typical of me
4- Very typical of me

	Not Typical	Somewhat Typical	Quite Typical	Very Typical
1. I feel distressed and uneasy before tests.	1	2	3	4
2. The thought, "What happens if I fail this test?" goes through my mind during tests.	1	2	3	4
3. During tests, I find myself thinking of things unrelated to the material being tested.	1	2	3	4
4. I become aware of my body during tests (feeling itches, pain, sweat, nausea).	1	2	3	4
5. I freeze up when I think about an upcoming test.	1	2	3	4
6. I feel jittery before tests.	1	2	3	4
7. Irrelevant bits of information pop into my head during a test.	1	2	3	4
8. During a difficult test, I worry whether I will pass it.	1	2	3	4

	Not Typical	Somewhat Typical	Quite Typical	Very Typical
9. While taking a test, I find myself thinking how much brighter the other people are.	1	2	3	4
10. I feel the need to go the the toilet more often than usual during a test.	1	2	3	4
11. My heart beats faster when the test begins	1	2	3	4
12. My mind wanders during tests.	1	2	3	4
13. After a test, I say to myself, "It's over and I did as well as I could."	1	2	3	4
14. My stomach gets upset before tests.	1	2	3	4
15. While taking a test, I feel tense.	1	2	3	4
16. I find myself becoming anxious the day of a test.	1	2	3	4
17. While taking a test, I often don't pay attention to the questions.	1	2	3	4
18. I think about current events during a test.	1	2	3	4
19. I get a headache during an important test.	1	2	3	4
20. Before taking a test, I worry about failure.	1	2	3	4
21. While taking a test, I often think about how difficult it is.	1	2	3	4
22. I wish tests did not bother me so much.	1	2	3	4
23. I get a headache before a test.	1	2	3	4
24. I have fantasies a few times during a test.	1	2	3	4

	Not Typical	Somewhat Typical	Quite Typical	Very Typical
25. I sometimes feel dizzy after a test.	1	2	3	4
26. I am anxious about tests.	1	2	3	4
27. Thoughts of doing poorly interfere with my concentration during tests.	1	2	3	4
28. While taking tests, I sometimes think about being somewhere else.	1	2	3	4
29. During tests, I find I am distracted by thoughts of upcoming events.	1	2	3	4
30. My hands often feel cold before and during a test.	1	2	3	4
31. My mouth feels dry during a test.	1	2	3	4
32. I daydream during tests.	1	2	3	4
33. I feel panicky during tests.	1	2	3	4
34. During tests, I think about how poorly I am doing.	1	2	3	4
35. Before tests, I feel troubled about what is going to happen.	1	2	3	4
36. The harder I work at taking a test, the more confused I get.	1	2	3	4
37. I sometimes find myself trembling before or during tests.	1	2	3	4
38. During tests I think about recent past events.	1	2	3	4
39. During tests, I wonder how the other people are doing.	1	2	3	4
40. I have an uneasy feeling before an important test.	1	2	3	4

Item Numbers of Reactions to Tests Scales

Tension	Worry	Test-irrelevant Thinking	Bodily Symptons
1	2	3	4
5	8	7	10
6	9	12	11
15	13*	17	14
16	20	18	19
22	21	24	23
26	27	28	25
33	34	29	30
35	36	32	31
40	39	38	37

*item scoring revised

Short Form Test

Q: Which of these is the most accurate definition of the discipline of psychology today?
a) the science of behavior
b) the science of mental processes
c) the science of behavior and mental processes
d) the science of human behavior and mental processes

2. Which research technique can provide cause-and-effect answers?
a) survey
b) experiment
c) case study
d) correlational

3. What did Sigmund Freud consider as the key to understanding behavior?
a) free will
b) brain physiology
c) unconscious mind
d) external consequences

4. Which term describes a relatively permanent change in behavior or the potential to make a response that occurs as a result of experience?
a) learning
b) cognition
c) maturation
d) perception

5. What must be paired together for classical conditioning to occur?
a) neutral stimulus and conditioned stimulus
b) neutral stimulus and unconditioned stimulus
c) conditioned response and unconditioned response
d) unconditioned stimulus and unconditioned response

6. A positive reinforcer is a stimulus that is ..... and thus ..... the probability of a response.
a) removed; increases
b) removed; decreases
c) presented; increases
d) presented; decreases

7. What term do psychologists use to describe "a stable pattern of thinking, feeling, and behaving that distinguishes one person from another"?
a) ego

b) psyche
c) self-image
d) personality

8. What is the correct sequence of Freud's psychosexual stages?
a) latency, anal, oral, genital, phallic
b) oral, genital, phallic, latency, anal
c) anal, oral, latency, phallic, genital
d) oral, anal, phallic, latency, genital

9. When the teacher was handing out this test, you noticed that your respiration rate and heartbeat increased, your palms got sweaty, and your hand shook a little. Your pretest behaviors were triggered by the_____. Upon completion of the exam, your body returned to its normal state by way of the _____.
a. parasympathetic nervous system; sympathetic nervous system
b. somatic nervous system; autonomic nervous system
c. sympathetic nervous system; parasympathetic nervous system
d. autonomic nervous system; somatic nervous system

10. A car crash woke John from his afternoon nap. When he looked out his apartment window, he saw several people milling around two smashed cars. He decided not to dial 911 because he assumed someone had already called. John's belief seems to result from
a) the bystander effect.
b) pluralistic compliance.
c) obedience to authority.
d) conformity to social norms.

Code_____

1. A psychologist does a study to see whether exercising increases a sense of well-being. In the study, she will be testing a(n)
   a. hypothesis b. operational definition. c. empirical definition d. anthropomorphic theory

2. A researcher performs an experiment to learn whether room temperature affects the amount of aggression displayed by college students under crowded conditions in a simulated prison environment. In this experiment, the independent variable is which of the following?
   a. room temperature
   b. the amount of aggression
   c. crowding
   d. the simulated prison environment

3. A procedure used to control both research participant bias and researcher bias in psychological experiments is the
   a. correlation method
   b. controlled experiment
   c. double-blind experiment
   d. random assignment of participants

4. Which correlation coefficient represents the strongest relationship?
   a. -0.86 b. +0.66 c. +0.10 d. +0.09

5. Which of the following research techniques has the most in common with clinical studies of the effects of brain injuries
   a. EEG recording b. deep lesioning c. microelectrode recording d. PET scan

6. Reflex centers for heartbeat and respiration are found in the
   a. cerebellum b. thalamus c. medulla d. RF

7. If one parent has one dominant brown-eye and one recessive blue-eye gene and the other parent has two dominant brown-eye genes, what is the chance their child will have blue eyes?
   a. 25 percent b. 50 percent c. 0 percent d. 75 percent

8. Which of the following stimuli are more effective at getting attention?
   a. unexpected stimuli b. repetitious stimuli c. intense stimuli d. all of the above

9. Colored afterimages are best explained by
   a. trichromatic theory
   b. the effects of astigmatism
   c. sensory localization
   d. opponent-process theory

10. A good antidote to perceptual habituation can be found in conscious efforts to
   a. reverse sensory gating
   b. pay attention
   c. achieve visual accommodation
   d. counteract shape constancy

11. Which of the following can most definitely be achieved with hypnosis?
a. unusual strength b. pain relief c. improved memory d. sleep-like brain waves

12. Sharpening memories and facilitating their storage is a function of
a. activation-synthesis cycles b. REM cycles c. deep sleep d. NREM sleep

13. When Casey opens the closet door and is shocked to discover a mouse, she screams and slams the door. Later in the week Casey's mom asks her to retrieve the vacuum cleaner from the closet and she refuses to go near the closet. What is the conditioned stimulus in this example?
a. Casey b. the closet c. the vacuum cleaner d. the mouse

14. Your teacher asks you to describe the sequence of parts of a neuron that the impulse travels during neural conduction. Which of the following sequences will you offer?
a. dendrites, axon, soma, terminal buttons
b. terminal buttons, axon, soma, dendrites
c. dendrites, soma, axon, terminal buttons
d. axon, soma, dendrites, terminal buttons

15. The concept of forming an association applies to both
a. associative and cognitive learning
b. latent and discovery learning
c. classical and opernat conditioning
d. a postsynaptic potential.

16. If a model is successful, or rewarded, the model's behavior is
a. less likely to reproduce
b. less likely to be attended to
c. more likely to be imitated
d. more subject to positive transfer

17. Extinction in operant conditioning is subject to _____ of a response
a. successive approximations b. shaping c. automation d. spontaneous recovery

18. Which is a correct match?
a. social reinforcer-primary reinforcement
b. token reinforcer-secondary reinforcer
c. intracranial stimulation-secondary reinforcement
d. negative reinforcer-punishment

19. Mild punishment tends to only temporarily _____ a response that is also reinforced
a. enhance b. aggravate c. replace d. suppress

20. Which of the following is a synonym for skill memory
a. semantic memory b. declarative memory c. episodic memory d. procedural memory

21. You are asked to memorize long lists of telephone numbers. You learn a new list each day for ten days. When tested on list three, you remember less than a person who learned only the first three lists. Your larger memory loss is probably caused by
a. disuse b. retroactive interference c. regression d. proactive interference

22. Which of the following is least likely to improve memory interpretation of sensory input.
a. Using exaggerated mental images
b. forming a chain of associations
c. turning visual information into verbal information
d. associating new information to information that is already known or familiar

23. Fluency, flexibility, and originiality are characteristics of
a. convergent thought b. deductive thinking c. creative thought d. trial-and-error solutions

24. Our decisions are greatly affected by the way a problem is stated, a process called
a. framing b. base rating c. induction d. selective encoding

25. From a practical point of view, intelligence can most readily be increased by
a. genetics b. teaching adaptive behaviors c. stimulating environments d. applying deviation IQs

26. Desirable goals are motivating because they are high in
a. secondary value b. stimulus value c. homeostatic value d. incentive value

27. The highest level of Maslow's hierarchy of motives involves
a. meta needs
b. needs for safety and security
c. needs for love and belonging
d. extrinsic needs

28. Bingeing and purging are most characteristic of people who have
a. taste aversions b. anorexia c. bulimia d. strong sensitivity to external eating cues

29. When the teacher was handing out this test, you noticed that your respiration rate and heartbeat increased, your palms got sweaty, and your hand shook a little. Your pretest behaviors were triggered by the_____. Upon completion of the exam, your body returned to its normal state by way of the _____.
a. parasympathetic nervous system; sympathetic nervous system
b. somatic nervous system; autonomic nervous system
c. sympathetic nervous system; parasympathetic nervous system
d. autonomic nervous system; somatic nervous system

30. The idea that labeling arousal helps define what emotions we experience is associated with
a. The James-Lange theory
b. Schachter's cognitive theory
c. the Cannon-Bard theory
d. Darwin's theory of innate emotional expressions

31. Which of the following is not an element of emotional intelligence?
a. empathy b. self-control c. self-centeredness d. self-awareness

32. Traditional gender role socialization encourages _____ behavior in males
a. instrumental b. emotional c. expressive d. dependent

33. The halo effect can be a serious problem in accurate personality assessment that is based on
a. projective testing b. behavioral recording c. interviewing d. the TAT

34. Which of the following is considered the most objective measure of personality?
a. rating scales b. personality questionnaires c. projective tests d. TAT

35. The use of ambiguous stimuli is most characteristic of
a. interviews b. projective tests c. personality inventories d. direct observation

36. Which of the following is not one of the Big Five personality factors?
a. submissiveness b. agreeableness c. extroversion d. neuroticism

37. With respect to health, which of the following is not a major behavioral risk factor?
a. overexercise b. cigarette smoking c. stress d. high blood pressure

38. Lifestyle diseases related to just six behaviors account for 70 percent of all medical costs. The behaviors are smoking, alcohol abuse, drug abuse, poor diet, insufficient exercise, and
a. driving too fast b. excessive sun exposure c. unsafe sex d. exposure to toxins

39.Which of the following is not a common reaction to frustration
a. ambivalence b. aggression c. displaced aggression d. persistence

40. Displaced aggression is closely related to the pattern of behavior known as
a. scapegoating b. leaving the field c. stereotyped responding d. burnout

41. Learned helplessness tends to occur when events appear to be
a. frustrating b. in conflict c. uncontrollable d. problem focused

42. The core feature of abnormal behavior is that it is
a. statistically unusual b. maladaptive c. socially nonconforming d. a source of subjective discomfort

43. Which of the following is a legal concept?
a. neurosis b. psychosis c. drapetomania d. insanity

44. Amnesia, multiple identities, and depersonalization are possible problems in
a. mood disorders b. somatic symptom disorders c. psychosis d. dissociative disorders

45. Shock, pain, and discomfort play what role in conditioning an aversion?
a. conditioned stimulus b. unconditioned response c. unconditioned stimulus d. conditioned response

46. When desensititzation is carried out through the use of live or filmed models, it is called
a. cognitive therapy b. flooding c. covert desensitization d. vicarious desensitization

47. The amount of cognitive dissonance a person feels is related to how much _____ exists for his or her actions.
a. reciprocity b. justification c. chance conditioning d. reference

48. In Solomon Asch's conformity experiment, participants yielded to group pressure on about _____ of the critical trials
a. 1 percent b. 10 percent c. one-third d. two-thirds

49. Obedience in Milgram's experiments was related to
a. distance between learner and teacher
b. distance between experimenter and teacher
c. obedience of other teachers
d. all of these

50. Interpersonal attraction is increased by all but one of the following. (Which does not fit?)
a. physical proximity b. physical attractiveness c. similarity d. overdisclosure

Table 1
Amount of Anxiety as a Function of Test Condition and Time

	Time	
Test Condition	Pretest	Posttest
Experimental	68.30	64.55
Control	73.44	65.89