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Assessing the Effectiveness of a Computer-Based, Online Social-Networking Intervention for Adolescents with Test Anxiety

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Assessing the Effectiveness of a Computer-Based, Online Social-Networking Intervention for Adolescents with Test Anxiety

by

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Dedication

This dissertation is dedicated to my wife, who walked this road with me every step of the way. Maria, you were the classroom distraction that earned me a B- on my first statistics test, and the study partner who turned that grade into an A on my second. I will never cease to be amazed at your patience, your wisdom, your maturity, your honesty, your love, and your support of my ill-considered grand schemes. You are my frontal lobe.

I also dedicate this work to my parents, who have never stopped striving to instill in me a respect for education, a value for hard work, and a definition of personal success that have defined who I am today. Thank you for your unending love and support of all my endeavors. And thank you for your money.

I dedicate the calluses on my fingertips to my dog, Pika, who gets the most joy out of his furry life by sleeping at my feet while I type. Many hours of typing = many hours of happy sleep.

Last, I would like to dedicate this dissertation to the soon-to-be-born "Bean" Baker, who in his/her first three months of pre-natal life learned to associate "Daddy" with "Sound of Computer Typing" and "Mommy" with "Sound of Loud Sighing Followed By Answer to Daddy's Statistics Question."

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Assessing the Effectiveness of a Computer-Based, Online Social-Networking Intervention for Adolescents with Test Anxiety

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This dissertation investigated the effectiveness of a newly designed intervention for adolescents with test anxiety. This CBT-based intervention is comprised of two parts: self-guided psychoeducational computer modules, and an online social networking group. The intervention was designed to provide adolescents with an effective means of reducing test anxiety symptoms, delivered through a familiar medium—the Internet. This study was conducted in classrooms in Houston, TX, with high school student participants. Participants were randomly assigned to one of three groups: those receiving the computer modules component only, those receiving the computer modules and social networking group, and those receiving no treatment (control). Test anxiety levels were assessed with the self-report Test Anxiety Inventory (Spielberger, et al., 1980). Changes in test anxiety levels over time were compared to changes in a measure of academic achievement.

The author compared changes in test anxiety level among the three groups using repeated measures ANOVA. It was hypothesized that participants in the two treatment groups would show improvements in test anxiety symptoms over time, while those in the control condition would not. It was further hypothesized that decreases in test anxiety symptoms would correlate with increases in academic achievement. Participants in all three groups showed some decrease in anxiety symptoms. There were no statistically significant differences between groups; however, there were some intriguing trends in the computer module only group, which showed a clinically meaningful, but not statistically different, decrease in anxiety. There was no association between changes in test anxiety symptoms and academic achievement.

Results of this study suggest that this intervention may not currently present an effective option for treating the symptoms of test anxiety. Results may be used to make data-driven improvements to address the limitations and unforeseen weaknesses of this intervention approach.

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CHAPTER ONE: Introduction

Children and adolescents frequently find themselves placed in testing situations above and beyond that typical of daily classroom assessment. Of the 2041 accredited, four-year, degree-granting colleges in the United States (The University of Texas at Austin, 2010), at least 82% require admissions test scores from its freshman applicants (FairTest, 2010). Consequently, millions of high school juniors and seniors sit annually for either the SAT or ACT examinations (College Board, 2005; ACT Inc., 2007). The 2001 *No Child Left Behind Act* requires all 50 states demonstrate their adherence to federal education standards by means of compulsory standardized testing of schoolchildren (United States Department of Education [USDoE], 2006). Furthermore, by the year 2012, approximately 72% of American public high schools will require that their students pass a standardized exit examination battery in order to graduate (Center on Education Policy, 2006; Sullivan, 2005).

Researchers have been interested in test anxiety since the early 1950s, due to its widespread nature, and understand its effects well (Gregor, 2005). Nearly 10 million children in grades K-12 are regularly and negatively affected by high levels of test anxiety (Ergene, 2003). High test anxiety is negatively associated with overall test performance and academic achievement (Topp, 1989). These performance deficits are not restricted to classroom-based academic assessments; high test anxiety correlates negatively with IQ scores, as well (Cowen, Zax, Klein, Izzo, & Trost, 1965).

Clinicians have developed a number of treatment options for test anxiety; although treatment results vary widely, some interventions are promising. A meta-

analysis conducted by Hembree (1988) indicated that test anxiety treatment generally has an ameliorating effect on the psychosocial symptoms of test anxious students. Effect sizes vary depending on the particular treatment model in use. The effects of treatment seem to be most pronounced for those interventions based on cognitive and behavioral therapeutic techniques (Ergene, 2003); among those interventions, the most effective outcomes were achieved through the use of group-therapy models (Crowley, Crowley, & Clodfelter, 1986).

The two primary meta-analyses of test anxiety treatment studies (Hembree, 1988; Ergene, 2003) focused solely on traditional, face-to-face interventions, and not computer based or teletherapy models, but traditional interventions are changing to incorporate technology. These non-traditional, technology-based interventions are quickly gaining interest among psychologists (Cavanagh & Shapiro, 2004), and this industry trend parallels an increase in Internet access among potential clients of younger ages: children and adolescents have access to computers at higher rates than ever. According to the 2000 U.S. Census, 90% of school-aged children had access to a computer through either school (80%) or home (66%) (Newburger, 2001). As the U.S. population grows, both in number and dispersion, the proportionate availability of mental health services decreases, especially for children (Pfefferle, 2007). Inspired by the unmet mental health needs of people in remote rural and under-resourced urban settings, research and practice in the field of psychology has expanded its reach to include electronic media (Elleven & Allen, 2004). Computer-based mental health treatments—a broad category capturing a variety of treatment options from email-facilitated counseling to therapist-free computerized

CBT—are currently reducing the negative psychosocial symptoms associated with a variety of disorders, with some of the greatest effects realized with depression and anxiety disorders (Cavanagh & Shapiro, 2004; Proudfoot, 2004). There are additional benefits to the use of electronic media, including increased accessibility (Leibert, Archer, Munson, & York, 2006), reduced cost of care (Proudfoot, 2004), and a general increase in the variety of treatment options available (Elleven & Allen, 2004).

This last benefit—an increased range of unique treatments options—may be most attractive to younger clients. According to a 2004 study, 87% of youth aged 12-17 regularly used the Internet, with 51% reporting daily use (Lenhart, Madden, & Hitlin, 2005). While adolescents a decade ago primarily went online to play videogames and conduct academic research (Gross, 2004), today's youth have begun to rely on the Internet more and more as a principle source of social interaction (Hinduja, 2008). Currently, more than half of America's teens use online social networking sites (e.g. MySpace.com, Facebook.com, Twitter.com), with a majority of that number visiting their preferred site on a daily basis (Lenhart & Madden, 2007). The utilization of online social networking as a tool to reduce test anxiety could increase the number of treatment options available to an adolescent population, thus increasing the likelihood of finding an intervention appropriately suited for an adolescent individual.

Unfortunately, the current options for treating test anxiety in children and adolescents are limited in two notable ways. The current review of the literature supports what Ergene (2003) concluded: that the bulk of current interventions are designed for adults or college students, and that there is an "urgent need" for intervention programs

developed for youth at the secondary school level. Furthermore, this current literature review reveals a marked lack of computer-based interventions for test anxiety even though such interventions have, in fact, been developed for other mental health concerns such as general anxiety and depression.

This study is a response to the lack of research conducted on non-traditionally delivered, computer-based interventions for adolescents with high levels of test anxiety. The ultimate purpose of this study is three-fold:

1. to provide test anxious adolescents with an effective, flexible, and engaging intervention for reducing their symptoms;
2. to contribute to the still young literature base assessing the potential benefits to be found in computer-based psychological interventions; and
3. to explore the possible therapeutic gains to be found in the adolescent interpersonal interactions unique to on online social networking environment.

To this end, this study aims to pilot and evaluate an Internet-based intervention for test anxiety. This intervention builds upon the existing empirically supported computer-based treatments, and expands on these treatments to fill a need for access to mental health services, specifically test anxiety interventions, for young people. The design of this current intervention format was focused on appealing to contemporary students who are comfortable with computers and may find this forum of mental health service delivery engaging.

The intervention itself is comprised of two components: educational computer modules and therapeutic online social networking. The intent of the first component is to provide youth with a means by which they may independently and privately acquire information about their test anxiety and skills to help combat its detrimental effects. The second component seeks to utilize existing Internet technologies as a medium through which therapeutic group support may be offered to adolescents.

This author hypothesized that the results of this study would indicate that participants receiving this intervention would demonstrate significant improvements in test anxiety symptoms over time, when compared to changes in a no-treatment control group. Furthermore, any reduction in test anxiety symptoms would result in a practical improvement in scores on a measure of academic achievement. Ultimately, although not great enough to demonstrate significance compared to the control group, participants in this intervention did ultimately realize significant improvement in self-reported symptoms. As such, the results of this study are similar to those of comparable interventions.

Many results of this study are encouraging and help establish this intervention as an eventually viable and highly accessible treatment option for those students with debilitating test anxiety who may otherwise find treatment unattractive or unattainable. As this intervention seeks to employ online social networking sites as a medium through which to deliver mental health services—a novel and unique offering in the field—this study serves as an informative exploration of the potentials of this existing technology.

Psychology must adapt to serve the needs of its clients. As the world changes, so too do the needs of its youth.

CHAPTER TWO: Literature Review

The purpose of the following literature review is to elaborate on the scientific rationale for an investigation of an Internet-based treatment for test anxiety in an adolescent population. In service to this goal, test anxiety will be defined and discussed in terms of the various conceptual models that have informed the development of myriad therapeutic approaches to its symptoms. A selection of current interventions will then be discussed. The history of computer-based treatments will be presented, and contemporary strengths and concerns of psychological service delivery through computer or Internet modalities will be discussed. Finally, the literature base concerning the application of online social networking technology to the provision of mental health services will be explored. The developmental considerations specific to adolescence, compared to adult populations, will be incorporated throughout the literature review.

TEST ANXIETY DEFINED

Within American culture, the term, "anxiety," is used in a variety of ways. Popularly, there are at least four pertinent uses: (a) anxiety as an intransigent personality trait (e.g. *I am an anxious person*), (b) anxiety as a situation-specific response (e.g. *I am anxious during job interviews*), (c) anxiety as an emotion (e.g. *I feel anxious*), and (d) anxiety as an explanation for specific behaviors (e.g. *because I was anxious about the interview, I prepared all my answers beforehand*) (Delprato & McGlynn, 1984). Clinically, the Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV-TR*) details symptoms from several categories of anxiety disorders, ranging from general and pervasive feelings of anxiousness to more situation-specific phobias (American

Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision*, 2000). While test anxiety is not clarified within the DSM-IV-TR as a specific disorder, it may be conceptualized in one of two ways: as a Specific Phobia-Situational Type, or as a subtype of Social Phobia (also known as Social Anxiety Disorder).

According to the American Psychiatric Association (APA), a specific phobia is most notably recognized by the following symptoms:

1. a persistent fear of specific objects or situations;
2. an immediate anxiety response upon exposure to the feared stimulus;
3. the fear may be recognized as unreasonable, although this is not often the case in children;
4. most frequently, the phobic stimulus is avoided, or tolerated with dread; and
5. the fear interferes significantly with an individual's normal routine or occupational/academic functioning (*DSM-IV-TR*, 2000).

If it is not deemed to be a symptom of a broader Social Phobia (see below), test anxiety may be explained as a situation-specific phobia in which the individual experiences extreme anxiety when placed within testing situations. The typical age of onset for a Specific Phobia, Situational type, is bimodal, occurring in either childhood or the mid-20s, and is often precipitated by the occurrence of a trauma related to the feared stimulus. A child who develops test anxiety may have experienced severe negative outcomes as a result of failing an examination (e.g. academic retention, punishment). The trauma may

be experienced indirectly, as well—parents who hope to motivate a child into academic success by warning about the results of academic failure, may, ironically, help instill that child with a phobic reaction to tests (Zeidner, 1998).

The appearance of test anxiety symptoms, as described above, may also indicate the presence of a broader concern: Social Phobia (*DSM-IV-TR*, 2000). Individuals with Social Phobia frequently anticipate and fear the potential embarrassment that comes from social interactions and performance situations. This fear of being judged negatively by others often extends to cover situations involving indirect evaluation, such as tests. The onset of Social Phobia generally occurs in adolescence, although sometimes in earlier childhood. Prevalence estimates vary from 3% to 13%. Unlike a Specific Phobia, the anxiety experienced by an individual with Social Phobia is not restricted to one specific stimulus, but rather may result from any situation in which personal embarrassment is deemed to be likely.

Whether test anxiety exists as a unique phobia, or is symptomatic of a more general social anxiety disorder, is not clear. In fact, the lack of a definite place for test anxiety within the DSM may speak to the broad nature of the impact of the disorder. The threat inherent in tests is simultaneously social (e.g. "the other kids will think I'm stupid if I fail this test"), academic (e.g. "I will not get into a good college if I fail this test"), and personal (e.g. "I am stupid if I fail this test") (Friedman & Bendas-Jacob, 1997), and so is not readily categorized within existing criteria.

FACILITATIVE VS. DEBILITATIVE TEST ANXIETY

To be clear, not all test anxiety is bad. The earliest authors to discuss test anxiety as a unique construct described two types of test anxiety: *facilitative* and *debilitative*. According to Mandler and S. B. Sarason (1952) test anxiety may be helpful for individuals who have not learned to cope with that anxiety using test-interfering behaviors. For these people, test anxiety can be productive and motivating. Test anxiety becomes debilitating, though, when it elicits behaviors that get in the way of good test performance. Mandler and Sarason's conceptualization of two types of test anxiety was directly derived from much earlier work. In their formational work, Yerkes and Dodson (1908) described the effects of electrical stimulation on the performance of rats in a maze, observing that lower level stimulation seemed to increase performance, while higher levels resulted in performance deficits. From this work came the concept of the anxiety-performance curve (see Figure 1).

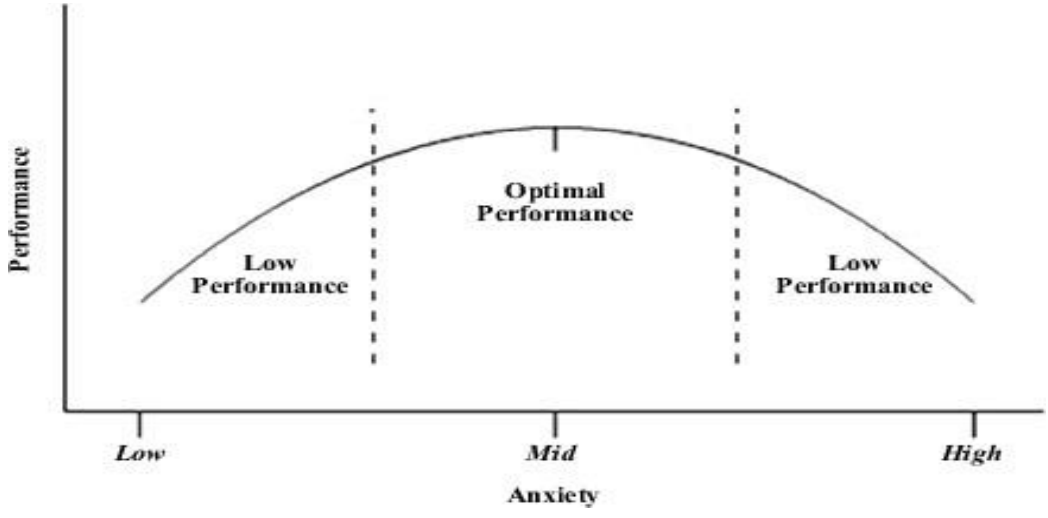

Figure 1. The anxiety-performance curve.

Within the broad test anxiety literature, though, the distinction between facilitative and debilitative test anxiety is rarely made, as most researchers are concerned with the process of reducing harmful, rather than increasing helpful, anxiety. As such, the specific construct of facilitative test anxiety is relatively ill-defined, as compared to its counterpart. As the focus of this current review is to build a framework within which to evaluate an intervention for debilitative test anxiety, this author will not attempt to elucidate both concepts. Unless otherwise specified, any further reference to test anxiety should be assumed to mean "debilitative test anxiety."

COMPONENTS OF TEST ANXIETY

Test anxiety is rarely specifically conceptualized within the broader literature base as a DSM-defined disorder, but rather as a construct comprised of two principle components, first named and defined by Leibert and Morris (1967). *Worry*, test anxiety's cognitive construct, is considered to be somewhat chronic and has been likened to the test taker's "internal dialogue" (Meichenbaum & Butler, 1980, p. 190). How *worry* presents itself depends on the individual and the situation, and may be characterized as a wide variety of irksome thoughts:

- concerns about personal test performance,
- unproductive and excessive pondering of multiple answer choices,
- a preoccupation with the visible signs of anxiety, such as sweating or blushing,
- excessive rumination over the worst-case outcomes of poor test performance, and

- overt self-deprecating thoughts, such as calling oneself "stupid."

Emotionality, the physically experienced component of test anxiety, on the other hand, describes the in-the-moment, affective arousal brought about by a perceived environmental threat (Deffenbacher, 1980). These two components – worry and emotionality – have been directly likened to Spielberger's (1966) *trait* and *state* anxieties, respectively (Wine, 1982). While worry and emotionality both contribute to the performance deficits observed in those with test anxiety, worry is believed to be the more negative of the two factors, as it directly draws from available cognitive resources (Meijer, 2001).

While not often discussed as a unique component, *lack of confidence* has long been considered to be an aspect of test anxiety, but is often subsumed under *worry* (Spielberger, Gonzalez, Taylor, Anton, Algaze, Ross & Westberry, 1980). *Lack of confidence* may differ somewhat in that it refers less to specific cognitions that may be occurring within the testing environment and more to an individual's intrapersonal sense of preparedness to deal with the perceived threat in the environment. Confirmatory factor analysis does support the inclusion of this third component in models of test anxiety as a unique one (Hodapp & Benson, 1997).

DEVELOPMENT OF TEST ANXIETY

As noted below, few theoretical models describing the interaction between test anxiety and academic performance seek to explain the intra-individual etiology of the disorder. This is likely, in part, because the potential causes of test anxiety are many, vary between individuals, and may occur at various points in a person's lifespan. To describe the development of test anxiety is a complex undertaking. In his extensive review of the literature, Zeidner (1998) sought to summarize the various existing theories and research seeking to address this issue, and noted that the supported antecedents of test anxiety tend to fall into three general categories: biological constitution, early childhood experiences and socialization, and difference in educational environment.

Biological Constitution

At its most rudimentary level, the fear response is a natural animal reaction to transient environmental threats (Sapolsky, 1994). In that the feeling of fear facilitates the *fight or flight* response, which aids in survival, it is a temporarily protective emotion (Grillon, 2008). Anxiety, defined as a sustained heightened sensitivity to dangers within the environment, is also protective, in that it offers additional awareness of those aspects of our surroundings which might cause us harm (Eysenck, 1982). There are those individuals, however, who are born with a natural propensity toward overestimating the number or level of threat of various environmental stimuli (Zeidner, 1998). Research has shown that the predisposition to develop anxiety disorders is heritable, with certain children born with a greater inclination to interpret threat in environmental stimuli (Albano, Chorpita, & Barlow, 2003). That being said, it is unlikely that genetic

predisposition to anxiety contributes entirely to the development of test anxiety, but rather works with a variety of environmental factors to lead eventually to the disorder (Krohne, 1980).

Early childhood experiences

There are a number of studies and models pertaining to the impact that early childhood experiences may have on the development of a variety of childhood anxiety disorders. Zeidner (1998) collates the predominance of these writings into three theoretical models that have been used to explain the early beginnings of test anxiety: psychodynamic, motivational, and social-learning.

In the earliest of these models, S. B. Sarason, Davidson, Lighthall, Waite, and Ruebush (1960) postulated that test anxiety develops when a young child is placed into an academically evaluative situation in which his performance does not measure up to the expectations of his parents. The parents' resulting anger and disappointment is then internalized by the child. Test anxiety derives from the child's fear that further evaluative situations will evoke further disappointment from his parents, and his implicit desire to avoid facing existing negative feelings. In this model, all evaluative situations are inherently threatening, with greater threat experienced in those situations which most remind the child of that initial failure (e.g. similar academic measure, overcritical teacher reminds child of parents).

Building upon the writings of S. B. Sarason, et al. (1960), Hill (1972) laid the groundwork for motivational models of test anxiety development. Like Sarason, Hill believed that test anxiety derives from early childhood academic experiences in which a

child's academic performance does not live up to the standards set by the parents. Hill additionally theorized that these early failures alter a child's core motivations. Children without test anxiety, he stated, are primarily motivated to achieve success and praise, with a lesser motivation to avoid failure. Children who have been set up for test anxiety by early academic failures are, contrarily, principally motivated to avoid failure, with the motivation to achieve success a distant second. Hill's model predicts the avoidance behavior that is seen as one of the symptoms of test anxiety.

Krohne's (1982) model of anxiety development is based on Bandura's (1977) social learning theory and describes a number of factors in a child's early environment that might put her at risk for the development of test anxiety. According to Krohne, test anxious children are characterized by uniquely negative competence expectancies (i.e. one's belief in one's ability to overcome obstacles and challenges) and consequence expectancies (i.e. one's prediction of situation specific outcomes), both of which are influenced by parental interactions. Parents who do not allow the child autonomy and/or who are overly critical of the child's independent efforts within problem-solving situations tend to foster in the child a belief that he cannot overcome challenges in the problem-solving arena on his own. Furthermore, punishment for failures, as opposed to rewards for successes, instills in a child the belief that the environment tends to respond negatively and punitively. Similarly, parents who are inconsistent with their responses—who intermittently punish and reward identical behaviors—instill in their children an external locus of control and a belief that their environment is chaotic and unpredictable. These beliefs held by the child—that she is not in control of her environment, that her

environment is primarily negative, and that she does not have the skills to overcome obstacles in this environment—work together to form the foundation for anxiety.

All three of these theories hold the core assumption that a child's early socialization experiences, primarily those involving parental interactions, may set the stage for anxiety. If the negative or chaotic experiences primarily revolve around evaluative or academic situations, situation-specific test anxiety may be the result.

School Environment

According to Zeidner (1998), many aspects of a child's learning environment may foster feelings of anxiety associated with academic performance, or exacerbate already existing fears. A particularly competitive classroom, in which student performance relative to others is valued above student mastery of material, may reduce a child's sense of ability and heighten fears of failure. Classrooms which are evaluation-oriented (i.e. the child is primarily motivated to achieve based on a teacher evaluation, such as grades) as opposed to achievement oriented (i.e. the child is motivated by a sense of achievement and accomplishment) may enhance this sense of competitiveness in children. Furthermore, a grading system may represent a very real threat to older children as low grade point averages may hinder the child's ability to enter college and/or obtain a desired job. Ability grouping, which places high-achieving and low-achieving students on separate academic tracks, reduces feelings of competency in children in the low-ability tracks. Finally, teachers who are critical in their evaluations or set overly low expectations for students who have demonstrated past poor academic performance may exacerbate feelings of anxiety that were sparked by similar behaviors in parents.

MODELS OF TEST ANXIETY

Many theoretical models have been offered to describe exactly how test anxiety affects and is affected by test performance. The earliest test anxiety theorists attempted to explain the detrimental impact of the disorder as the result of an "anxiety drive state", in which feelings of high anxiety produce an affective arousal that depresses performance on academic tasks (Mandler & S. B. Sarason, 1952). *Drive states*, from which the theory derives its name, describe the various motivations experienced by an individual under certain situations. In the case of test anxiety, an individual experiences competing drives to focus on either the examination or the physiological effects of anxiety. While groundbreaking, drive state theory, and its practical implications, was called into question by various research conducted in the mid-1960s. As such, it is rarely, if ever, used as a basis of test anxiety study today (Zeidner, 1998).

Subsequent test anxiety researchers challenged the drive-state theorists and posited two principle, competing theories to describe the disorder's detrimental mechanisms. The first of these, the *interference* model (Wine, 1971), conceptualized the poor examination performance of test anxious individuals as the result of competing cognitive processes. While the predominate theory for many years, the interference model lost some ground in the 70s and 80s due to research indicating that test anxiety may be in part the effect of poor test ability, rather than the cause. In response, the *skills deficit* model (Lin & McKeachie, 1970) hypothesizes that individuals with poor test-taking skills, resulting from both below-average aptitude and a lack of learned test

preparation behaviors, experience a justified sense of anxiety when placed in an examination situation for which they are unprepared.

More recent researchers, seeing compatibility, rather than exclusivity, in the competing test anxiety literature, have attempted to coalesce these two theories into more comprehensive models. The *dual-deficit* (Meichenbaum & Butler, 1980), *social learning* (Bandura, 1977, 1989), and *transactional-process* (Spielberger & Vagg, 1995) theories have all been applied to the development of comprehensive models of test anxiety. While built on the foundations of the interference and skills deficit models, each of these three theories presents a unique conceptualization of the causes and effects of test anxiety. The five currently applied models of test anxiety, along with their respective empirical support, are described in more detail below.

Interference Model

An additional criticism of the drive state model of test anxiety was raised by Wine (1971) in a review of the existing test anxiety literature of the day. While analyzing their 1967 description of the two principle components of test anxiety, Liebert and Morris conducted a series of studies (Liebert & Morris, 1967; Morris & Liebert, 1969, 1970) revealing that while the cognitive component, worry, is significantly negatively associated with performance on tests, the same is not true for the affective component, emotionality. Wine concluded that the existing drive models of test anxiety, which tended to interpret academic deficits associated with the disorder as resulting from equal cognitive and affective factors, were insufficient. Likewise were existing treatments, such as systematic desensitization and relaxation, which focused solely on reducing that

affective arousal. In their stead, Wine proposed a model describing worry as the sole component of test anxiety worthy of theoretical attention.

The interference model supports the notion that, within an examination situation, the attention of individuals with high test anxiety is split between the demands of the task and negative preoccupations about the self (Birenbaum & Nasser, 1994). As a result, any natural capacity possessed by a highly test-anxious person for performing on a given examination is reduced. In a later writing, Wine (1980) argued for the use of the descriptive phrase "cognitive-attentional construct" to refer to this conceptualization of test anxiety. In her view, the cognitive-attentional model of test anxiety maintains that various cognitive factors such as worry and other off-task thoughts detract from available cognitive resources, thus impairing cognitive performance. This latter term now appears to be used synonymously with "interference model" in test anxiety literature. Figure 2 depicts the hypothetical effects of test anxiety on the cognitive resources of a test anxious individual, as described by the interference model.

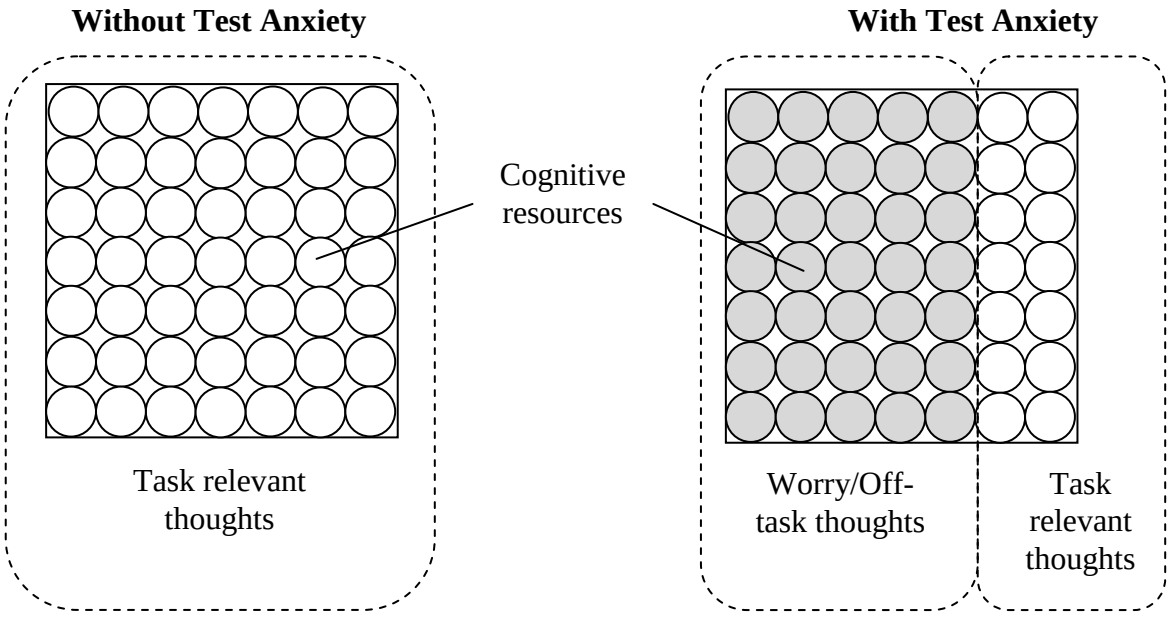

Figure 2. Cognitive resource allotment for individuals with and without test anxiety.

In an important contribution to the foundational research supporting this model, Holroyd, Westbrook, Wolf and Badhorn (1978) sought to distinguish between the impact of self-reported autonomic arousal and that of actual autonomic arousal in test anxious students. Using a sample of 72 college freshman women, Holroyd, et al., demonstrated that, as indicated by prior research, students with high test anxiety report significantly greater levels of autonomic arousal within a performance environment than do those with low test anxiety. In a move unique to this study, though, researchers simultaneously monitored physiological signs of arousal (e.g. electrodermal activity, heart rate) in both high and low test anxious subjects and found no significant difference between the two groups. From this, they concluded that high test anxious individuals do not actually experience greater arousal during a test, but rather tend to focus more on the normal

arousal they are experiencing. According to Holroyd, et al., it is this focus—the "cognitions of arousal" (p. 443)—rather than the arousal itself that seems to interfere with actual test performance.

The cognitive-attentional model has empirical support in more recent research. Testing the effects of performance stress on working memory in a sample of 80 undergraduate students at Michigan State University, Beilock and Carr (2004) found that increased stress heightens the occurrence of intrusive worries, placing demands on working memory that reduce expected performance. These detrimental effects of performance stress were most pronounced in participants with the greatest working memory aptitudes, leading the researchers to conclude, "performance pressure harms individuals most qualified to succeed by consuming the working memory capacity that they rely upon for their superior performance" (p. 101).

There is also evidence to suggest that anxiety works to inhibit an individual's capacity for selective attention. During a series of trials, Mogg, Bradley, Miller, and White (1995) demonstrated that persons with generalized anxiety disorder (GAD) experience more cognitive disruption, as measured by performance on a color-naming Stroop task, when presented with threatening words, than did their non-clinical counterparts. From this, the researchers concluded that individuals with GAD are less capable of filtering threatening stimuli from their environment and find their capacity for cognitive performance inhibited as a result. Other researchers have shown that these effects hold for persistent trait anxiety (Braunstein-Bercovitz, 2000) as well as the more

situation-specific state anxiety (Braunstein-Bercovitz, Dimentman-Ashkenazi, & Lubow, 2001).

Skills Deficit Model

At the same time that the interference model was beginning to take hold, various studies concerning the relationship between anxiety and study skills were completed and would set the stage for an eventual competing theory. Desiderato and Koskinen (1969) found a significant inverse relationship between levels of academic anxiety and good study habits in a sample of college freshman women. Mitchell and Ng (1972) discovered that treatments for test anxiety that positively impact a student's GPA also result in an improvement in study skills. Wittmaier (1972) revealed a significant link between high test anxiety and poor study skills—a link not demonstrated in low test anxiety subjects. Findings such as these led various researchers to question the image of the test anxious student promoted by the interference model—that of the student who knows the material, but "freezes up" during test administration (Culler & Holahan, 1980).

The skills deficit model of test anxiety is based on the belief that certain test takers lack some of the requisite skills necessary to perform well on tests. Their reduced performance in evaluative situations results from this lack, while their anxiety results from an awareness of their poor preparedness for the given task (Birenbaum & Nasser, 1994). As seen in Figure 3, under this model, test anxiety is less the cause of poor performance than the result (Musch & Broder, 1999).

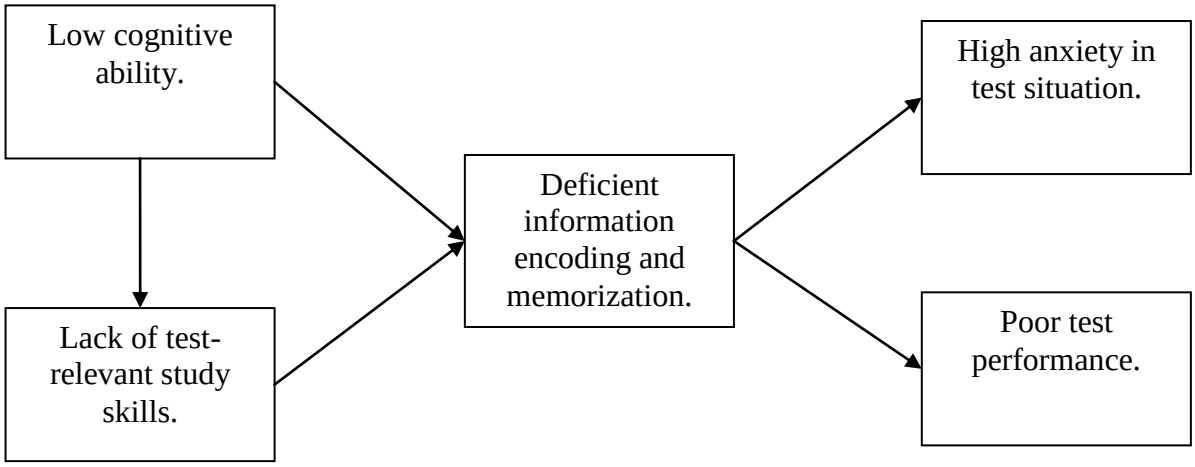

Figure 3. Deficit model of test anxiety.

Although the deficit model proposes a unique conceptualization of test anxiety, the poor test performance of highly test-anxious individuals in comparison to those with low test anxiety has been "almost exclusively interpreted within the so-called *interference model*" (Musch & Broder, 1999, p. 106). A typical treatment approach based on the deficit model would attempt to remediate an individual's initial lack of academic/study/test-taking skills. Meta-analysis has shown, though, that study skills training, alone, fails to result in both a significant reduction in test anxiety symptoms (Ergene, 2003) as well as any positive improvement in academic indicators, such as GPA (Hembree, 1988). These findings suggest that the skills deficit model, by itself, fails to adequately explain the detrimental effects of test anxiety.

Dual-Deficit Model

While the interference model and deficit model may appear, in theory, to contradict one another, it has been argued that the two models work in a complementary fashion (Birenbaum & Nasser, 1994). Treatments based solely on either a cognitive-attentional model or a skills deficit model have not been shown to be as effective at reducing test-anxiety symptoms as those treatments reflecting an understanding of both models (Musch & Broder, 1999). As neither the interference nor deficit models alone appear to be sufficient explanations of the mode by which test anxiety effects reduce performance in evaluative situations, more wide-ranging models have evolved.

Meichenbaum and Butler (1980) described the "dual-deficit" model as a more complete illustration of how test anxiety impacts test performance. Proponents of this model allow that anxiety affects test performance through cognitive impairment, as in the cognitive-attentional model. The second deficit occurs when an individual's test anxiety inhibits that person's willingness or ability to prepare for examinations—the avoidance behavior that comprises one of the core symptoms of test anxiety. Through this interaction, a test anxious individual, already armed with reduced cognitive capacity, *a la* the interference model, must face an assessment he or she is poorly-prepared to take. Once in the testing situation, this individual's worst-case-scenario concerns are quickly confirmed, thereby practically assuring increased anxiety during future examinations. One can imagine the downward spiral this scenario might produce. Because it seeks to explain not only a test anxious individual's cognitive and autonomic responses to anxiety producing situations, but also that individual's behavioral response to the anxiety, the

dual-deficit model of test anxiety has been referred to as more "comprehensive" (Smith, Arnkoff, & Wright, 1990) than both the cognitive-attentional and skills deficit models. Figure 4 illustrates the relationship among the dual-deficit model's core components.

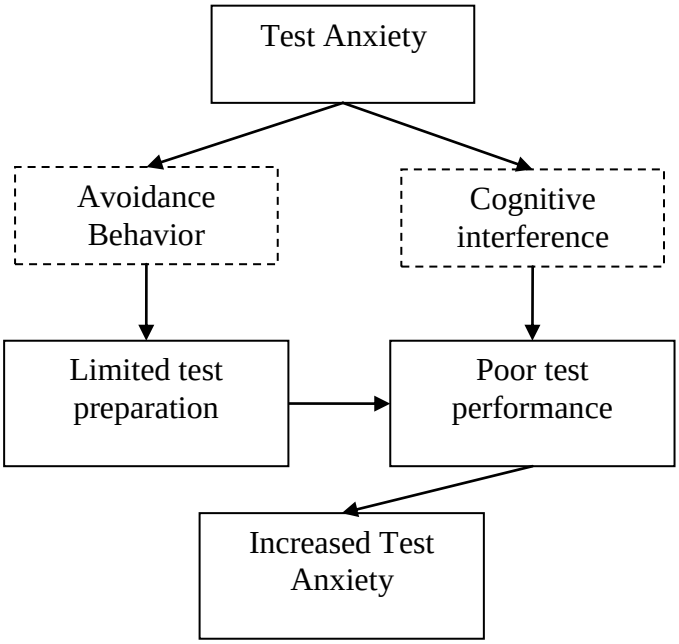

Figure 4. Dual-deficit model of test anxiety.

Meichenbaum and Butler (1980) discuss the research support for three specific categories of behaviors common to test anxious individuals: pre-examination study behaviors, interpersonal behaviors, and actual test-taking behavior. First, it has been shown that individuals with high test anxiety tend to possess poor study habits, with the causal relationship between test anxiety and poor study habits likely being reciprocal (Desiderato & Koskinen, 1969). Second, there is research to suggest that the interpersonal skills of people preparing for examinations might differ between low-test-

anxious and high-test-anxious individuals, with those who have low reported test anxiety being more willing to seek out cooperative or social preparation situations (Mechanic, 1962). Finally, high test-anxious individuals appear to benefit more from observing the cognitive modeling of specific problem-solving rules than do low test-anxious individuals (Bruch, 1978).

Social Learning Model

The social learning theory, as described by Bandura (1977, 1989), may also be used to explain the relationship between anxiety and poor academic performance. According to this model, prior poor performance on academic measures may have a profound impact on an individual's self-efficacy—beliefs held concerning personal ability to control events affecting one's life—in a number of ways. Individuals who have experienced failure may realize a reduced sense of faith not only in their ability to succeed at the given task, but also in their ability to cope with both the environmental threats caused by the task as well as their own worries about that threat. Lowered self-efficacy in each of these domains, by means of lowered standards and motivation, as well as increased worry and affective arousal, will eventually lead to further impeded performance on future tests. See Figure 5 below for an illustration of this model.

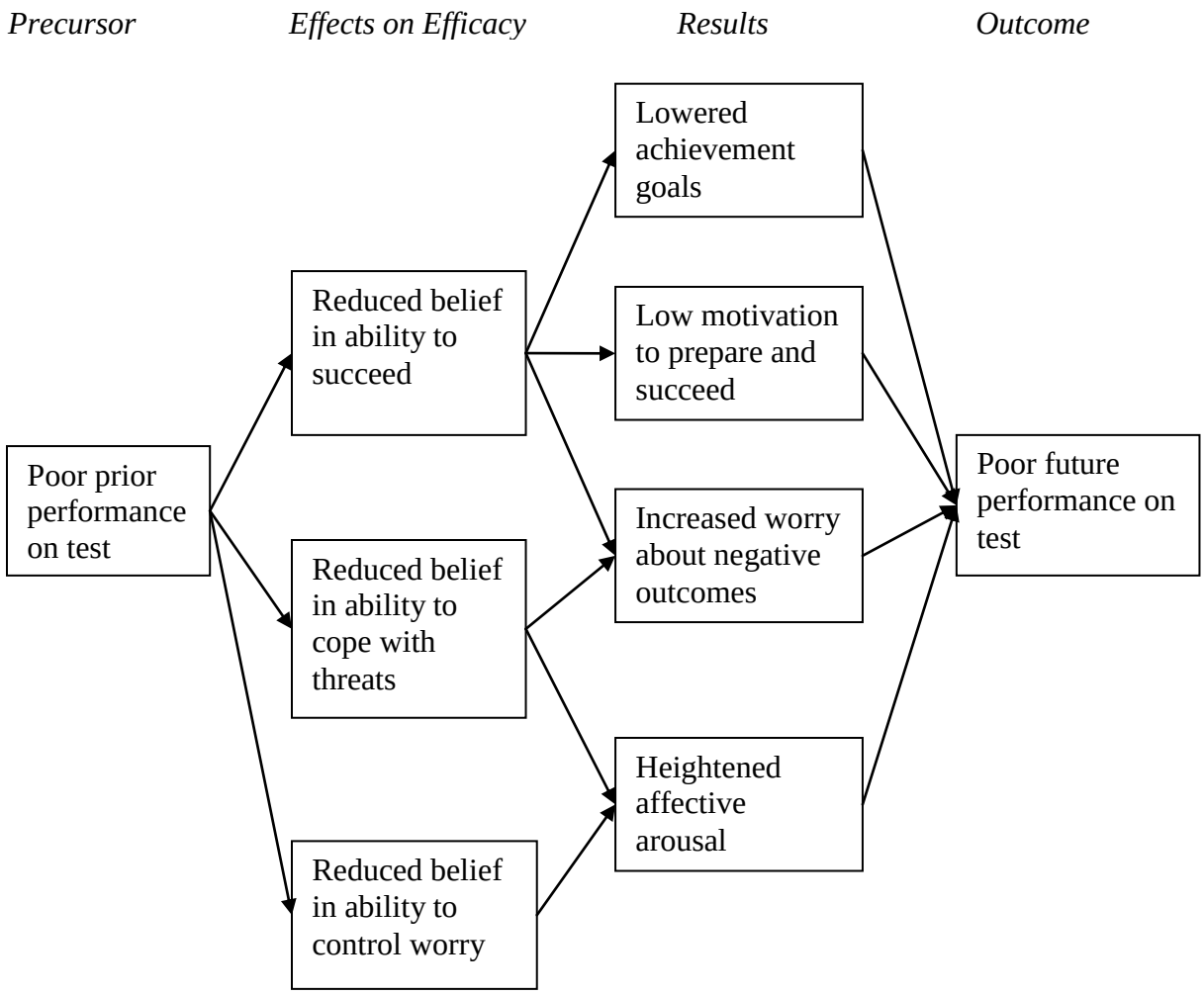

Figure 5. Social learning model of test anxiety.

Multiple studies have illustrated the importance of self-efficacy as a relevant variable in models of test anxiety. Low self-efficacy has been found to predict both future test anxiety (Hunsley, 1985) as well as low GPA (Lent, Brown, & Larkin, 1984) in undergraduate samples. In one multimodal comparison study, Smith, Arnkoff, and Wright (1990) analyzed the abilities of each of the social learning, cognitive-attentional,

and skills deficit models to predict the existence of test anxiety in college undergraduates. Using hierarchical regression to compare model-specific variables (e.g. self-efficacy, study skills, worry indicators), researchers assessed the variance explained by each of the model's unique predictors. Finding that all three models proved to be a significant source of variance in subjects GPA and test anxiety symptoms, Smith, et al., concluded that promising counseling programs would be multimodal in nature, including a direct approach to improving a client's sense of self-efficacy.

Transactional Process Model

Faced with multiple disparate conceptualizations, Spielberger and Vagg (1995) proposed a synthesis of these various models of test anxiety—the *transactional process* model. This model attempts to explain how varieties of individual experience interact with differences in specific testing situations to result in the range of behavioral outcomes observable in such situations. Figure 6 depicts their model.

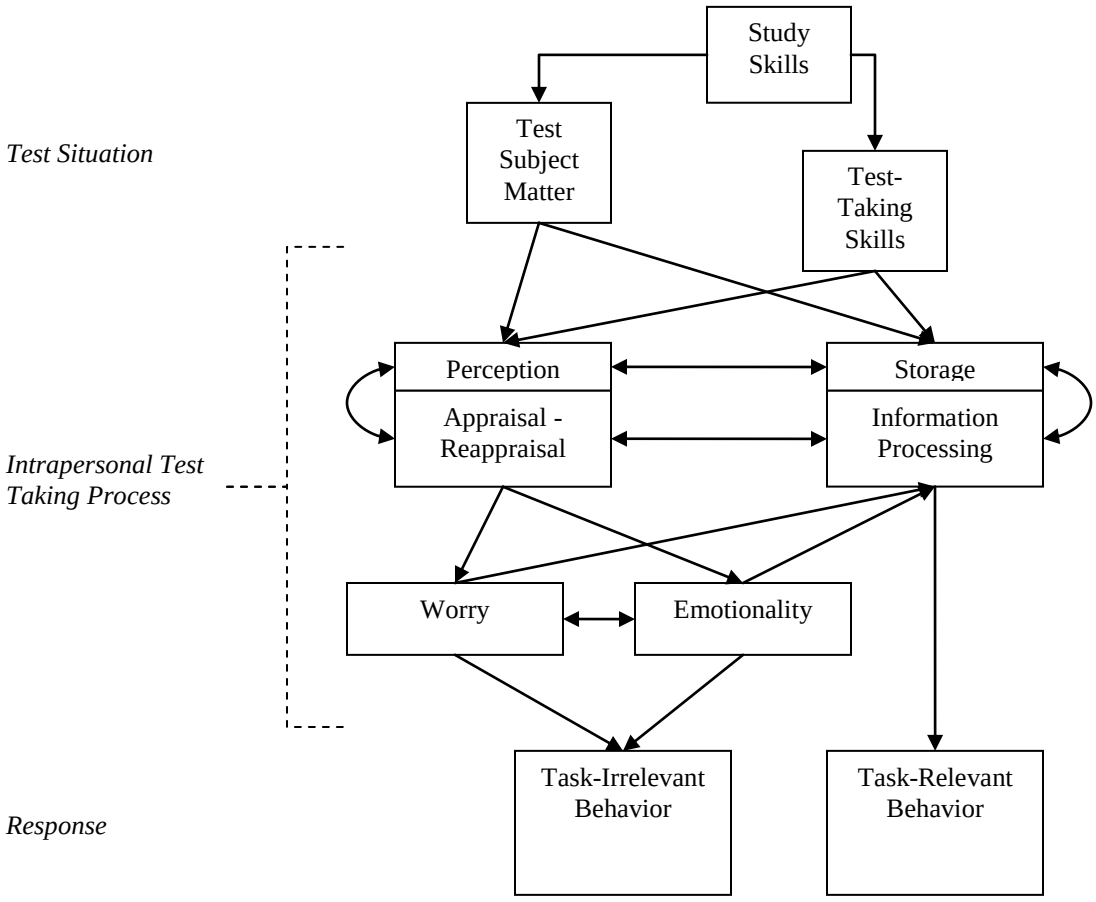

Figure 6. Transactional process model of test anxiety (adapted from Spielberger and Vagg, 1995).

The transactional process model would appear to be the most comprehensive model of test anxiety in that it accommodates aspects of all previously discussed models, as well as illustrates the impact of anxiety before, during, and after an examination. According to the transactional process model, when a person is placed within a testing situation, the demands of that specific situation vary according to that person's study skills and/or preparation prior to the examination, the specific questions asked on the examination, and the individual's general test-taking skills. Once the examination

begins, intrapersonal qualities affect how a person perceives the demands of the situations and his/her own ability to handle those demands, the level of worry and emotionality felt within the situation, and how all of this impacts the individual's cognitive capacity and efficiency. Finally, this model allows for two outcomes from this process: task relevant behavior, and task irrelevant behavior.

The transactional process model offers an explanation of the differences in the reactions of test-anxious individuals to a variety of evaluative situations. Within this model, how intense the anxious reaction to a testing situation becomes depends on a number of factors. As in the skills deficit model, test anxious individuals may have a fundamental lack of test-taking or study skills, which could cause a heightened anxiety reaction. Comparable to the cognitive-attentional model, any anxiety felt within the situation may exacerbate the anxious emotionality or off-task cognitions, sapping the available cognitive resources. Similar to the social learning theory construct of self-efficacy, perceptions of personal ability to handle the demands of the task impact the level of perceived environmental threat, thereby also affecting anxiety levels. This model nicely allows for the reciprocal nature of these intrapersonal processes, as worry and emotionality interfere with test performance, which in turn produces more worry and emotionality.

THERAPEUTIC INTERVENTIONS FOR TEST ANXIETY

One of the principle applications of each of the various models of test anxiety is the development of appropriate treatments. Models based on anxiety drive state theory, which place an emphasis on the affective arousal experienced by the test anxious

individual, would lend support to therapeutic interventions that focus on alleviating those physiological responses. Contrarily, the interference model would advocate for interventions focused solely on correcting cognitive-attentional focus within the testing environment. Skills deficit models promote remediating test anxiety symptoms by teaching test anxious individuals more appropriate study and test-taking skills. Finally, interactional models, such as the dual deficit and transactional process, seem to demand a multimodal treatment approach that works to provide the test anxious with good test-taking strategy in addition to some cognitive or behavioral skills designed to provide relief from both the worry and emotionality experienced in a testing environment. Table 1 provides an overview of the categories of treatment typically used to relieve the symptoms and other negative effects (e.g. academic underperformance) associated with test anxiety.

Table 1: Test Anxiety Intervention Categories

Intervention Type	Therapeutic Focus	Examples
Behavioral	Autonomic physiological arousal	Progressive deep muscle relaxation, Systematic desensitization
Cognitive	Worry	Redirecting self-statements, Cognitive restructuring
Cognitive-Behavioral	Worry & Emotionality	Systematic desensitization, Reappraisal of thoughts, Cognitive restructuring
Study Skills	Skills deficit	Time management, SQ3R
Test-Taking Skills	Inappropriate testing strategy	Active reading, Process of elimination

Note. Adapted from Cizek & Burg (2006)

Behavioral Interventions

Behavioral interventions for test anxiety primarily focus on reducing the autonomic physiological arousal associated with the emotional component of test anxiety. Systematic desensitization, perhaps the most widely-used test anxiety behavioral treatment (Hembree, 1988), works by placing test-anxious individuals in a series of increasingly stressful examination or examination-like scenarios with the intent that those individuals become used to being in such situations, with physiological arousal reducing as a result. Other behavioral techniques, such as deep muscle relaxation, attempt to help people develop an association between testing situations and a physically relaxed state.

Both the Ergene (2003) and Hembree (1988) meta-analyses of test anxiety treatment literature support the use of behavioral interventions for reducing feelings of affective arousal brought about by anxiety. Looking only at the ability of the treatment to reduce emotionality, systematic desensitization was found to have a large effect size (Ergene, 2003). Zeidner (1998) is cautious when interpreting this data, however, as it appears that the subjective relief experienced by the test anxious individual following behavioral treatment, alone, does not necessarily equate to academic gains. This appears to be a long-standing concern with behavioral treatment, as earlier reviews of the literature made similar notes (Allen, 1972).

Cognitive Interventions

Cognitive interventions, in opposition to behavioral, are most concerned with intervening prior to anxiety-induced physiological arousal by countering the test anxiety component of worry. Such interventions tend to teach test anxious individuals to engage

in cognitions that are incompatible with task-irrelevant cognitions, or try to help those individuals modify irrational beliefs that lead to worrisome thoughts (Fletcher & Spielberger, 1995). Forgoing the ability to stop worries from intruding altogether, cognitive therapies might also help test-anxious individuals learn to cope with those worries through the use of rational self-statements.

In 1988, Hembree, defining cognitive treatments as those focused solely on alleviating worry, but without a further description of the specific cognitive techniques used, reported cognitive therapies to be ineffective at reducing test anxiety symptoms. These results were directly contradicted five years later by Ergene (2003), who reported at least a moderate effect size for cognitive therapies, in general. Parceling out specific techniques used, this second meta-analysis discovered the greatest effect size of any therapeutic technique was obtained by Cognitive Restructuring.

Cognitive-Behavioral Interventions

Cognitive-behavioral interventions rely on a combination of behavioral and cognitive techniques to counteract the effects of both the worry and emotionality components of test anxiety. Two common methods of psychotherapy grounded in cognitive-behavioral methods are Ellis's rational-emotive therapy (RET; Ellis, 1962) and Beck's cognitive behavioral therapy (CBT; Beck, 1995). Interventions employing cognitive-behavioral strategies attempt to help clients develop cognitive techniques to cope with the negative psychosocial symptoms of disorders such as depression and anxiety, and then practice those techniques in real life. Cognitive behavioral therapists may also work with clients to help them judge the rational proof behind distressing

beliefs (e.g. nobody likes me, I fail at everything I try) and adjust the daily behaviors that are affected by those beliefs (e.g. avoiding other people, neglecting to put forth effort in projects, respectively).

In his meta-analysis, Ergene (2003) noted a wide range of reported outcomes of cognitive-behavioral based treatments for test anxiety. Without the addition of other strategies, a cognitive-behavioral approach, alone, resulted in very small effect sizes for reducing test anxiety symptoms. Combined with skill-based techniques (e.g. cognitive and study skills), cognitive-behavioral based treatments resulted in high effect sizes. In an earlier meta-analysis, Hembree (1988) found cognitive-behavioral treatments, not combined with outside strategies, to be associated with not only a significant reduction in test anxiety symptoms, but also a significant improvement in test performance and GPA.

Study Skills and Test Strategy Interventions

Intervention programs based on the deficit model of test anxiety attempt to intercede at the point of the test taker's specific deficit. Rooted in the assumption that test anxiety arises, in part, from inadequate knowledge of examination material, study skills programs work by helping test takers improve their test preparation behaviors (Naveh-Benjamin, 1991). Test-taking strategy programs, on the other hand, help teach students general tactics for performing successfully on standardized exams. Such tactics would include applying appropriate pacing during timed sections and making savvy use of the process of elimination (The Princeton Review, 2008).

There is little evidence to suggest that study skills training, alone, is effective at either reducing test anxiety symptoms or improving academic performance in those

individuals with high test anxiety (Ergene, 2003; Hembree, 1988). Research does support the use of study skills training as a component in multimodal interventions, however. Study skills training combined with behavioral techniques have been found to be more effective at reducing anxiety than either individual component (Hembree, 1988; Mitchell & Ng, 1972). Furthermore, for those individuals who are high in test anxiety but possess poor study skills prior to treatment, the inclusion of a study skills training component in a cognitive-behavioral program has been found to result in improved academic performance (Zeidner, 1998; Hembree, 1988).

Comprehensive Interventions

As indicated by the most recent and, arguably, most comprehensive model of test anxiety—the transactional process model—there are many factors contributing to the academic detriments experienced by those individuals with the disorder. Depending on the individual, there may be a fundamental lack of test taking strategies and study skills that contribute to both academic underperformance and heightened anxiety *in vivo*, as in the skills deficit model. This relationship may be reciprocal, however, rather than linear. One of the hallmarks of anxiety, in any form, is the propensity for avoidance behavior (Beck, 1995). By avoiding preparatory situations that might lead to academic improvement, test anxious students merely serve to increase any existing skills deficit and, eventually, their own sense of anxiety. Within the actual testing environment, cognitive inattention serves to detract from the cognitive resources available to contribute to the task. At the same time, a heightened sense of affective arousal distracts cognitive attention away from the appropriate source—the test.

Test anxiety literature supports the use of multimodal treatments—those which include cognitive, behavioral, social learning, and study skills components—for the joint purposes of reducing test anxiety and improving academic performance. The Hembree (1988) meta-analysis revealed cognitive-behavioral treatments to be significantly associated with reduced test anxiety. While study skills training was not effective at reducing test anxiety, it was, as may be expected, associated with higher GPA in students who had high test anxiety but possessed poor study skills prior to training. Supporting these findings, Ergene (2003) found treatments that combined cognitive techniques with relaxation training, study skills training, or both, to produce the greatest effect sizes in terms of test anxiety symptom reduction. In an extensive review of the first 40 years of test anxiety literature, Zeidner (1995) illustrates the importance of combining treatment techniques. While treatments using only behavioral or cognitive techniques have shown to be effective at reducing test anxiety symptoms, the most effective, and those that are most successful at achieving that elusive outcome of academic improvements, combine cognitive, behavioral, and study skills techniques into one comprehensive intervention.

COMPUTER FACILITATED MENTAL HEALTH

As we progress further into the 21st century, the healthcare industry has established a variety of offerings for the computer-savvy individual. Websites such as WebMD (www.WebMD.com) offer detailed information and advice concerning the at-home treatment of physical maladies and symptoms. Even delicate physical procedures have been adapted to fit the growing scope of an online world, as internet-connected robots are controlled by distant human surgeons—a burgeoning field known as

"telemedicine." The field of psychology, too, has made it a point of investigating the potential benefit to be found in the therapeutic use of electronic media.

Online Counseling

There are numerous online counseling resources available for those who wish to pursue them (e.g. www.onlinecounseling.org, www.counselingpros.com, www.family-counseling.org). In summarizing the variety of available online resources, Elleven and Allen (2004) describe two general categories of service delivery: synchronous, which makes use of real-time "chat" technology, and asynchronous, which generally occurs through email. Table 2 summarizes the available online service delivery methods, as described by Elleven and Allen.

Table 2: Available Online Counseling Media.

Service Method	Pros	Cons
Email	Widely available. Accessible through computer or handheld electronic device.	Potentially long therapist response times. Encryption method must be used to ensure confidentiality.
Chat room	Allows for couples/group meetings. Immediate therapist response.	Password protection necessary to ensure confidentiality
Instant Message	Widely used by younger clients. Immediate therapist response. Required software freely available. Encrypted software available.	Encryption necessary to maintain confidentiality. May be necessary to install additional software on client's computer.
Video Conference	Allows for face-to-face meeting with therapist. Required technology (see *Cons*) becoming standard on new computers.	High-speed Internet connection required by both therapist and client. Requisite software, camera, and microphone potentially increase start-up cost for both therapist and client.

Regardless of the chosen method of delivery, online counseling mimics the traditional therapy session by connecting the client with a human therapist. While it is necessary to sacrifice some aspects of the therapeutic connection (e.g. nonverbal

communication) with most electronic formats, recent research has shown that the resulting anonymity afforded by online counseling may compensate for this loss (Leibert, Archer, Munson, & York, 2006). This anonymity cannot be taken to extremes—it is advised that therapists still maintain knowledge of their client's identity (Krause, Jack, & Stricker, 2004). That being said, the lack of a face-to-face meeting may actually increase counseling investment and participation for clients who have body issues (Rochlen, Zack, & Speyer, 2004), or are introverted and/or social phobic (Amichai-Hamburger, Wainapul, & Fox, 2002).

A controversy is currently at hand within the profession of psychology, one related to a concern that electronic treatment modalities over a computer may essentially replace the psychotherapist (Cavanagh & Shapiro, 2004). Of course, the controversy makes sense: if the interpersonal connection between client and therapist is integral to effective treatment (Krupnick, Sotsky, Elkin, Simmens, Moyer, Watkins, & Pilkonis, 1996), and that connection is lost, then the treatment suffers. Central to this argument, though, is a key assumption: that electronic media are not capable of simulating a convincing interpersonal connection with a client. On the contrary, there is reason to believe that online counseling modalities may, in fact, be capable of fostering the same working alliance ideally found in face-to-face meetings. Cook and Doyle (2002) compared results on the Working Alliance Inventory (WAI; Bordin, 1979) between clients receiving online text-based counseling (i.e. chat-room or email counseling) and those in traditional counseling. Although their sample size was small (online counseling $n = 16$; traditional counseling $n = 25$), no significant differences were found between the

two groups—both indicated a relatively high sense of working alliance achieved through their respective media.

Computer-based Interventions

Computerized psychotherapeutic interventions have been used to effectively treat a number of mental health concerns. Computerized cognitive behavioral interventions, in particular, have been shown to be successful in treating depression and anxiety (Cavanagh & Shapiro, 2004), with positive clinical outcomes rivaling those attained through traditional treatment methods (Mitchell, Howell, Turnbull, & Murphy, 2005). What follows is an examination of two of the recently-developed, CBT-based, computerized treatments for general and test anxiety that have shown to be effective at reducing symptoms without the need for direct therapist contact.

Beating the Blues™.

Beating the Blues (*BtB*) is a wholly computer-based CBT intervention designed to help individuals with depression and/or anxiety. This nine session intervention consists of one 15-minute introductory session followed by eight 50-minute work sessions. During each session, clients receiving treatment through the *BtB* program are exposed to video vignettes of individuals with either anxiety or depression, depending on the client's diagnosis. In each vignette, cognitive-behavioral techniques are modeled for the client, who is then offered the opportunity to try out the techniques through interactive functions built into the program. Through *BtB*, clients are assigned homework and provided feedback as to their performance. Due to the proprietary nature of this particular

intervention, however, the authors do not describe the specific practice clients receive or how the program provides customized feedback.

Control studies indicate *BtB* is an effective means of reducing symptoms of both depression and general anxiety in a clinical sample. Proudfoot, Goldberg, Mann, Everitt, Marks, and Gray (2003) tracked a sample of patients with clinical depression or anxiety receiving *BtB* (n = 50) through treatment and then over the course of six months and compared changes in symptomology to those of a separate clinical sample receiving only face-to-face CBT intervention (i.e. *treatment as usual*; TAU; n = 51). Compared to those in the TAU group, individuals receiving *BtB* realized an average of 5 points greater improvement on the Beck Depression Inventory (BDI) or 3 on the Beck Anxiety Inventory (BAI), depending on the nature of their initial diagnosis. Not only do these results represent a significant improvement overall, but also in comparison to a face-to-face CBT group. Positive results were obtained within two months and were found to be stable through an eight month follow-up.

BtB represents an example of a computer-based treatment program that has been found to be effective at reducing the psychosocial symptoms associated with anxiety, in general, while maintaining a minimal contact between therapist and client. *BtB* is a program, which, according to its description, required potentially considerable investment during the development phase, and is intended to be implemented as an adjunct to an existing private therapy practice. As such, it may not be a viable treatment option for low-income clients or treatment settings that are of limited financial means, such as schools or community clinics. Many of the advertised benefits of *BtB* (retrieved August

24, 2008, from http://www.ultrasis.com/products/products_beating_the_blues_faq.jsp), however, would generalize to any computer-based treatment option:

- it reduces the length of wait to receive CBT for clients who fit the program's eligibility requirements (i.e. mild to moderate anxiety or depression),
- some patients report preferring interacting with a computer than with a therapist,
- all data can be stored under password protection and encryption, maintaining patient confidentiality, and
- the program can be implemented at a greatly reduced cost per patient, compared to face-to-face treatment meetings (Proudfoot, et al., 2003).

An Internet-based treatment for test anxiety (Orbach, Lindsay, & Grey, 2007).

Although test anxiety has been widely studied and effectively treated for decades, the disorder appears to have been largely overlooked by the developers of computer-based treatments. While the literature concerning the computer-based treatment of test anxiety is sparse, the results of at least one study show promise for progress in this area. Recognizing the lack of test anxiety treatment options available on the Internet, Orbach, Lindsay, & Grey (2007) developed a six-week CBT treatment for the disorder that is delivered entirely through the Internet and foregoes nearly all contact between client and therapist. This as-yet-unnamed program uses Spielberger and Vagg's (1995) transactional process model as its foundational theory, arguing that such a hypothesis supports multimodal treatments as more effective than those based on only one treatment

component (e.g. study skill training, desensitization). As previously discussed, meta-analysis offers support for these beliefs (Ergene, 2003).

Orbach, et al.'s, flexible program presents clients with a series of six computer modules, fully accessible through the Internet. All modules are presented from a common menu and numbered to suggest an order, but instructions clarify that there is no assigned order of approach and participants are free to choose when and how often each module is completed. The modules, in order of presentation, include:

1. a brief introduction to test anxiety,
2. relaxation strategies,
3. cognitive skills,
4. study skills,
5. a hierarchical exposure exercise, and
6. a self-reflective exercise.

In an efficacy study of this program, a four-session placebo control program was also developed by the researchers. This program, also Internet-based, provided participants with general test anxiety information, less thorough instructions in relaxation, and then a number of brain-teasers to use as exposure. Throughout the program, subjects had no contact with a mental health professional, other than through study recruitment and initial confidentiality procedures.

In their publication describing the outcome of their study, Orbach, et al., (2007) compared the reduction in test anxiety symptoms achieved between college-aged members of their treatment group and those realized by same-age peers in the placebo

control. Overall, results were favorable for the treatment program. Using repeated measures ANOVA, the authors determined that, while participants in both groups showed significant improvement in test anxiety symptoms, as measured by the Test Anxiety Inventory (TAI; Spielberger, 1980) and Anxiety Hierarchy Questionnaire (AHQ; Orbach, 2002), there was significantly greater improvement in the treatment group (n = 30) than in the control (n = 28). Treatment group effect sizes were large for both measures: 0.88 and 1.28, respectively. In the discussion of their findings, the authors noted that these effect sizes are greater than those realized by clinician-delivered CBT treatments, as reported by the Ergene (2003) meta-analysis. A group-administered intelligence test, the Alice Heim Tests of General Reasoning (AH; Heim, Watts, & Simmons, 1974) was used to estimate test performance pre- and post- intervention. While results of the repeated-measures ANOVA did indicate a significant improvement between first and last administration of this measure, the results were not significantly different between the treatment and control groups.

The results of the Orbach, et al., (2007) study are encouraging. Based on these findings, there is reason to believe that a wholly Internet-based treatment program, in which the human clinician has been virtually removed from the process, can work as a treatment medium for individuals with test anxiety. There are certain aspects of the study, however, that warrant change in similar future studies. By their own admission, certain of the computer modules included in the program seemed underused and ineffective. It is not certain how accurate a placebo was offered by this study, which somewhat calls into question any comparison made between the two groups. There was

no immediate comparison made by the study to either a clinician-led group or a no-treatment group, which may have produced informative results. Finally, this study focused on the treatment of college-aged (i.e. 18-24 years old) clients; results of this study may not be indicative of those which may be obtained with clients of different developmental cohorts.

PROS, CONS, AND ETHICAL CONSIDERATIONS OF COMPUTER-BASED INTERVENTIONS

As noted by a number of authors, computerized treatment options carry a number of potential benefits, including some advantages over face-to-face counseling methods. Of course, there are also a number of decided cons, or challenges, facing those clinicians who choose to employ computer-based interventions. What follows is a brief discussion of the pros and cons of computer-based treatments, as discussed by the current experts and authors in the field.

Potential benefits of computer-based intervention.

In a study assessing the effects of including therapeutic computer modules as a component in traditional group therapy for anxiety, Mitchell, Howell, Turnbull, and Murphy (2005) noted a number of advantages to the use of computers in therapy:

- *Privacy*: some users feel more comfortable revealing personal information to a computer.
- *Reliability*: a computer program can be expected to present the same information, in the same fashion, each time it is accessed.

- *Flexibility*: clients work with computer treatments on their own scheduled, and may repeat programs if they so desire.
- *Empowerment*: client-driven computer-based therapy requires clients to take a personal stake in their own improvement.
- *Variety*: in that it is not treatment as usual, computer-based therapy provides a treatment option for those clients who want something different.
- *Accessibility*: as computer treatments may be stored on and accessed through the Internet, or indeed any computer, these treatment options may be available to individuals who would otherwise not be able to seek treatment.
- *Therapist support*: as more clients make use of computer-based treatments, which can be made to automatically collect and interpret data, therapists who would otherwise be working with those clients are now free to engage in other tasks.

While this list is extensive, it is not comprehensive. Other potential benefits of online therapy options have been noted. The anonymity provided by online communication often produces a disinhibiting effect (Joinson, 1998). Additionally, text-based media (e.g. email, instant messenger) require clients to write their thoughts in order to express them, which may be therapeutic in and of itself (Rochlen, Zack, & Speyer, 2004). Taken together, a heightened level of disinhibition coupled with a text-based bond may lead to what has been termed "telepresence," or the sense of being with

someone who is not physically present (Fink, 1999). Finally, a seemingly obvious, but often overlooked benefit to cyber-psychotherapy is the easy access to helpful resources afforded by a constant connection to the Internet (Rochlen, Zack & Speyer, 2004).

Potential challenges of computer-based interventions.

Along with the above-noted benefits, computer-based therapy programs carry a number of distinct challenges. As noted earlier, text-based communications between therapist and client are void of nonverbal communications (Leibert, Archer, Munson, & York, 2006). Models of therapy that rely on nonverbal cues, such as Interpersonal (Teyber, 2006), may only be possible in such electronic media as videoconferencing, which allows client and therapist to see each other in real-time. All efforts should be made by therapists to identify the client and to ensure the consistency of that identity with each communication (e.g. through the use of passwords). Additionally, any computer-based treatment program comes with all the same obstacles that would accompany any computer program, namely that of cost (i.e. cost of computer, software, and Internet service) as well as computer-literacy (Rochlen, Zack, & Speyer, 2004).

Ethical considerations of computer-based interventions.

With the introduction of a new treatment media also comes the potential for additional ethical responsibilities binding those clinicians who would choose to take advantage of it. Organizations have arisen for the express purpose of addressing this unique challenge. The International Society for Mental Health Online (ISMHO)—a non-profit organization, formed in 1997, which seeks to promote the ethical use of the online

mental health services—has advocated for the following additional ethical guidelines (ISMHO, 2000):

- Informed consent for treatment needs to specifically address the potential risks of online treatment, including the risk of misunderstanding between therapist and client, the risk of increased turnaround time between communications (in the case of asynchronous counseling), and the risk to privacy that comes with maintaining a permanent electronic record of all communications (as is the case with email).
- The clients should be provided an electronic means by which to check any participating therapists' identities and qualifications.
- Clients should be made aware of possible alternatives to online treatment, such as treatment in person.
- Any participating therapists should be sufficiently competent in computer use.
- All emergency procedures should be discussed with clients.

Mental health providers, who are ethically and legally charged with helping to secure the well being of their clients (Jacob & Hartshorne, 2003), may find that this last ethical guideline presents a unique challenge. Online communications often occur on a time delay (in the case of email). Furthermore, an online clinician is not physically present with a client to take action should the need arise. In order to counter this concern, the ISMHO advocates working with each client in order to establish a local backup (e.g.

emergency contact, public safety emergency services, a local mental health provider) who is capable of intervening in any emergency issues.

ONLINE SOCIAL NETWORKING

With the advent of the Internet, the geographic and temporal limitations to human connection essentially ceased to exist. At any given time of day, it is possible to communicate with another individual in nearly any location on Earth. Born into this technological age, today's adolescents have taken full advantage of the communication opportunities offered by the Internet, as online interactions become the primary means of social exchange between teenagers (Hinduja & Patchin, 2008). Online social networking sites offer a unique opportunity for individuals to reconnect with old friends, meet new people, or keep in touch with current acquaintances.

Members of social networking sites—such as MySpace.com, Friendster.com, and Facebook.com—are allotted server space to develop customized web-pages on which they post personal pictures and information. Often, these sites also offer members the opportunity to build "friend lists," which link the member's page directly to an unlimited number of other member pages. Built-in search engines offer casual users of the sites the opportunity to find members by their real name, screen name, or email address. While this opportunity to connect with other individuals worldwide is one of the primary functionalities of social networking sites, it is the ability to share personal information and thoughts with online friends that appears to be one of the main draws to young users (Gross, 2004).

There are many examples of online social networking being adopted by various industries to help promote investment and growth within their respective fields. Ideablob University (www.Ideablob.com) is a site designed strictly for entrepreneurs who wish to market test and refine their business models. Linked In (www.Linkedin.com) is a flair-free site that caters to the social networking needs of business professionals on the job hunt. *Twilight*, a series of vampire novels geared toward an adolescent audience, is beginning to realistically compete with *Harry Potter* sales due largely to its marketing through social networking sites (Green, 2008).

The mental health industry does seem to be becoming aware of the existence of such sites as well as their importance in the lives of adolescent clients, in particular. Clemens, Shipp, and Pisarik (2008) advocate incorporating a teenage client's MySpace profile into therapy as the website may represent a valuable component of the client's identity development. Based on a review of the literature and Internet searches, however, online social networking has been largely avoided by mental health care providers. Currently, there seem to be no published or advertised interventions that employ the capabilities of existing online social networking sites as a method of delivery.

Social networking sites offer a unique medium through which to provide therapeutic services. Pragmatically, they supply users with a premade website on which information may be stored and disseminated. A clinician with a personal page could post video or audio clips of therapeutic material, or publish a weekly psychoeducational journal. Even therapists who are not versed in computer programming can access these seemingly advanced functions, as social networking sites are typically designed to be

usable by those with the most basic computer aptitude. Furthermore, the social nature of these sites potentially facilitates the formation of interpersonal connections through electronic media.

The principle concern involved with the use of online social networking sites for the delivery of mental health services is the risk to privacy that comes with the use of any electronic medium. Social networking sites, in particular, appear to be vulnerable to this criticism in that they invite individuals to share personal information in a somewhat public arena. This is a valid concern—it is unethical and illegal to allow unrestricted public access to personal client information. Traditional group therapy, however, promotes inter-client communication and sharing of personal information, if that communication is focused on alleviating a shared malady (Yalom, 1995). Most social networking sites allow members to restrict access to their personal pages, and therefore any information shared within that page, to specifically invited individuals. In this way, a private webpage on a social networking site is just as, and no more, secure as a traditional group therapy meeting. Group members in both meeting formats—face-to-face or via the Internet—are asked to keep personal information revealed within meetings private. Client confidentiality is then entrusted to the group.

SUMMARY

Based on the available research, then, there is much that we know about test anxiety. The determinants of test anxiety are varied and likely include biological, developmental, and educational factors (Zeidner, 1998). There are many ways to conceptualize test anxiety and its effects on academic performance; the most

comprehensive models include intrapersonal, interpersonal, and situational components that are reciprocal in their interactions (Spielberger & Vagg, 1995). Effective treatment options for test anxiety exist; those with the most positive impact on test anxiety symptoms and academic performance work to provide clients with cognitive and behavioral coping strategies as well as study and test-taking skills (Ergene, 2003).

Currently, however, the field of test anxiety literature and treatment is lacking in some notable areas. The majority of treatments for the disorder are designed specifically for young adults (i.e. college students). Very few effective treatments for test anxiety are directed at the specific needs of children and adolescents (Ergene, 2003). Computer-based treatments, which have been found to be effective at reducing the symptoms of general anxiety in clinical adult samples (Cavanagh & Shapiro, 2004), have largely not been adapted to fit the specific needs of the test anxious individual. At the time of this writing, there appears to be only one published Internet-based treatment option for test anxiety, which is designed for college students and was assessed with indeterminate results (Orbach, et al., 2007).

There are recently popularized technologies, too, which have yet to be explored as mental health service delivery media. Online social networking sites, in particular, offer a centralized, online location on which groups may meet, share personal thoughts and feelings, and disseminate information conveniently, cheaply, and privately. The use of these sites as a central component in therapy may offer a particular incentive for young people, as adolescent membership to social networking sites is reaching nearly ubiquitous levels (Hinduja & Patchin, 2008).

Many of the predominant theories of test anxiety accommodate the specific facilities of the learner as a factor moderating not only the severity of test anxiety symptoms, but also the ease at which those symptoms are alleviated. Social learning theory (Bandura, 1977), in particular, advises that the more competent a person feels in his learning environment, the greater his motivation to succeed becomes. Teens, by and large, feel confident and competent immersed in an online environment (Gross, 2004). This awareness clashes with the current treatment options for adolescent anxiety, which have largely failed to adapt to the unique interests of the 21st century adolescent. As it is, then, there is a notably empty niche in the field of test anxiety treatments. There is a current need for an empirically-grounded intervention, designed with the specific needs of adolescents in mind, which seeks to explore the potential advantages offered by readily available Internet technologies.

CHAPTER THREE: Methods

DESIGN

The test anxiety intervention that is the basis for this study is comprised of two primary components: self-guided computer modules and an online social networking group. In order to test the effectiveness of each of these components, Participants were randomly assigned to one of two treatment groups, with repeated measures pre-, mid-, and post-intervention. In this design, the independent variable is group assignment. One group received only the self-guided computer modules, while the second group received the full program, including the online social networking group. To protect against possible threats to validity, such as timing of events external to this study, maturation of participants, and test-retest practice effects, intervention group participants were compared to results obtained from participants assigned to a no-treatment control.

PARTICIPANTS

Participants for this study were solicited from YES! Prep Public Schools, who provided the researcher access to students in the freshman and junior level classes, respectively, at two separate campuses—YES! Prep East End and YES! Prep Southwest. From the YES! Prep website:

> YES! Prep Public Schools is a free, open-enrollment public school system serving 2,800 students across five campuses in the Houston area. YES! Prep has been ranked as the best public school in Houston by *Newsweek, U.S. News & World Report* and the *Houston Chronicle*…. YES! Prep Public Schools exists to increase the number of low-income Houstonians who graduate from a four-year college prepared to compete in the global marketplace and committed to improving disadvantaged communities (retrieved from http://www.yesprep.org/about/index.htm, Dec. 16, 2008).

As per its mission statement, YES Prep services a primarily, although not exclusively, low-income demographic. Some statistics concerning the YES! Prep student body, taken from the same source, are:

- 88% of YES students are first generation college-bound
- 80% of YES students are economically disadvantaged
- 95% of YES students are Hispanic or African American
- Most students enter YES at least one grade level behind in math and English

The researcher met with prospective participants at each campus in large groups and provided them with information regarding the purpose and course of this project. Students who self-selected and returned the provided parent consent/youth assent form were allowed to participate in the study. Ultimately, 50 students returned signed consent forms and opted to participate in this study.

Prior to group assignment, participants were rank ordered according to initial test anxiety levels. In descending order, participants were placed in sets of three and were then randomly assigned to one of three groups based on the following process:

- A die was rolled to determine the first participant's group placement. A roll of 1 or 2 resulted in placement in the Computer Modules group (described below), 3 or 4 in the Full Program group (described below), and 5 or 6 in the no treatment control (described below).
- After the first participant was placed, a coin-flip determined group placement for the remaining two participants in the trio.

Table 3 outlines the basic demographic data of this study's participants.

Table 3: Characteristics of Study Participants.

	Computer Modules treatment group (*n* = 16)	Full Program treatment group (*n* = 17)	No treatment control group (*n* = 17)
Sex	Female = 9 (56.2%)	Female = 9 (52.9%)	Female = 14 (82.3%)
Mean age	16.19 (*sd* = 1.109)	16.41 (*sd* = 1.278)	16.28 (*sd* = 1.127)
Race/Ethnicity	Hispanic = 13 (81.25%) African-American = 2 (12.5%) White/non-Hispanic = 1 (6.25%) Multi-racial = 0 (0.00%)	Hispanic = 13 (76.5%) African-American = 4 (23.6%) White/non-Hispanic = 0 (0.00%) Multi-racial = 0 (0.00%)	Hispanic = 9 (52.94%) African-American = 6 (35.29%) White/non-Hispanic = 1 (5.88%) Multi-racial = 1 (5.88%)
Internet access at home?	yes (*n* = 13)	yes (*n* = 16)	yes (*n* = 15)
Average minutes on Internet per week	80.94	123.75	90.00
Mean test anxiety (T-scores)	51.31 (*sd* = 10.855)	51.59 (*sd* = 8.500)	51.65 (*sd* = 8.979)

Figure 7 displays highest level of education attained by at least one of each participant's parents. Figure 8 displays total family income reported by each participant.

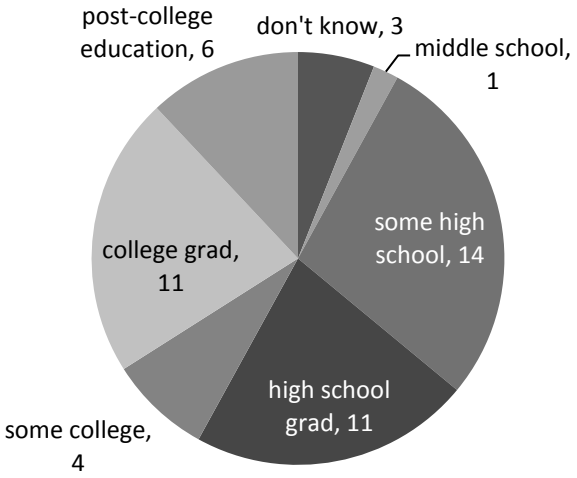

Figure 7. Highest education level attained by participant parent.

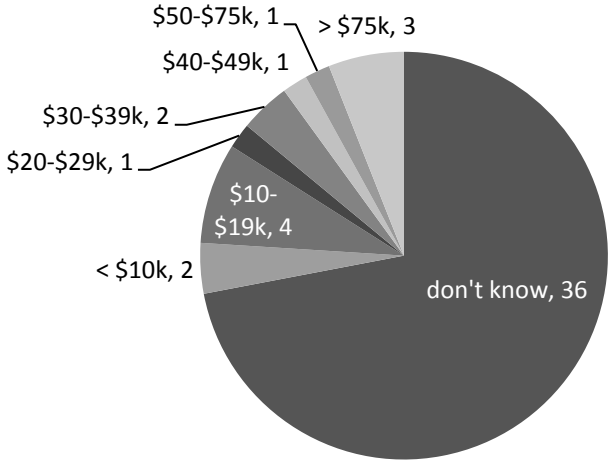

Figure 8. Total reported participant family annual income.

No participants dropped out during the course of this study, and group membership was identical pre- and post-intervention.

In the proposal for this study, it was reported that a power analysis (conducted using G*Power v.3.0.10) determined an acceptable sample size to be 48. This number was based on the following parameters:

- repeated measures ANOVA, one-between/one-within factor
- effect size *Cohen's f* = 0.25
- $\alpha = 0.05$
- power = 0.80
- number of groups = 4
- number of repetitions = 2

As this study intended to use two dependent measures, one with two repetitions and the other with three, the lower number of repetitions, two, was used to obtain a sample size estimate that would accommodate both measures. Since that initial proposal, the study design has changed in that it has been reduced by one group. The actual sample size of 50 provides an achieved power of .88 with two repetitions and .94 with three, based on the following parameters:

- repeated measures ANOVA, one-between/one-within factor
- effect size *Cohen's f* = 0.25
- $\alpha = 0.05$
- power = 0.80
- number of groups = 3
- number of repetitions = 2, 3

EXPERIMENTAL CONDITIONS

Computer-Modules Condition

Study participants assigned to the Computer Modules (CM) condition received a six-week, Internet-based intervention designed to reduce the symptoms of test anxiety in adolescents. Once each week, participants accessed one of a progressive series of computer-based modules, each of which provided information regarding the roots and course of test anxiety, as well as guided practice with empirically-based techniques for reducing physical and cognitive test anxiety symptoms. A detailed presentation of these modules, including screen-shots and page text, may be found in Appendix A. Through the modules, students were provided with multiple handouts—these handouts may be found in Appendices B-N. Please see Table 4 for a summary of the content of each module.

Table 4: Session Structure for Computer Modules Condition

Module	Title	Brief Agenda*
Lesson 1:	What is Test Anxiety?	1. Introduction to test anxiety. 2. Good vs. Bad anxiety. 3. How we treat symptoms of anxiety. 4. What to expect from this program.
Lesson 2:	How to Study.	1. How to set up a good study environment. 2. How to plan a good study schedule.
Lesson 3:	How to Relax.	1. Review of physical symptoms of anxiety. 2. *Deep Breathing* 3. *Progressive Deep Muscle Relaxation*.
Lesson 4:	How *not* to Think.	1. Thinking errors defined. 2. Avoidance behavior. 3. The Cognitive-Behavioral model of anxiety.
Lesson 5:	How *to* Think.	1. Automatic thoughts defined. 2. Turning avoidance behaviors into coping behaviors. 3. Coping statements—instruction and practice.
Lesson 6:	The Big Picture.	1. Tying it all together. 2. Lessons 2-5 skills review.

**Lessons 2-6 each end with homework assignment and quiz.*

As seen in Table 4, most of the computer modules follow the same general format: instructional presentation, followed by new skill practice (if applicable), then a final quiz. During the instructional presentation, participants are exposed to some of the fundamental aspects of test anxiety and its therapeutic treatments. Lesson 1 introduces

the concept of test anxiety as conceived by the dual-deficit model, and explains some of the negative outcomes and behaviors associated with the disorder. Through lessons 2-5, participants receive practical instruction in study skills, relaxation strategies, and cognitive coping skills, respectively. The final lesson seeks to provide a big-picture framework for the various skills and strategies participants have learned, as well as provide a review of each of these new skills.

As research has demonstrated (Hembree, 1988; Ergene, 2003), cognitive and study skill-based interventions for test anxiety are more effective when paired with desensitizing exposure tasks. To capitalize on these findings, at the end of each of five lessons (omitting lesson 1), participants are presented with a brief quiz. At the end of lessons 2-5, this quiz tests information gained during the first part of the presentation. The quizzes at the end of these lessons present participants with a less-threatening, relatively low stakes exposure by testing them on recently obtained information in an untimed scenario. At the end of lesson 6, the quiz becomes more academically relevant, presenting participants with a variety of age-appropriate math questions taken from previously released Texas Assessment of Knowledge and Skills (*TAKS*) exams. This final quiz provides a higher grade of exposure by presenting stimuli that is timed, scored, and more closely paralleling that which would be found in an academic setting.

Full Program Condition

As discussed in the prior literature review, one of the challenges facing the developers of computer-based psychotherapeutic interventions has been how to effectively replicate the non-specific, interpersonal elements of therapy (Cavanagh &

Shapiro, 2004). This program attempts to overcome this challenge by utilizing the communal foundation of social networking sites readily available on the internet.

Participants in the Full Program (FP) group were provided with the same computer-based program given to CM group participants. In addition, each participant assigned to the FP group was given a username and password for a unique ID on MySpace.com, the Internet's most popular social networking site (Hinduja & .Patchin, 2008). With this password, participants were able to access a 24-hour discussion board where they were asked to share their thoughts and questions concerning this project, and test anxiety in general, with the experimenter as well as with other study participants. Following each week's lesson, as described above, FP group participants were asked to log on to the MySpace discussion board, read a relevant weekly prompt, and then respond to that prompt. They were also asked to comment on at least one of their fellow group member's responses. This message board was facilitated by the researcher and comments were monitored to ensure appropriateness (e.g. vulgar messages, had they occurred, would have been removed). Table 5 presents each week's prompts.

Table 5: Online Discussion Prompts for Full Program Participants.

Lesson	Prompts
Lesson 1	1. When do you feel the most anxious about tests? What do you do about it? 2. What is the one thing you most hope to learn during this program?
Lesson 2	1. What does your current Study Zone look like? Is it cluttered and distracting, or a pretty good place to study? How will you change your Study Zone after this week's lesson? 2. What is one major test you have coming up? What is the first thing you will do to start preparing? When will you start?
Lesson 3	1. Do you experience any of the physical symptoms of anxiety while taking tests? If so, which ones? 2. What are some things you can do to help yourself relax when you're feeling nervous about a test?
Lesson 4	1. Do you practice avoidance behavior? In other words, when you are nervous about something, do you avoid it *because* it makes you nervous? 2. What do you think the results of this avoidance behavior are?
Lesson 5	1. How well do you understand Coping Statements? 2. Is this a technique that you could see yourself using when you are feeling anxious? Is this something you already do?
Lesson 6	1. What questions do you still have about Test Anxiety? 2. What skills do you think you will use in the future to help you when you are anxious?

Individuals without an assigned username and password were not able to log in to the study's discussion page, and participants with this login information were asked to keep it confidential. Online group participants were asked not to share their own personally identifiable information (e.g. name, phone number, email), or that of other group members should that information come to light. The experimenter was the only person aware of all the participant identities associated with each username. As such, the confidentiality of the participants in this condition was as maintainable as that which is found within a traditional group treatment.

Comparison Control

Participants randomly assigned to the comparison control group received no test anxiety intervention. Rather, in exchange for their participation, they were offered access to the computer-based intervention following the completion of the study. During the course of the study, participants in the comparison control group were asked to complete the same measures at the same intervals as the experimental conditions, offering a baseline comparison to evaluate potential improvement in anxiety symptoms due to practice/exposure, environmental, or historical contaminants.

INSTRUMENTATION

Demographic Survey

Participants were asked to provide demographic and behavioral information including age, sex, race/ethnic identification, and grade point average. Also included in this demographic survey were questions regarding participant experience with computers

and internet-based social networking programs. See Appendix O for a copy of the demographic survey.

Test Anxiety Inventory

The *Test Anxiety Inventory* (TAI; Spielberger, et al., 1980), based on the widely used *State-Trait Anxiety Inventory* (Spielberger, 1970), is a 20-item, Likert-type instrument used to assess test anxiety symptomology. The TAI can be administered to a group, requires approximately 10 minutes to complete, and offers norms for high school. Score reports include an estimate of total test anxiety (TAI-T), as well as separate scales of worry (TAI-W) and emotionality (TAI-E). The TAI is a copyrighted instrument and so will not be reproduced here—please see Appendix P for sample TAI items.

For each item on the TAI, respondents are asked to read a statement concerning an attitude toward test taking situations and to record a response indicating how they generally feel about that statement. Responses are provided on a four-point scale, with the scores 1-4 indicating the respondent "Almost Never," "Sometimes," "Often," or "Almost Always" agrees with the given statement, respectively. As the TAI total anxiety score is calculated by summing all item responses, total scores may range from 20 to 80. Item 1 is the only reverse-scored item.

Scores for worry and emotionality are each derived from the sum of eight of the 20 items. The score for the TAI-W subscale is calculated from items 3, 4, 5, 6, 7, 14, 17, and 20. The score for the TAI-E subscale is the sum of items 2, 8, 9, 10, 11, 15, 16, and 18. The total scores for each subscale may range from 8 to 32.

The two subscales of the TAI reflect the cognitive and behavioral models upon which this intervention is based. This, coupled with the TAI's compatibility with both group- and self-administration, make the instrument well-suited for the purposes of assessing study participant test anxiety levels.

The TAI manual reports test-retest reliability estimates for the high school sample of .81 at one month and .62 at six months. Coefficient alpha for the high school sample was .92, indicating a high internal consistency. Convergent validity scores with I. G. Sarason's (1978) *Test Anxiety Scale* were .82 and .83 for males and females, respectively.

Minor and Gold (1985) conducted an independent analysis of the TAI's convergent and divergent validity. The TAI-W subscale was found to have a significant positive correlation with a measure of negative internal dialogue for both male ($r = .72$, $p < .001$) and female ($r = .60$, $p < .001$) subjects. There was no significant correlation between TAI-W scores and those attained on a measure of positive internal dialogue or the Subjective Units of Discomfort Scale (SUDS; Wolpe & Lazarus, 1966), a self-report measure of physiological arousal. TAI-E scores had a significant positive correlation with the SUDS for both males ($r = .451$, $p < .001$) and females ($r = .52$, $p < .001$); however, there was no correlation between subject scores on the TAI-E and self-reported negative or positive thoughts.

Woodcock-Johnson III Tests of Achievement

This study seeks not only to reduce the symptoms of test anxiety, but also to assess potential academic benefit resulting from symptom reduction. Given pre- and post- intervention, the Woodcock-Johnson III Tests of Achievement (WJ III ACH) serves

as an estimate of participant academic functioning. The WJ III ACH is a comprehensive achievement battery comprised of 22 subtests assessing five general areas: reading, mathematics, written language, oral language, and academic knowledge. The WJ III ACH is standardized and provides norm-referenced scores for examinees ages 2-90.

For the purposes of this study, only three subtests from the full WJ III ACH battery were used, resulting in four scores for each participant. *Reading Fluency* (Test 2), *Math Fluency* (Test 6), and *Writing Fluency* (Test 8) make up the three timed examinations offered by the WJ III ACH. Taken together, these three subtest scores provide an *Academic Fluency* cluster score for each participant. Age-based standard scores (*mean* = 100; *sd* = 15) for each of the three subtests as well as the cluster were used. In order to protect against the confounding effects of examinee practice across multiple administrations, two forms of the WJ III ACH—Form A and Form B—were administered pre- and post-intervention, respectively. See Appendix Q for sample items from each of the WJ III ACH *Academic Fluency* subtests.

The *Reading Fluency* test requires examinees to read basic true/false statements quickly and then provide a "yes" or "no" response. In *Math Fluency*, examinees are asked to quickly calculate basic addition, subtraction, and multiplication problems. *Writing Fluency* requires the test-taker to produce a number of short, simple sentences under timed conditions. Time limits for each of the subtests are 3 minutes, 3 minutes, and 7 minutes, respectively; total administration time for all three subtests should be approximately 15-20 minutes.

There is a theoretical basis for the use of these three subtests as an objective outcome measure in a study of an intervention for test anxiety. According to the three predominate models of test anxiety—the *cognitive-attentional* (Wine, 1980), *dual-deficit* (Meichenbaum & Butler, 1980), and *transactional process* (Spielberger & Vagg, 1995) models—test anxiety affects performance, in part, by interfering with the cognitive processes necessary for productive test-taking. Increased anxiety in performance situations has been shown to negatively impact overall cognitive ability (Hembree, 1988); this detrimental effect has been shown to be exacerbated by timed conditions (Onwuegbuzie & Seaman, 1995). Furthermore, it has been illustrated that it is somewhat common for individuals to develop subject-specific anxieties, as in mathematics anxiety (Sapp, 1999). The three fluency tests of the WJ III ACH offer a timed evaluation of cognitive performance across a broad range of academic areas. If test anxiety symptoms present an initial impediment to performance on these measures, participants who experienced a decrease in anxiety symptomology should realize a concomitant improvement in scores.

The decision to use these three particular subtests was pragmatic, as well. The administration instructions of the three WJ III ACH fluency tests allow for small group administration and necessitate a predictable overall time limit. Also, the availability of two parallel test forms allows for pre- and post-intervention scores while minimizing practice effects.

The *WJ III Technical Manual* (McGrew & Woodcock, 2001) reports high split-half reliability for each of its three fluency tests, resulting in an overall high composite

reliability for the Academic Fluency cluster. For all ages, one year test-retest reliability is also high for each subtest, as well as for the overall cluster. See Table 6 for a summary of these scores.

Table 6: Split-half and Test-retest Reliabilities for WJ-III-Ach Fluency Subtests and Cluster

Test/Cluster Name	Split-half reliability across all ages	Test-retest reliability across all ages
Reading Fluency	.90	.79
Math Fluency	.90	.92
Writing Fluency	.88	.70
Academic Fluency	.93	.88

The *Writing Fluency* subtest utilizes some subjectivity for scoring examinee responses; an interrater reliability for this subtest is reported to be .98.

Participant Feedback Survey

At the close of the study, each experimental group participant was asked to complete a survey soliciting his/her reactions concerning the specific condition in which he/she was a member. With this survey, participants had the opportunity to provide specific open feedback about their experiences during the course of the study. While the questions varied slightly between the two specific experimental conditions, all participants were asked to rate their personal level of investment in the study, including

amount of homework completed and time spent on independent tasks. Results from this survey were used to compare the level of individual participation to the outcomes obtained on dependent variables, and will be used to make improvements to the program for future use. See Appendices R and S for copies of the participant feedback survey for each of the experimental conditions.

SETTING & EQUIPMENT

Setting

With permission and cooperation from YES! Prep Public Schools, each participant in CM and FP groups was given the option to participate in the Internet-based program from his/her respective school campus during a daily study period. Participants were also told they could access the program from any Internet-connected computer, including one at home, if they preferred. When accessing the program at school, participants were directed to a small conference room, where they could work separately from non-participating peers.

All group meetings occurred on the subject's home campuses in classrooms of varying sizes. Regardless of the condition to which they are assigned, the researcher met with all participants for one initial and two follow-up TAI administrations.

Equipment

Participants assigned to either experimental condition (CM and FP groups) needed periodic access to a computer with high-speed internet capabilities. Each participant's home campus provided laptop computers for students to use while accessing

this program. If a computer was available in the home, each student was also allowed to participate in the computer-based components of the study (e.g. computer modules, online social networking) by means of his/her personal computer. The only software required by this program was an Internet-browser (e.g. Internet Explorer, Firefox).

PROCEDURE

This study required the approval of both the University of Texas Institutional Review Board (IRB) and the YES! Prep Public Schools administration. Please see Appendix T for a copy of the approval letter from YES! Prep administration.

At the onset of this project, the researcher met in large groups with 9th and 11th grade students at two participating YES! Prep campuses (YES! Prep East End and YES! Prep Southwest). Access to these specific grade levels was provided by YES! Prep, as these years allowed room in the student curriculum to dedicate a period per week to study participation. Specifically, 9th grade students were enrolled in a daily study hall, while 11th grade students had a daily college advising period that frequently allowed for independent study.

To facilitate the program from its end, YES! Prep also provided a point of contact at each of the two participating campuses. In addition to communicating with the researcher regarding program progress, each site contact person agreed to see to it that students had the necessary equipment on a weekly basis and to log student time spent in the program. The researcher also provided each site contact person with brief instructions for helping students access the various components of the computer-based

intervention. As this intervention was designed to be self-guiding, the site contact persons did not need, nor receive, any additional training.

In these initial meetings (four total) with students, the researcher briefly explained the purpose of the study, the expected time commitment and demands for participants, and the need for parental consent. The students received Parent Consent/Youth Assent forms in English and Spanish (Appendices U and V, respectively) and a Letter to Parents (Appendix W), providing a summary of the information in the consent form. Students were instructed to read the consent/assent forms with their parents and, if interested, return the signed forms to the YES! Prep designated site contact person. Both the consent/assent forms and Letter to Parents contained researcher contact information in case parents or students had additional questions not answered by those documents.

Approximately a week and a half following these initial meetings, the researcher returned to each campus to collect consent forms and initial data. Meeting with student participants in small groups, 2-3 students per group, the researcher administered the demographic survey, Test Anxiety Inventory, and WJ-III-Ach Tests of Academic Fluency (Reading Fluency, Writing Fluency, and Math Fluency) Form A.

Using TAI Total scaled scores as an estimate of initial participant test anxiety levels, the researcher randomly assigned each participant to one of three groups, using the method described in the *Participants* section of this document. CM group participants were assigned to receive only the independent study computer modules portion of this intervention. FP group participants were assigned to both access the independent study computer modules and participate in online group discussions hosted on MySpace.com.

Each participant in the FP group, therefore, also was registered for MySpace with a unique, non-identifying, username and password. Control comparison group participants did not receive access to any test anxiety intervention components until the conclusion of the study.

Following group assignment, the researcher provided each of the two YES! Prep contacts with packets containing the following:

- *Test Anxiety Intervention Teacher's Guide* (Appendix X): This one-page document provided the YES! Prep contacts with brief instructions for accessing the website and MySpace discussion board.
- *Test Anxiety Intervention Program Instructions* (Appendices Y and Z, for the CM and FP groups, respectively): Similar to the teacher's guide, this document provided instructions for accessing the appropriate portions of the program for participants in the CM and FP groups. The form for FP group members additionally provided each participant with his/her personal login information for the MySpace discussion board.
- *Test Anxiety Intervention Sign In/Out Form*: Each YES! Prep contact was asked to have students log time in and out when accessing this program each week. This form contains student participant names and so will not be included in the appendices.

The researcher met once more with study participants prior to the start of the intervention. In these meetings, in which CM group and FP group participants were separated, students received an initial orientation to the program, including how to access

the appropriate program components (based on group membership), and how to log in to the MySpace discussion board (for FP group participants).

During the following three weeks, intervention participants accessed Lessons 1-3 of the intervention. Once all participants had completed Lesson 3, the researcher returned to the campuses to collect TAI data, mid-intervention. At this time, the researcher also conducted an integrity check, to make sure all participants were accessing the program regularly, and provided a brief retraining for students who needed help accessing specific aspects of the program. Students then completed the following three weekly lessons.

In the week following the completion of the program, the researcher again met with students in small groups (2-3 students). During these meetings, participants completed a third TAI, as well as the WJ-III-Ach Tests of Academic Fluency Form B. CM and FP group participants also provided quantitative and qualitative feedback regarding the program on feedback forms tailored to each group.

The total course of this study was approximately 12 weeks. The six lessons of the intervention took approximately 8 weeks to complete, as YES! Prep asked for one-week suspensions of the program at two points: after Lesson 3, during state-wide TAKS testing, and after Lesson 5, when many participants were out of town on a school-sponsored trip. Figure 7 provides an outline of the above-detailed course of this study.

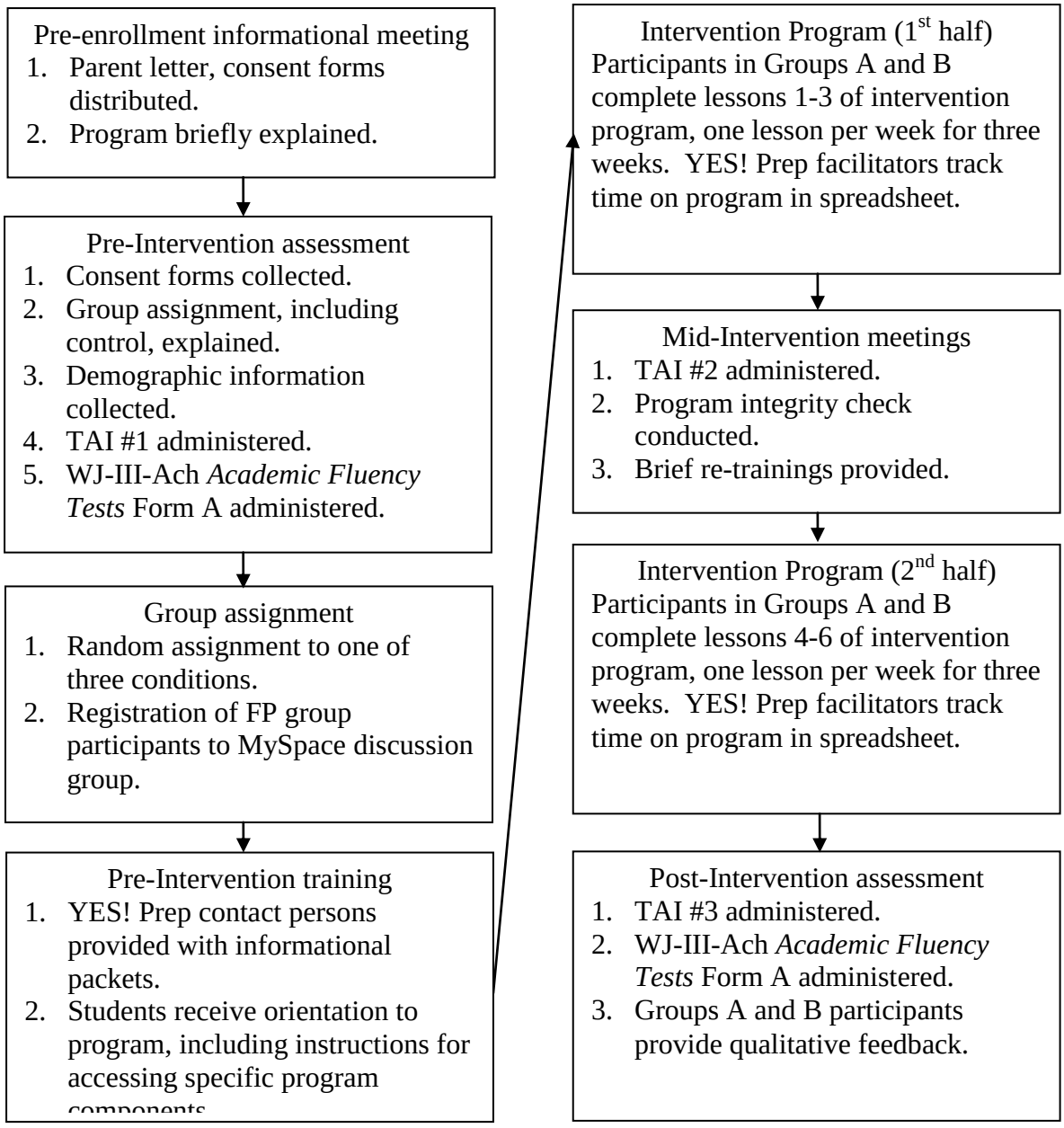

Figure 9. Overview of study procedure.

PROPOSED RESEARCH QUESTIONS, ANALYSIS, AND HYPOTHESES

Research Question One

Does this intervention system as a whole—including self-guided computer modules and online social networking group—reduce test anxiety symptoms in adolescents?

Proposed analysis one.

Repeated measures ANOVA, one between (*Group*) and one within (*Time*), will be used to compare the change in TAI scores across time between the Full Program condition and the no-treatment control.

Hypothesis one.

Results will indicate a change between TAI pretest and TAI final administration. There will also be a *Group*Time* interaction. Follow-up t-tests will reveal a change between TAI pretest and TAI final administration for FP group participants.

Research Question Two

Will the addition of the online social networking group to the self-guided computer modules prove to be more effective at reducing test anxiety symptoms than the self-guided computer modules alone?

Proposed analysis two.

Repeated measures ANOVA, one between (*Group*) and one within (*Time*), will be used to compare the changes across time in TAI scores for the Computer Modules and Full Program conditions.

Hypothesis two.

Results will show an overall main effect; there will also be a *Group*Time* interaction. Follow-up t-tests will reveal a reduction in TAI scores for participants in both the FP and CM groups. FP group participants will report greater symptom reduction than those participants in the CM group.

Research Question Three

Will participation in the Full Program condition result in practical improvements in academic ability, as approximated by the WJ III ACH *Academic Fluency* cluster score, as a result of reduced test anxiety?

Proposed analysis three.

A paired samples *t*-test will be used to compare FP group participant scores on the WJ-III-Ach Form A *Academic Fluency* cluster to those obtained on the WJ-III-Ach Form B *Academic Fluency* cluster.

Should there be a significant difference between Form A (baseline) and Form B scores, follow-up testing will be necessary to determine if those differences were directly related to a reduction in test anxiety symptomology. In order to test this relationship, difference scores will be derived for both measures, WJ-III-Ach *Academic Fluency* and TAI, by subtracting the baseline (i.e. first administration) score from the posttest (i.e. final administration) score. These difference scores will then be correlated. A significant negative correlation between these two difference scores would indicate that a reduction in test anxiety symptoms contributed, in part, to an increase in performance on the timed academic tasks.

Hypothesis three.

It is expected that the WJ-III-Ach *Academic Fluency* cluster scores for participants in the FP group will improve between Form A (baseline) and Form B. As stated in hypothesis one, participants in the Full Program are expected to report a reduction in test anxiety symptoms, as measured by the TAI. It is anticipated that the difference scores for each of these measures will be negatively correlated, indicating that those participants who report reduced test anxiety symptoms will concurrently score higher on the WJ-III-Ach Form B.

Research Question Four

Will test anxiety levels, as assessed by the TAI, moderate the effectiveness of treatment conditions in reducing test anxiety levels, as assessed by the TAI?

Proposed analysis four.

Using multiple regression, TAI post-intervention scores will be regressed on treatment condition (i.e. CM, FP, and control groups) and TAI pre-intervention scores. In a second step, a *Group* by *Pretest* cross-product will be added to the equation to test for a possible *Group*Pretest* interaction.

Hypothesis four.

It is anticipated that students with higher levels of anxiety at the beginning of this study will report more overall benefit from the FP condition than from the self-guided computer modules, alone. While the computer modules, alone, are expected to result in improvement in test anxiety symptoms for all participants, it is believed that those with

the highest levels of anxiety will report more benefit from the intervention condition that potentially provides interpersonal feedback, motivation, and modeling.

CHAPTER FOUR: Results

Where reported, effect size statistic, Cohen's *d*, was calculated using the effect size calculators at www.cognitiveflexibility.org/effectsize (for paired sample t-tests) and www.lyonsmorris.com/ma1/index.cfm (for independent sample t-tests). All other statistical analyses for this study were conducted using SPSS Statistics 17.0. The significance level for all the below-reported tests was 5%.

PROPOSED ANALYSES

Descriptive Data

As noted above, the total sample size for this study was $N = 50$. The three experimental groups were relatively equal in size (Group A $n = 16$; Group B $n = 17$; Group C $n = 17$). The overall sample's mean TAI scores were slightly above average for a random sample of students and 19 of the 50 (38%) were at least 0.5 standard deviations above the measure's normative sample mean. A one-way ANOVA conducted comparing initial TAI scores among the three groups revealed no significant differences among the groups on this measure at the start of the intervention [$F(2, 47) = .006$; $p = .994$]. Similarly, there were no significant differences among the three groups for baseline scores on this study's other dependent measure, the WJ-III-Ach *Academic Fluency* cluster [$F(2, 47) = .634$; $p = .535$]. Group means and standard deviations at each time period for TAI and WJ-III-Ach are summarized in Tables 7 and 8, respectively.

Table 7: Mean and Standard Deviations for TAI by Group and Time*

Group		TAI-T Time 1	TAI-T Time 2	TAI-T Time 3
Computer Modules only (*n* = 16)	*M*	51.31	53.50	47.44
	sd	10.855	10.132	9.866
Full Program (*n* = 17)	*M*	51.59	50.88	49.47
	sd	8.500	8.410	9.388
No Treatment (*n* = 17)	*M*	51.65	49.53	49.94
	sd	8.979	8.360	8.004
Total (*N* = 50)	*M*	51.52	51.26	48.98
	sd	9.274	8.948	8.982

** T-scores (mean = 50; sd = 10) based on high school norms.*

Table 8: Mean and Standard Deviations for WJ-III-Ach Academic Fluency Cluster by Group and Time*

		Academic Fluency	
Group Membership		WJ Form A	WJ Form B
Computer Modules (*n* = 16)	*M*	106.25	108.69
	sd	10.574	10.091
Full Program (*n* = 17)	*M*	101.65	110.82
	sd	13.973	12.244
No Treatment (*n* = 17)	*M*	103.00	109.29
	sd	11.169	11.044
Total (*N* = 50)	*M*	103.58	109.62
	sd	11.935	10.990

**Age-based Standard scores (mean = 100; sd = 15).*

Research Question One

The first research question addressed whether the intervention program, as a whole, presented an effective means of reducing test anxiety symptoms in participants. It was hypothesized that a repeated measures ANOVA, one between (*Group*) and one within (*Time*), would indicate a difference in self-reported test anxiety symptoms for participants in the Full Program condition (Group B) between pre- and post-intervention assessments. It was further hypothesized that similar changes would not be observed over time for participants in the control.

Mauchly's sphericity test confirmed that the main effect of time does not significantly violate the sphericity assumption [$W = .874$, $X^2 = 2.83$, $p > .05$]. Therefore,

sphericity was assumed when interpreting the *F*-value for the main effect of time and its interaction with the between groups variable of group assignment. Levene's tests of equality of error variances indicated variances were homogenous for all levels of the repeated measure [$p > .05$].

Analysis of the within-subjects effects revealed no significant differences for either Time [$F(2, 64) = 2.864$; $p = .064$] or the *Time*Group* interaction [$F(2) = .666$; $p = .517$]. The tests of between subjects effects for this repeated measures ANOVA indicated no significant differences between groups [$F(1, 32) = .010$; $p = .922$]. Cohen's *d* for between group differences at time of final TAI administration was .054. See Table 9 for the results of the repeated measures ANOVA.

Table 9: Repeated Measures Analysis of Variance for Research Question One

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta^2_{partial}$
			Between Subjects			
group	1.922	1	1.922	.010	.922	.000
Error	6384.235	32	199.507			
			Within Subjects			
Time	66.843	2	33.422	2.864	.064	.082
Time * Group	15.549	2	7.775	.666	.517	.020
Error(Time)	746.941	64	11.671			

Figure 10 illustrates the group means at each assessment point for the Full Program group and the no treatment control.

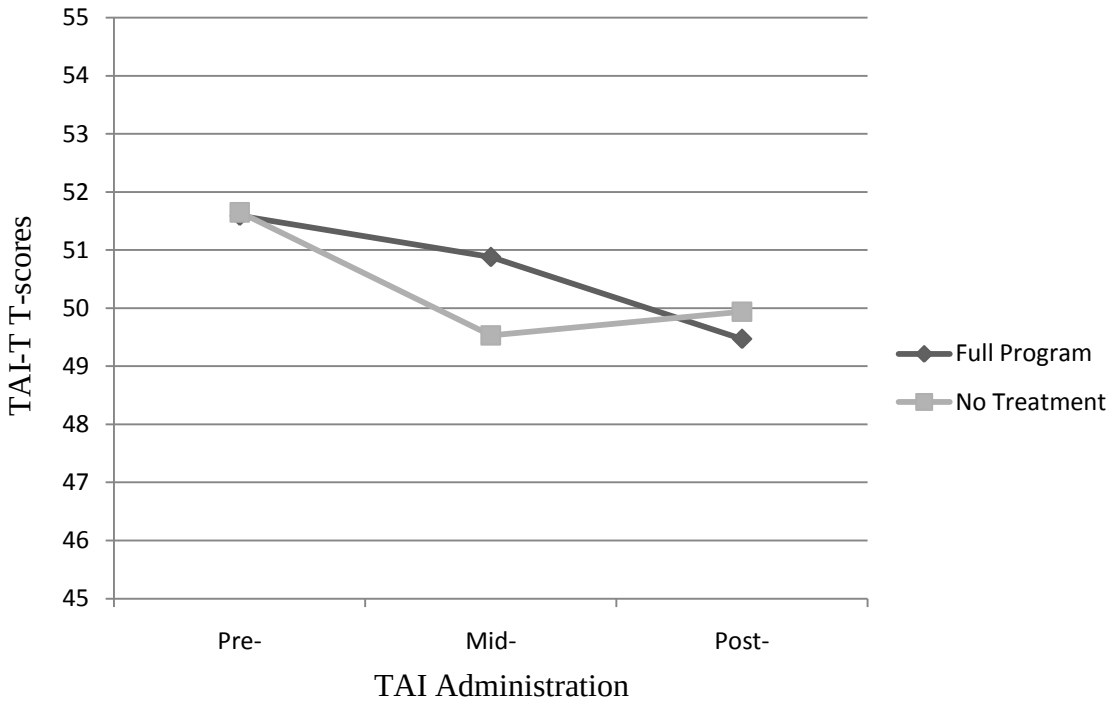

Figure 10. Full Program and No Treatment TAI-T group means by time.

As this repeated measures ANOVA produced no significant results, the null hypothesis cannot be rejected and no follow-up tests were conducted for this research question.

Research Question Two

The second research question dealt with the issue of whether the addition of an online social networking component to the self-guided computer modules would improve the program's effectiveness at reducing test anxiety symptoms in its participants. It was

hypothesized that a repeated measures ANOVA, one within factor (Group) and one between factor (Time) would reveal two things. First, both groups would report a reduction in test anxiety symptoms between first TAI administration and TAI post-intervention, indicated by an overall main effect. Second, there would also be a *Group*Time* interaction. Follow-up t-tests would indicate that participants receiving the full program (Group B) would have lower TAI scores at the post-intervention assessment than those participants receiving only the self-guided computer modules (Group A).

Here, Mauchly's sphericity test indicated that the main effect of time violates the sphericity assumption [$W = .816$; $X^2 = 6.088$; $p < .05$], therefore degrees of freedom were corrected using Huyn-Feldt estimates of sphericity [*epsilon* = .917]. Levene's test indicated between group variances were homogenous for all levels of the repeated measure [$p > .05$].

The results of the tests of within-subjects main effects show a difference for the main effect of time [$F(1.843, 56.857) = 7.493$; $p = .002$], but no difference for the *Time*Group* interaction [$F(1.834) = 2.638$; $p = .085$]. This indicates that there was a change in the reported test anxiety symptoms over time, but the magnitude of the change did not seem to be moderated by group membership. The test of between subjects main effects for this question confirms no differences in test anxiety levels between groups [$F(1, 31) = .001$; $p = .974$]. Cohen's *d* for between group effects at time of final TAI administration was .211. See Table 10 for the full results of the repeated measures ANOVA.

Table 10: Repeated Measures Analysis of Variance for Research Question Two

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta^2_{partial}$
			Between Subjects			
group	.262	1	.262	.001	.974	.000
Error	7397.314	31	238.623			
			Within Subjects			
Time	258.185	1.834	140.768	7.493	.002	.195
Time * Group	90.912	1.834	49.567	2.638	.085	.078
Error(Time)	1068.179	56.857	18.787			

Figure 11 illustrates the group means at each assessment point for the Full Program and Computer Modules experimental groups.

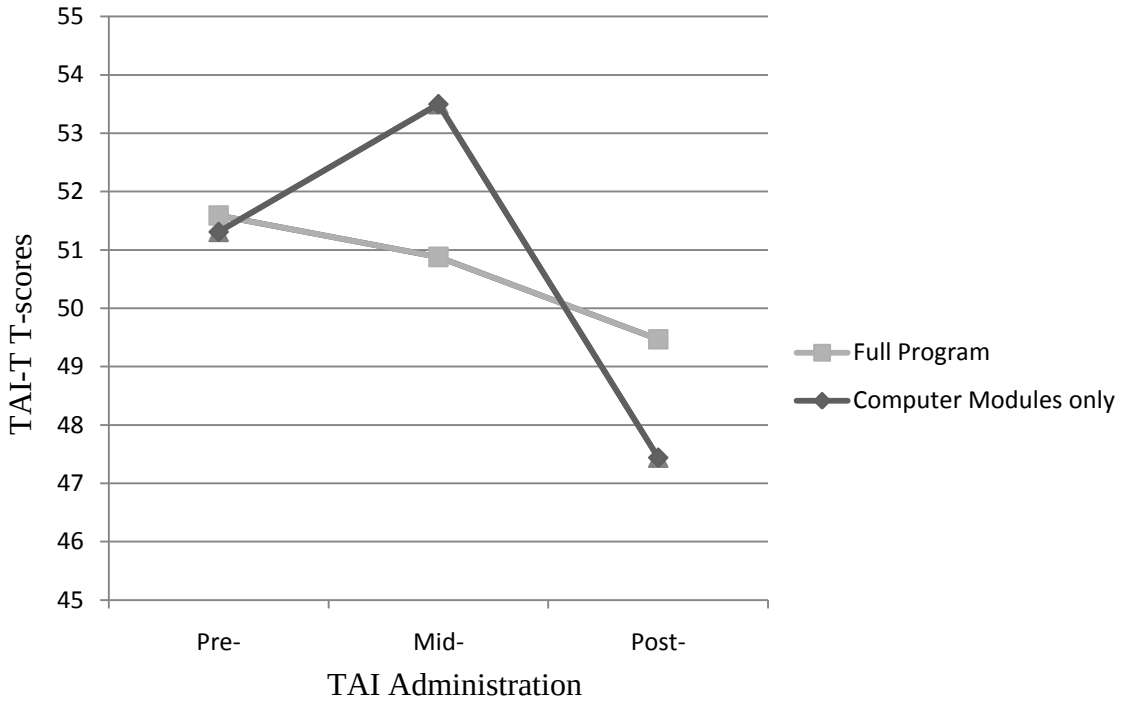

Figure 11. Full Program and Computer Modules TAI-T group means by time.

To follow up on the change in TAI scores over time, paired sample *t*-tests were run for each of the CM and FP groups, comparing first administration TAI to final administration TAI. As seen in Table 11, CM group participants did report reduced test anxiety symptoms post-intervention. *T*-tests (see Table 12) show this pre-post within-group difference to be significant [$t(15) = 4.528$; $p < .001$]. As seen in Table 13, FP group participants also reported reduced test anxiety symptoms post-intervention; however, *t*-tests (see Table 14) indicated that the within-group difference was not significant [$t(16) = 1.625$; $p = .124$].

Table 11: Computer Modules Group Paired Sample Statistics for TAI Pre- and Post-Intervention.

	M	*sd*	*SEM*
TAI-T Time 1	51.31	10.855	2.714
TAI-T Time 3	47.44	9.866	2.466

Table 12: Computer Modules Group Paired t-test of Pre- and Post-Intervention TAI Scores

	M	*sd*	*SEM*	t	df	*p*	*d*
TAI-T Time 1– TAI-T Time 3	3.875	3.423	.856	4.528	15	.000	1.181

Table 13: Full Program Group Paired Sample Statistics for TAI Pre- and Post-Intervention

	M	*sd*	*SEM*
TAI-T Time 1	51.59	8.500	2.062
TAI-T Time 3	49.47	9.388	2.277

Table 14: Full Program Group Paired t-test of Pre- and Post-Intervention TAI Scores

	M	*sd*	*SEM*	t	df	*p*	*d*
TAI-T Time 1– TAI-T Time 3	2.118	5.372	1.303	1.625	16	.124	.399

Research Question Three

This question addressed the issue of whether or not those participants who received the full intervention (i.e. FP group participants), would report some academic benefit from their involvement with this program. To measure this, academic abilities of participants were assessed using the WJ-III-Ach tests of Academic Fluency, a battery comprised of three timed academic measures (*Reading Fluency*, *Math Fluency*, and *Writing Fluency*). It was then necessary to establish whether FP group participants' academic performance had improved. Table 15 shows the FP group means for the WJ-III-Ach *Academic Fluency* cluster did increase between Form A (pre-intervention) and Form B (post-intervention). There was also a strong positive paired samples correlation [$r = .792$; $p < .001$], indicating that students who scored high on Form A tended to do the same on Form B; likewise for lower scorers. As seen in Table 16, the corresponding paired samples *t*-test revealed that there was positive change [$t(16) = 4.397$; $p < .001$].

Table 15: Full Program Group Paired Samples Statistics for WJ-III-Ach Form A and Form B

	M	*sd*	*SEM*
WJ Form A Academic Fluency SS	101.65	13.973	3.389
WJ Form B Academic Fluency SS	110.82	12.244	2.969

Table 16: Full Program Group Paired t-test of WJ-III-Ach Form A and Form B

	M	*sd*	*SEM*	t	df	*p*	*d*
TAI-T Time 1– TAI-T Time 3	9.176	8.604	2.087	4.397	16	.000	1.085

Next, pre-/post-intervention change scores were calculated for both the TAI and WJ-III-Ach by subtracting each participant's pre-intervention score from his/her post-intervention score on each of these two measures. On average, FP group participants reported a 2.12 point (*sd* = 5.372) reduction in TAI scores and a 9.18 point (*sd* = 8.604) increase on the WJ-III-Ach *Academic Fluency* cluster. The Pearson correlation coefficient derived from these two scores was not significant [$r = .002$; $p = .994$].

Careful scrutiny of participant-specific results revealed two statistical outliers with regards to WJ-III-Ach change scores: one participant scored 24 points higher on Form B than on Form A, while another scored 35 points higher. These two change scores

were 2.8 and 4.1 standard deviations above the group mean. To obtain a more accurate example of average group performance relative to this question, the results of these two outlier participants were removed and the above tests were re-run. While the group mean difference without these outliers was lower, the paired sample t-test indicated the difference remained significant [$M = 6.467$; $sd = 3.662$; $t(14) = 6.839$; $p < .001$]. Also as previously, the follow-up correlation between the TAI and WJ-III-Ach change scores was non-significant [$r = .340$; $p = .215$].

As it is pertinent to the discussion of these results, it should be noted that the control group, too, demonstrated a significant increase in WJ-III-Ach scores [$M = 6.294$; $t(16) = 4.342$; $p = .001$]. The mean difference between Form A and Form B for the Computer Modules group, however, was not significant [$M = 2.438$; $t(15) = 2.111$; $p = .052$].

Research Question Four

This final research question concerned the issue of a potential treatment-aptitude interaction. Specifically, would a participant's ability to experience positive gains from this program depend on his/her starting test anxiety levels? This question was tested by means of multiple regression.

First, both the pre- and post-intervention TAI scores were centered by subtracting the gross mean of each administration from each individual score, producing two new variables: *TAI-Total #1* centered and *TAI-Total #2 centered*. Dummy variables were produced for each of the CM and FP groups. Next, two *Group*Anxiety* crossproducts were created: *CM Group * TAI-Total #1* and *FP Group * TAI-Total #1*.

In a multiple regression, the centered TAI post-intervention scores were regressed on the two Group assignment dummy variables and TAI pre-intervention scores. In a second step, the two above-described crossproducts were added to the model to test for a possible *Group*Pretest* interaction. Table 17 presents the results of this process.

Table 17: Summary of Multiple Regression for Variable Predicting Final TAI Scores in Full Program Group Participants

				Change Statistics				
Model	*R*	R^2	f^2	ΔR^2	ΔF	*df1*	*df2*	Sig. ΔF
1	.872[a]	.761	3.15	.761	48.706	3	46	.000
2	.875[b]	.766	3.26	.005	.502	2	44	.609

a. Predictors: (Constant), TAI-T #1 centered, CM group dummy, FP group dummy
*b. Predictors: (Constant), TAI-T #1 centered, CM group dummy, FP group dummy, CM Group*TAI crossproduct, FP Group*TAI crossproduct*

Based on the above model summary, the addition of the *Group * Pretest* crossproducts did not result in a significant change in the model [$\Delta R^2 = .005$, $F(2, 44)$, $p = .609$]. As such, this test did not support starting test anxiety levels as a significant moderating factor for overall program gains and the null hypothesis for this question cannot be rejected. Step 1 of this model, though, did produce a significant result [$\Delta R^2 = .761$, $F(3, 46)$, $p < .001$], reiterating the results of the repeated measures ANOVA reported in research question two, above.

EXPLORATORY ANALYSES

Three factors establish the basis for this exploratory analysis of variables in addition to those previously proposed:

- the non-significant results of the primary analyses,
- the starting mean test anxiety levels of the three groups, and
- the ultimate status of the online discussion group.

These factors will be discussed at length in Chapter Five.

Starting test anxiety levels for each of the experimental groups were near population average, as indicated by T-scores on the pre-intervention TAI administration. As this intervention is intended to reduce levels of *debilitative* anxiety (i.e. greater than average anxiety), it was important to assess the intervention's impact on the test anxiety levels of those participants most affected, initially, by the symptoms of test anxiety.

For this specific question, all participants whose starting TAI scores were not greater than .5 standard deviations above the population mean (i.e. pre-intervention TAI ≤ 55) were excluded from further analysis. Additionally, CM and FP group members were merged into one treatment group. Table 18 displays pre-/post-intervention TAI means and standard deviations of the two resulting groups (*Treatment* and *No Treatment*). Figure 12 illustrates the change in group means across time.

Table 18: Mean and Standard Deviations for TAI by Group and Time*

Group Membership		TAI-Total			
		Pre-Intervention	Post-Intervention	Pre- to Post-Difference	*d*
Treatment (*n* = 11)	*M*	62.27	57.64	- 4.63	1.361
	sd	5.569	6.531		
No Treatment (*n* = 6)	*M*	60.83	58.67	- 2.16	3.885
	sd	2.994	4.502		
Total (*N* = 17)	*M*	61.76	58.00	- 3.76	1.243
	sd	4.764	5.766		

** T-scores (mean = 50; sd = 10) based on high school norms.*

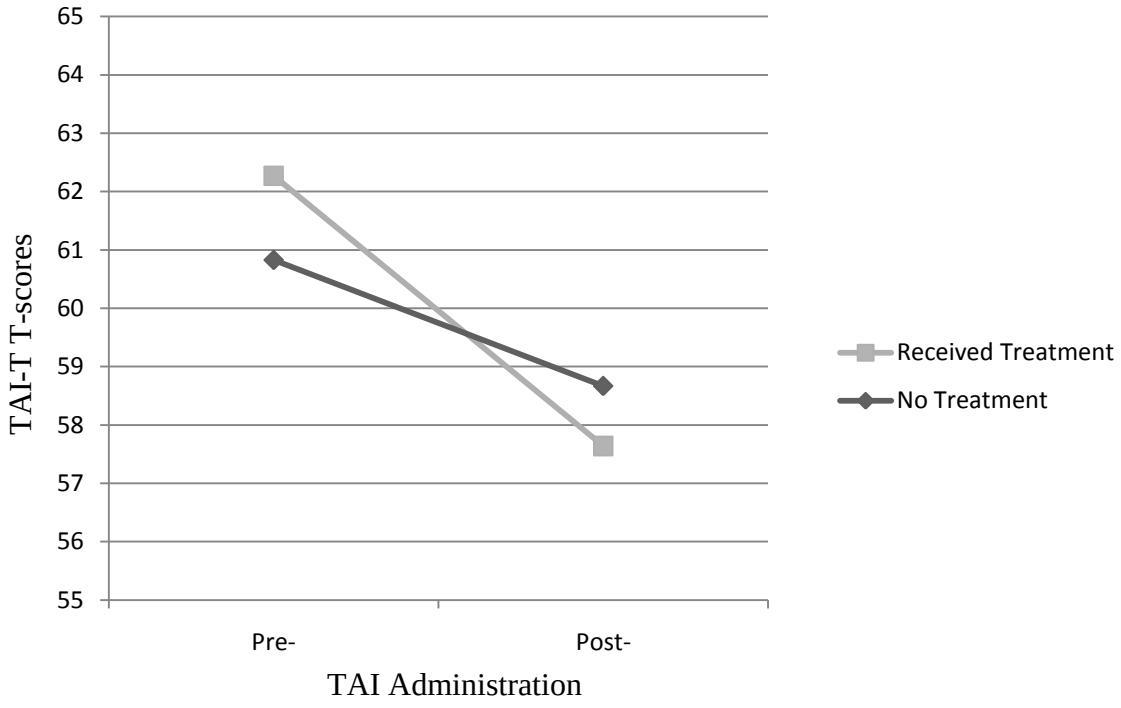

Figure 12. Changes in TAI-T means across time.

As shown in Table 19, a repeated measures ANOVA, one between (*treatment*) and one within (*time*), resulted in a significant within subjects main effect between pre- and post-intervention TAI scores [$F(1, 15) = 19.619$; $p < .001$]. The *time*treatment* interaction was non-significant [$F(1, 15) = 2.586$; $p = .129$]. Levene's test supported the homogeneity of error variance assumption at both assessment periods [$p > .05$]. The test of between subjects effects did not support a significant difference between the treatment group and the no-treatment control [$F(1, 15) = .006$; $p = .939$]. Cohen's *d* for between group effects at time of final TAI administration was .173.

Table 19: Repeated Measures Analysis of Variance, Group*Time, for TAI High-Scoring Participants

Source	*SS*	*df*	*MS*	*F*	*p*	$\eta^2_{partial}$
			Between Subjects			
group	.325	1	.325	.006	.939	.000
Error	814.205	15	54.280			
			Within Subjects			
Time	89.840	1	89.840	19.619	.000	.567
Time * Group	11.840	1	11.840	2.586	.129	.147
Error(Time)	68.689	15	4.579			

To follow-up on the significant within-subjects main effect across time, both the treatment and no-treatment control groups were subjected to paired sample t-tests. As seen in Table 18, above, participants with high levels of test anxiety at pre-intervention assessment who were placed in one of the two treatment groups reported an average decrease of 4.63 points in overall TAI scores over the course of the intervention. Those high test anxiety participants who received no treatment reported an average decrease of 2.16 points in overall TAI scores. These improvements equate to .463 and .216 standard deviations, respectively, on the normalized T-score scale used by the TAI. As seen in Tables 20 and 21, this result was statistically significant at the $\alpha = .05$ level for both the treatment group [$t(10) = 4.357$; $p = .001$] and the no-treatment control [$t(5) = 3.313$; $p = .021$], respectively.

Table 20: Treatment Group Paired Sample t-test for TAI Pre-/Post-Intervention Mean Differences

	M	*sd*	*SEM*	t	df	*p*	*d*
TAI-T Pre-TAI-T Post-	4.636	3.529	1.064	4.357	10	.001	1.361

Table 21: No-Treatment Control Paired Sample t-test for TAI Pre-/Post-Intervention Mean Differences

	M	*sd*	*SEM*	t	df	*p*	*d*
TAI-T Pre-TAI-T Post-	2.167	1.602	.654	3.313	5	.021	3.885

CHAPTER FIVE: Discussion

The present study aimed to evaluate the effectiveness of an Internet-based intervention for adolescents with test anxiety. This intervention is comprised of two main components:

- self-guided, psychoeducational computer modules, and
- an Internet-based group discussion forum.

Taken together, these two components are intended to mimic what adolescents may receive from participating in a structured group intervention—namely, skills and strategies for dealing with the symptoms of test anxiety, plus a supportive group environment in which questions and concerns may be raised and discussed.

To evaluate this intervention, study participants were placed in one of three groups, differentiated by the extent of intervention received: the Full Program (FP) group, the Computer Modules (CM) group, and the no treatment control group. Test anxiety levels were assessed pre-intervention, mid-intervention, and post-intervention. Academic ability was also assessed pre- and post-intervention.

SUMMARY OF HYPOTHESES

Hypothesis One

The first hypothesis proposed that participants who participated in the full program (i.e. those who received access to both the self-guided computer modules and the online discussion forum) would report a significant decrease in their experience of test anxiety over the course of the intervention. When compared with the comparison

control group, who did not receive any test anxiety intervention, participants in the full program would experience significantly less test anxiety following the test anxiety intervention.

This hypothesis was not supported. While study participants who received the full program did report lower mean scores in test anxiety symptomology over the course of the study, the difference between baseline and final assessment was not significant. The comparison control group, too, reported a slight decrease in test anxiety symptoms over the course of this study.

Hypothesis Two

The second hypothesis proposed that participants in both of the intervention groups—those who received the full program as well as those who received only the self-guided computer modules—would report a decrease in test anxiety symptoms over the course of the intervention study. It was further hypothesized that the addition of the online discussion forum to the computer modules would result in a more effective intervention; therefore, those participants receiving the full program would experience less test anxiety following the intervention than those who received only the self-guided computer modules.

Part of this hypothesis was supported. The participants who received the computer modules only did report significantly less test anxiety following the intervention than they did at the start of this study. Participants who received the additional component of the online discussion forum did not, however. While the Computer Modules Only group did report less test anxiety overall following the

intervention than did the Full Program group, the difference between the two groups was not significant.

Hypothesis Three

The third hypothesis proposed that participants who received the full intervention program would notice an improvement in test-related academic skills as a result of reduced test anxiety. Indeed, participants in the full intervention program did show improvement in their WJ-III-Ach scores between Form A, administered pre-intervention, and Form B, administered post-intervention. This overall hypothesis was not supported, however, as these academic gains were not correlated with test anxiety.

Hypothesis Four

The fourth hypothesis proposed that a participant's ability to benefit from the intervention would depend, in part, on his or her starting levels of test anxiety. Specifically, those participants with the highest levels of anxiety will receive more benefit from the intervention condition that potentially includes interpersonal feedback, motivation, and modeling (i.e. the full program). For those participants with moderate levels of anxiety at the start of the program, there would not be as noticeable a difference between the gains reported from full program placement as compared to the gains achieved by interacting with the computer modules alone.

This hypothesis was not supported. Statistical models that considered starting levels of test anxiety as a factor did not help to explain the overall change in test anxiety scores any more than did models which ignored starting levels of test anxiety as a potential factor.

DISCUSSION OF RESULTS OF PRIMARY HYPOTHESES

Non-Significant Gains for Full Program Group Participants

This study's primary hypotheses offered, in general, the following proposals:

- that participants in both treatment groups would report a significant reduction in test anxiety levels as a result of participation in the program.
- that participants who were placed in the FP group would report the most benefit, especially those participants with the highest starting test anxiety levels.
- that positive improvements in test anxiety symptoms would equate to gains in academic performance.
- that all of these positive effects would not similarly be reported by participants in a no-treatment control group.

Indeed, participants in both treatment groups reported lower levels of negative test anxiety symptoms after participating in this intervention. Interestingly, though, the greatest gains—and the only statistically significant gains—were demonstrated by participants in the CM group. The decrease in test anxiety symptoms for the FP group averaged 2.1 points on a normalized T-score scale; less than the nearly 4 points achieved by those intervention participants who were not given access to the online discussion group component.

There are a number of possible explanations as to why this result runs contrary to the hypothesis. One could argue that inclusion in the discussion group exposed students to a forum in which anxiety was able to spread, like a virus, from peer-to-peer through

worry laden comments. In this way, the group discussions would have acted more as an anxiety hothouse than the social support network that was intended.

Scrutiny of the specific comments offered within the discussion forum does not support this notion, though. Comments posted on the discussion board were mostly positive, did not contain specific anxiety language, and generally ranged from positive discussion contributions to what could be considered prototypical MySpace postings. As a positive example, consider a post from a participant during Lesson 2: "My only study zone is mah (*sic*) room. I usually watch something on tv while doing my homework. I guess I'll turn the volume down next time so I don't get distracted." A similarly on-topic contribution during Lesson 3: "I think some things that will help me relax during (tests) would be to calm down, think positive (*sic*), and just be confident in myself." Examples of some less pointed comments would include, "First!" and "If you freeze up, candy can help!" In fact, only one of the discussion board posts contained what could be construed as negative content, and its author took strides to convey that this negativity was intended to be a joke: "you spelled 'taking' wrong, maybe that's a reason why your (*sic*) so anxious, lol, jk, ☺."

It is true, though, that the discussion board did not function as intended. As described in depth in the Methods section of this paper, participants in the FP group were provided specific instructions for the group discussions. They were to sign on at least once weekly, read the provided prompts, and post at least one unique comment and at least one comment in response to a peer. The prompts were intended to provide merely a starting point for broader discussions. It was hoped that students would become engaged

in reciprocal discussions regarding personal thoughts relevant to that week's topic. Within these discussions, students might find support and normalization for the anxiety they were feeling.

This goal did not come to fruition. Actual participation in the online discussion group was low. There was 100% participation in the Lesson 1 discussion. Lesson 2's discussion board reflected only two participants. Retraining during Lesson 3 increased the participation level back to 100%. Discussion boards during the final three lessons, however, contained three participants each. Beyond the low participation rate, the depth of interpersonal interactions between participants was lacking following the first lesson. The comments during Lesson 1 were indicative of virtual interactions between participants. Discussions during the following lessons were solely responses to the prompts and contained no participant interactivity.

While the eventual status of the online discussion group was unexpected within this study, and unfortunate considering its intent, it is not wholly unsupported by research. Hara, Bonk, and Angeli (2000) studied graduate student participation in online academic discussions and reported that "students tended to post just the one required comment per week" and did not interact at the level intended in that specific forum. With regard to the actual participation rates of online group forum members, Yang, Li, Tan, and Teo (2007) concluded that rate of high school student participation in online discussions seems to be primarily positively influenced by three factors: how much fun the forum is, how much a student expects to learn by participating in the forum, and peer

pressure to participate in the forum. Notably, online discussion participation rates were not found to be influenced by pressure from authority figures.

MySpace.com was chosen as a medium for the online discussions precisely to take advantage of two of the motivating factors described by Yang, et al. As discussed in this paper's literature review, MySpace is currently the most popular social networking site among high-school students. It was hoped that the discussion board, then, would come pre-infused with social credibility born of MySpace's reputation as a fun site that most high school students use.

The low participation rates and the strictly task-oriented nature of the discussions point to the possibility that participants viewed this portion of the program as one more homework assignment, to be completed for the sake of completion. If that is the case, it is possible that being asked to complete even more busy work, in addition to the homework assigned within the self-guided computer modules, reduced the credibility of the program as a whole. Taken to the extreme, one might conclude that participants in the FP group perhaps viewed the entire program as weekly busywork. Participants in the CM group, who had not been distanced by one more weekly assignment, were perhaps able to maintain an appropriately positive relationship with the program. Thus, we see the significant gains enjoyed by adolescents who did not participate in the weekly discussion board.

Non-Significant Improvement Relative to No Treatment Control Group

While students in the CM group showed significant improvement in test anxiety symptoms over time, the same improvement was not observed relative to the control group. This is due, in part, to similar positive improvement demonstrated by members of the control. This result begs the question—why did the students who received no intervention show positive gains?

One explanation, and perhaps the one that requires the least speculation, is that the control group simply performed similarly to the normative sample used by the TAI, with regards to that measure's test-retest reliability statistic. As reported by Spielberger, et al. (1980), test-retest reliability was .81 at one month (.62 at six months). The correlation between the control group's pre-/post-intervention TAI scores, administered within two months of each other, was .823.

It is also likely that anxiety levels observed within the control group are reflective of school-related environmental factors peripheral to this study. When this intervention started, at the time of first assessment of test anxiety levels, students were nearing the start of their final six-week marking period of the year. At the end of the year, high school students anticipate a number of comprehensive exams, including course finals and state-wide TAKS. Therefore, student anxiety levels at this time of year may be harbingers of the expected trials to come. Post-intervention assessment occurred in the final two weeks of school, once all major tests had been completed for the year and students were looking forward to summer vacation. Personal experience would tell us that anxiety levels are likely to be different between these two scenarios.

One other factor to consider is that the treatment groups and the control group did not exist in isolation from one another. Once a participant in either treatment group completed his weekly lesson, he returned to class with members of the control. It is possible that communication between groups occurred outside of the confines of the intervention program and that the control group experienced the benefits of a treatment bleed-over. The downward trending test anxiety levels demonstrated by the control group may reflect, in part, some level of knowledge of the skills passed on to treatment group participants, gleaned from peer-to-peer conversations.

All of the above possible explanations for the non-significant difference between the treatment groups and the control are based on the assumption that study participants were accurate reporters, pre- and post-intervention, of their own anxiety levels. It is possible that at the time of first assessment, participants in the two treatment groups were not completely attuned to physical and cognitive processes indicative of anxiety that they may have been experiencing, and so under-reported their true anxiety levels. During the course of the intervention, participants in both treatment groups learned to associate specific negative thoughts and feelings with the tests that invoked them, and so may have become more accurate self-reporters as a result. At the time of post-intervention assessment, the magnitude of the reduction in true test anxiety levels may have been greater than is reflected in the obtained results.

Test Anxiety Symptom Reduction vs. Academic Ability Improvement

Participants in the FP group demonstrated significant improvement in academic performance over time, as indicated by the mean difference between the WJ-III-Ach Form A and Form B administrations. Before removing two outliers from consideration, participants in this group improved an average of 9.18 points on the *Academic Fluency cluster* score, representing a change of nearly a full standard deviation on the normalized standard score scale used by the WJ-III-Ach. When the tests were re-run, minus the two outliers, the group's average score increase settled at 6.47 points, still representing a significant change. Members of the control group improved their WJ-III-Ach performance significantly, as well—6.29 points on average.

As there was no significant post-intervention difference between the FP and control groups on the TAI (as indicated by the results of Research Question One), it was not surprising that there was no significant difference between the two groups in terms of their improvement on the WJ-III-Ach, once the two outliers were removed. The correlation between the two was also insignificant, indicating that improvements (i.e. reductions) in TAI scores did not necessarily equate to gains in academic achievement, which runs contrary to what was initially hypothesized.

This non-significant correlation could potentially be a result of how academic achievement was measured. As described by many of the prominent theoretical models of test anxiety, a student's academic performance is potentially impacted by anxiety in a number of ways. A test anxious student's cognitive resources, which would ideally be committed to on-task behaviors, may be primarily allocated to worry, thereby reducing

performance *in vivo*. Additionally, a test anxious student may practice avoidance behaviors leading up to a test, thereby impacting his ability to thoroughly prepare for that test.

The academic measure used in this study was not one for which students were expected, or able, to study. As such, avoidance behaviors prior to the assessment would not be a factor. Furthermore, the level of personal investment each participant held in his own performance on the WJ-III-Ach was likely low, particularly in comparison to the investment placed in so-called "high stakes" tests, such as the state-wide TAKS. Students were not led to believe that there were any true ramifications of their performances on this measure of academic achievement. It is a good possibility that the stakes were not high enough for this measure to elicit debilitating levels of test anxiety in enough participants to register on a statistical test.

No Treatment-Aptitude Interaction

The multiple regression used in Research Question Four indicated that how much a participant was able to benefit from specific group placement did not depend on that participant's starting levels of anxiety. It was initially hypothesized that the support and guidance offered by the online discussion group would be particularly beneficial to those participants with the highest levels of starting test anxiety; therefore, highly anxious participants would benefit most from placement in the Full Program treatment group. As discussed above, the online discussion group did not function in the intended capacity and likely did not offer its participants with a support system above and beyond that experienced by those participants in the Computer Modules Only group. Given that, the

lack of an interaction between group placement and baseline anxiety levels is not unexpected.

DISCUSSION OF RESULTS OF EXPLORATORY ANALYSIS

This additional analysis was prompted by two initial findings:

- the TAI baseline scores presented group means that were only slightly above the population average, and
- the ultimate nature of the online discussion group resulted in little practical distinction between the Full Program and Computer Modules Only group.

The stated intention of this intervention is to reduce the symptoms of test anxiety in adolescents. This researcher acknowledges, however, that there is a level of anxiety that is beneficial in that it is motivating. This intervention was not designed to reduce facilitative test anxiety. Therefore, the expected reduction in test anxiety symptoms for those participants with average or below average baseline TAI scores would be minimal. So, it was important to analyze the change in TAI scores in only those participants with high starting levels of test anxiety. Furthermore, it was recognized that the FP group was more similar, in practice, to the CM group than was designed. For this final analysis, then, the two experimental groups were merged into one "Received Treatment" group for comparison against the control.

This analysis revealed that students who started the program with TAI scores higher than 55 (greater than .5 standard deviations above the population mean) reported significant positive improvement in both the Treatment and No Treatment groups. There

was a slight, although non-significant, difference between the groups, in favor of the Treatment group, at the time of post-intervention analysis. The difference scores (i.e. TAI pre-intervention – TAI post-intervention) obtained for each group also differed, again non-significantly, in favor of the Treatment group.

Although this additional analysis did not reveal significant gains for the Treatment group relative to the control, it did indicate that significant gains took place over the course of the intervention. The effect size for this treatment group was large, 1.361, and greater than that reported by a study of a similar program (Orbach, 2007). That the improvement demonstrated by each of these two groups trends in the desired direction should not be overlooked. After removing from consideration the participants without baseline test anxiety scores greater than .5 standard deviations above the mean, the power of this test to recognize either a significant interaction effect, or a between subjects main effect, was reduced considerably.

STUDY STRENGTHS

The primary strength of this study is that it evaluated a new intervention *in vivo* and collected novel data from the precise sample that intervention intends to benefit. By implementing this intervention within the classroom, this study was able to assess not only the quantitative data obtained, but also a number of essential qualitative factors that impact its effectiveness.

The initial makeup of the comparison groups also represents a strength for this study. The three groups were quite homogenous. In addition to non-significant differences among the groups in the two baseline measures—TAI and WJ-III-Ach—the

groups had very similar socio-cultural compositions. Furthermore, all students attended school in the same system and comprised only two unique classes of students. As such, each participant experienced very similar daily environmental events that would have otherwise been difficult to control.

This study contributes to a small, but growing, pool of research concerning computer-based delivery of mental health services. The effect sizes provided will allow a comparison between this study and others, broadening our overall understanding of how computers may be used to treat symptoms of test anxiety.

Finally, a particular strength of this study is that it evaluated the two core components of this program separately. Because this study's design separated the experimental group participants into those receiving the full program and those receiving the computer modules only, it is possible to assess the value of the computer modules in isolation. Given the results of the online discussion group, the decision to separate those groups lent value to the study's outcome.

STUDY LIMITATIONS

The first limitation of this study is the small size of its highly anxious population. The initial overall sample size (N = 50) provided an acceptable power for the anticipated statistical tests. In order to most accurately answer the questions relevant to the purpose of this study, however, it was necessary to omit from some analyses those participants who had average or below-average levels of test anxiety at the start of the study. After this cut-point was set, the power of the exploratory statistical analyses, discussed above, was lowered.

Due to the online nature of this intervention, there was some loss of treatment fidelity that might otherwise be found in face-to-face work with a therapist. While the researcher provided thorough instructions, guided practice, regular prompts and reminders, and a fidelity check mid-intervention, the level of participant participation was ultimately up to the participant. Participant reports of time spent on task and amount of homework completed, for example, may not have been accurate. This, unfortunately, is a limitation of any intervention that has self-guided components and one that must be weighed against the potential benefits of the client autonomy gained in exchange.

As discussed above, the use of self-report measures represent a limitation in any study which uses them. In this case, the accuracy of participant self-reported test anxiety levels is not assured, which may have impacted the significance levels reported in some of this study's findings.

Finally, that the online discussion group did not emerge as an active social support medium is also a limitation of this study. As a result, it is not possible to evaluate the value of an online social networking group as a component in this computer-based intervention—one of the primary goals of the study. That being said, the unplanned form ultimately taken by the online discussion group offers valuable data for future improvements to this program.

AREAS OF FUTURE RESEARCH

Arguably the greatest value of this study is found in the direction it provides this researcher for future studies.

Most immediately, the online discussion group component of this intervention will be overhauled and improved based on the results of this study. Participants in this study were provided with a very hands-off approach, allowed to access the discussion group on their own schedule, in the hopes that the autonomy would increase investment in the program. A more productive approach may be to schedule regular (e.g. weekly) online meetings in a real-time chatroom, moderated by a trained therapist. During non-meeting times, intervention participants would be welcome to post thoughts, questions, and concerns to the chatroom, similarly to the discussion board in the current study. The scheduled, live, facilitated chats would provide not only a sense of accountability for participants, but also a level of immediate gratification. The use of newer technologies, such as Google Video and Voice Chat, would allow the facilitator, and any participant with access to a webcam, to participate more personally in the meeting and would perhaps increase this component's potential for interpersonal connection.

The second run of this study should focus on a clinical sample, screened for symptoms by a trained clinician. Test anxiety levels should be assessed using multiple measures, in the hopes that the convergence of these measures may provide an accurate picture of participants' true anxiety levels. Academic performance, too, could be assessed by different means. If it is possible to acquire this particular data, participant

scores on statewide “high stakes” tests could be used to assess academic performance under more demanding conditions.

Beyond the focus of this specific intervention—helping adolescents with test anxiety—it is this researcher’s plan to generalize the program developed through this program to fit the psychotherapeutic needs of a broad range of clients. As this program is based in empirically-supported cognitive-behavioral techniques, it could be adapted to suit the needs of clients with most disorders sensitive to a CBT approach (e.g. Generalized Anxiety, Depression).

This researcher hopes that this study marks the first step in the development of a program that is easy to access, fun to engage, broad in its scope, and effectively therapeutic in its overall offering.

Appendices

Appendix A: Self-Guided Computer Modules Program Guide

The following pages provide a detailed presentation of the information made available to study participants through the self-guided computer modules. For a more accurate impression of the participants' experience with this program, the author encourages readers to visit the online intervention at: www.staycoolsystem.org.

Because they received varying access to the MySpace online discussion board, Computer Module and Full Program group participants were actually provided access to two separate websites. The two websites differed only in that the one provided to Computer Module participants did not contain a link to the MySpace Discussion Group, while that provided to Full Program participants did. All other site content was identical.

Figure 11 presents a screen shot of the homepage presented to participants in the Full Program group. Observe that the "Main Menu" (navigation bar on left of page) contains a link to the "MySpace Discussion Group." The right side of the screen contains the lesson menu. Each week, the main text on the homepage was changed to reflect the assignment for that week's lesson. The screenshot in Figure 13 was captured during Lesson 6.

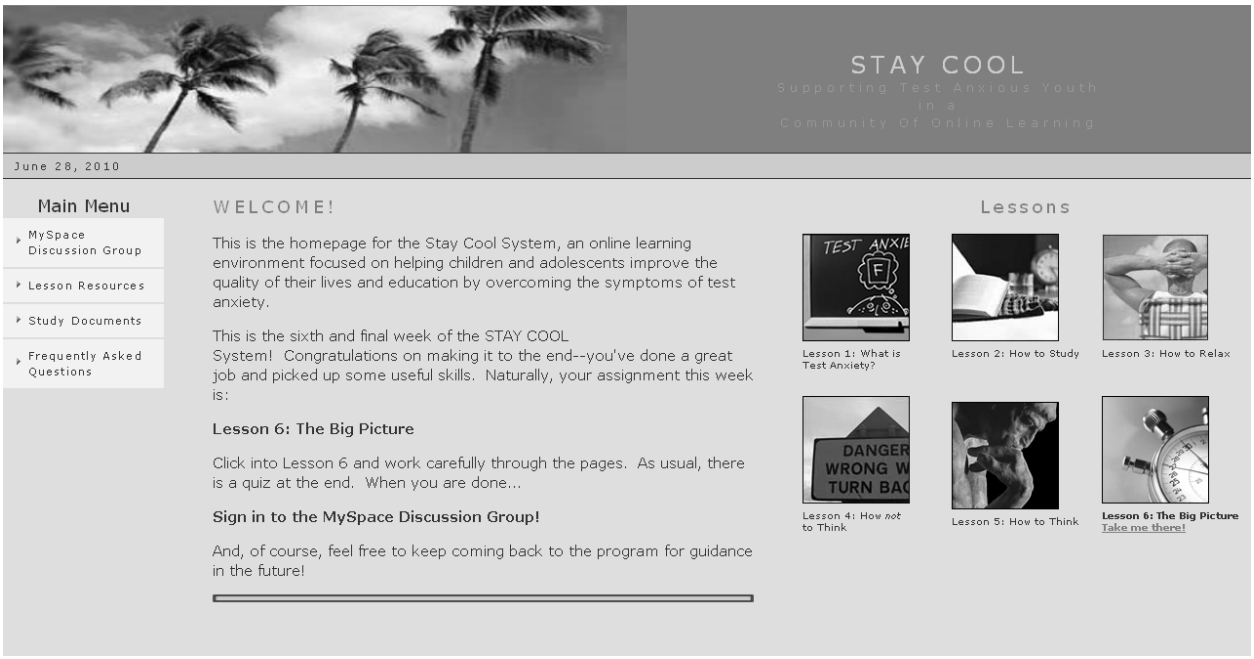

Figure 13. Screenshot of self-guided computer module website homepage (*Full Program group*).

As participants accessed each lesson, they were presented with a series of web pages like the one seen in Figure 14. The left side of each page presents a navigation menu that can be used to access the first page of each main topic for that lesson, plus a button to return to the website homepage. The top-right of each page presents a summary of important points from that page's particular topic. The bottom-right of each page contains a page-counter as well as "forward" and "back" arrows (when appropriate) for easy navigation. The main text for the page is chunked based on topic.

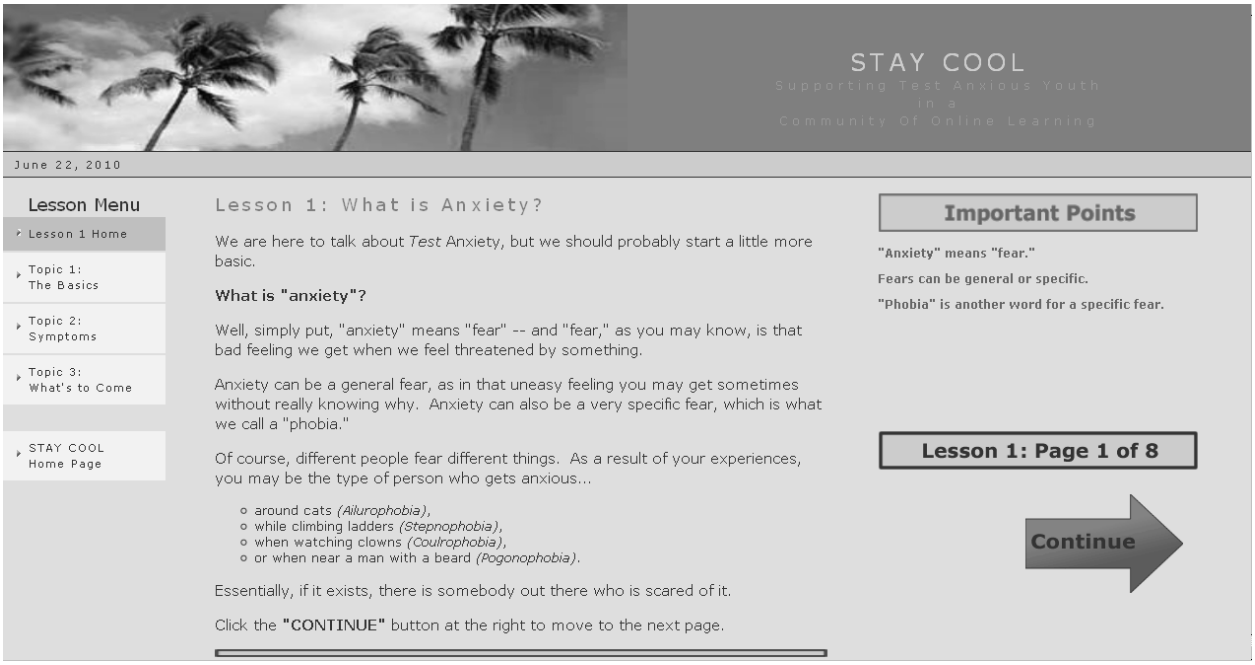

Figure 14. Screenshot of Lesson 1, Page 1, illustrating typical lesson page layout.

From the main menu, participants could also access a number of additional resources:

- MySpace Discussion Group (Full Program group participants only).
- Lesson Resources. This page provides users with a number of printable documents and outside website relevant to each Lesson. Please see Appendices B through N for copies of each document.
- Study Documents. This page provides printable documents relevant to the current study (e.g. consent forms).

- Frequently Asked Questions. As participants present question that may be relevant to all program users, those questions and their answers are placed on the F.A.Q.

What follows is the text from each lesson page of this website. Where applicable, an explanation of non-text page components has been provided.

Lesson 1, Page 1

Page text…

Lesson 1: What is Anxiety?

We are here to talk about *Test* Anxiety, but we should probably start a little more basic.
What is "anxiety"?

Well, simply put, "anxiety" means "fear" -- and "fear," as you may know, is that bad feeling we get when we feel threatened by something.

Anxiety can be a general fear, as in that uneasy feeling you may get sometimes without really knowing why. Anxiety can also be a very specific fear, which is what we call a "phobia."
Of course, different people fear different things. As a result of your experiences, you may be the type of person who gets anxious...

--around cats *(Ailurophobia)*,
--while climbing ladders *(Stepnophobia)*,
--when watching clowns *(Coulrophobia)*,
--or when near a man with a beard *(Pogonophobia)*.

Essentially, if it exists, there is somebody out there who is scared of it.

Click the **"CONTINUE"** button at the right to move to the next page.

Lesson 1, Page 2

Page text…

What is Test Anxiety?

Ok, so what about **Test Anxiety** (*testophobia*)?

Most psychologists think of test anxiety as being a very specific form of **social anxiety**. Social anxiety, as the name implies, is a general fear about social situations, interactions, and being judged or evaluated by others.

"Wait a minute," you may be saying right now. "I'm not shy. I love being around people. I'm certainly not scared of them!"

Good point. Remember, though, test anxiety is a *specific* form of social anxiety. Most of the time, you may have no problem being around others. You may be the life of the party. When taking a test, though, something different happens. You start to worry about the outcomes of the test and the potential embarrassment that might arise as a result of poor test performance.
It's the same thing that happens to golfers who choke on the back 9, actors who freeze on stage, or men who stutter around beautiful women. The true fear is the fear of poor performance and the social consequences of that performance.

Lesson 1, Page 3

Page text…

Good Anxiety?

Now, believe it or not, not all anxiety is bad! We *need* a little anxiety. If our caveman ancestors hadn't been appropriately afraid of wild animals, none of us would be here today. Having a little bit of anxiety helps keep us on our toes and working to avoid very real dangers. It is anxiety that keeps most of us from walking out into heavy traffic, wrestling bears, and juggling loaded pistols.

The same is true for tests. A little anxiety motivates us to work hard and prepare to do well. This good anxiety is called "**facilitative**" anxiety, because it *facilitates*, or helps, us do what needs to get done.

Too much anxiety, though, gets in our way and *debilitates*, or hurts, our performance. Let's return to the caveman example. Facilitative anxiety would have helped the caveman to be aware of wild animals, to carry a sharp spear, to hide in the shadows, and to otherwise be prepared to survive. "**Debilitative**" anxiety would have made him freeze with fear when confronted by a saber-toothed tiger. Debilitative anxiety = no more caveman.

So, our goal is not to get rid of *all* anxiety. Our goal is to reduce your anxiety levels from "too much" to "just enough." Keep that in mind.

Lesson 1, Page 4

Page text…

How anxiety feels.

Regardless of what gets you anxious, all debilitative anxiety has some common physical symptoms. You may experience all, some, or only one of these symptoms. Some of the more common physical symptoms of anxiety are:

--headaches,
--excessive sweating,
--nausea,
--diarrhea,
--frequent urination,
--shortness of breath, and
--rapid heartbeat.

Of course, any one of these symptoms can be a problem. Put them all together and you may find you're not quite yourself under certain circumstances. After all, how can you be expected to pay attention to a math problem when you need to go to the bathroom and are trying to think through a headache?

Lesson 1, Page 5

Page text…

How anxiety thinks.

On top of the bad physical feelings, there are mental symptoms of anxiety, as well.

Take a minute and think about your own testing experience. You're sitting at a desk, pencil in hand, the timer starts, and all of a sudden...

You FREEZE.

Your stomach tightens up

Your palms start to sweat.

Your shoulders cramp.

And...

And...?

...

And your mind goes blank.

But, is it true that your mind *really* goes blank? You may not be thinking what you need, or want, to be thinking--you know, thoughts that would help you on the test--but I would be willing to bet that there is plenty going through your mind when the test starts.

Lesson 1, Page 6

Page text…

Common anxious thoughts.

Just as there are common physical symptoms associated with test anxiety, so too are there common thoughts. Here are some common thoughts you may have had yourself while taking a test:

--"I'm not a good test taker."
--"I always fail these tests."
--"If I don't do well on this, people will think I'm stupid."
--"I don't know this material."
--"People can see me sweating."
--"Man, I *am* stupid."

Now, carefully consider these statements. If you think about them for a minute, you may begin to realize that not all of them are, well, shall we say, *accurate*? Is it true that you've never done well on a test, or that you don't know *any* of the material? Probably not.

See, here is what anxiety does. Anxiety takes whatever it is we are scared of--in this case a test--and turns that thing into some kind of unbeatable monster.

And this monster whispers thoughts in our ears about ourselves that aren't very pleasant... or very true, for that matter.

Regardless of how truthful or (*usually*) untruthful these thoughts are, we tend to believe them. And by believing the thoughts, our anxiety gets worse, and the monster gets stronger.

Lesson 1, Page 7

Page text…

How to fix it.

Fortunately, anxiety is one of those monsters you can learn to deal with.

There have been many famous and successful people who have overcome their own anxieties: Abraham Lincoln, Sigmund Freud, Edvard Munch, Johnny Depp, Oprah... The point is, with a bit of work, you can learn to beat anxiety, whatever the source.

Here is exactly how we are going to beat test anxiety.

First, you are going to learn the right way to study for exams and how to eliminate some of those bad habits that feed anxiety.

You know those uncomfortable physical symptoms that distract you when you're feeling anxious? You are going to learn a number of relaxation techniques that will help you calm your body and reduce those symptoms.

And those worrisome, catastrophic thoughts? You will learn to judge how extreme those thoughts are, and then how to replace them with more realistic thoughts.

Lesson 1, Page 8

Page text…

In the coming weeks.

The STAY COOL system is a six-week program designed to provide you with skills you can use to beat test anxiety. You are almost finished with Week 1. Not so bad, was it? Here is a brief outline of what is to come:

--Lesson 2: Learn how to study.
--Lesson 3: Learn how to relax.
--Lesson 4: Learn how *not* to think.
--Lesson 5: Learn how *to* think.
--Lesson 6: Putting it all together.

In the future, each lesson will end in a short quiz. Pay attention while you work through each lesson, as questions may focus on the most random (but important) of details! Some

of the lessons will also provide you with homework to complete before the next week. **Do the homework.** Test anxiety is very treatable, but you have to work to see the results.

You're off the hook this week, though. There is no quiz, and your homework is simple: **explore this site**. Go to the homepage and poke around for awhile. You won't be able to access future lessons until the appropriate time, but there are a lot of other good resources and even some activities for those curious enough to find them.

Thank you for joining me on this journey. We will talk next week.

Lesson 2, Page 1

Page text…

Lesson 2: How to Study...

When you are outside of school, left to your own devices, what kind of a student are you?
Do you plan ahead carefully for tests, prepare weeks in advance, and only study in complete silence?
Do you wait until the last minute, skimming your text book like a crazy person in the hallway before class?
This week, we are going to examine your study habits and discuss some of the implications of your study choices. We will talk about what you are doing right and what you could probably be doing better. There are two major topics this week:

1) How to control your environment to get the most out of your study time.
2) How to set your schedule and plan ahead for tests.

Read through each page carefully. Remember that important information on each page is summarized in the top-right corner. Plus, this week, there will be a quiz at the end. When you are finished reading a page, click the large "CONTINUE" arrow you see on the right.

Lesson 2, Page 2

Page text…

Your Study Zone

During a typical day, how much time do you think you spend learning? If your answer is, "not that much," you're wrong. You might not think you're wrong, but you are. Trust me.

If you are thinking that learning only takes place when you're nostril-deep in a text book, we need to broaden your definition a little. Do you play a musical instrument? Practice sports? Read comic books? Play video games? Talk to other humans? Any time your brain gets new information--which is does thousands of times a day--you are technically learning.

So, you have plenty of experience as a learner. I bet if you think about it, you probably also have a pretty good sense of what you need in order to be at your learning best.

When you study for a test, you need to do everything you can to help your brain take in, and hang on to, new information. Where you are, what you have around you, and how you feel when you study all affect your ability to learn. This combination of your environment and your state-of-mind is what we'll be calling your **STUDY ZONE.**

Lesson 2, Page 3

Page text…

A Bad Study Zone is...

Regardless of who you are, there are some things you can bring to your study zone that will make it harder for you to learn. If your brain were an automobile, you could give yourself one flat tire for each of the following:

--a ringing cell phone,
--text messages/IM/Twitter/online chat,
--a television on "in the background," or
--loud music with words.

And now that your car/brain doesn't work, and you have to walk, you can give yourself one sprained ankle for each time you try to study while you are...

--uncomfortable,
--too tired,
--too frustrated, angry, anxious, depressed, etc., or
--have no idea what your test is about.

Of course, no one of these things is going to derail your thought train (please forgive the mixed metaphor), but they add up quickly.

Lesson 2, Page 4

Page text…

A Good Study Zone is in a *Good Location*

I know I'm not telling you anything you don't know, but **where** you study has a huge impact on **how** you study. You could study crashed out on your friend's bed while he/she watches TMZ, or you could study at your kitchen table before dinner.

Picking the right place to study isn't rocket science. There are essentially two things to look for:

1) where you study should be comfortable (but not *too* comfortable), and
2) where you study should be free from distractions (especially fun ones).

It should be obvious why you need to be comfortable while studying. After all, how well can you concentrate if your seat makes your butt hurt? But, why shouldn't your study area be *too* comfortable? How many times have you fallen asleep while reading a textbook? Need I say more?

And now, of course, we need to consider the distractions.

Lesson 2, Page 5

Page text…

A Good Study Zone is *Distraction Free*

Let's try a little experiment:

1) Turn on some loud music, or if that's not an option, ask someone near you to start singing loudly into your ear.

2) Get out your cell phone and send a text to your best friend describing why you don't really like that one guy in science class who always wears the same shirt.
3) While texting, use your tongue to count the number of teeth in your mouth.
4) Before you've finished counting, memorize the following: **"Chromatic notes are the five pitches that, together with the seven pitches of a diatonic scale, make up a complete chromatic scale" (Bothamley, 1993).**
5) Good luck.

Your brain is a powerful machine, but it's not omnipotent (borrow a dictionary). While it can handle some distractions, too many will make it nearly impossible to focus on the important stuff. When you are getting into your study zone, turn off the cell phone (don't laugh--I'm serious), find a nice, quiet room, and get out of your brain's way so that it can do its job.

Now that you are comfortable and distraction free, you are in a much better position to get into the right studying state of mind.

Lesson 2, Page 6

Page text…

A Good Study Zone is a *Clear Head*

As a final note on this first topic, I want to make it clear that your good study zone is just as much mental as it is physical. A lot of things affect your state of mind, including how tired you are, how stressed you are, and how you feel emotionally.

In a perfect world, you would only have to prepare for tests when you were wide awake, in a great mood, and had nothing better to do. As you well know, however, the world isn't perfect. Half of your day is spent in school. After school, you may have sports or other extra-curricular activities taking up your time. You may have a job and/or family members to take care of. Through no fault of your own, you may not be able to even start your homework until after dinner, when you're tired and want nothing more than to lie on the couch and watch TV.

My point is, if you were to wait for the perfect time to start studying, it would never happen. In future weeks, we will discuss some ways to keep yourself calm and focused on your work, even when your brain isn't fully cooperating. Now though, we will discuss the very important topics of *when to study* and *how to prepare.*

Lesson 2, Page 7

Page text…

Cramming = :(

When you have a test on Friday, is this your typical study schedule?

--**Monday**: Watch *The Simple Life, Season 3* marathon.
--**Tuesday**: Update MySpace and Facebook pages to include personal impressions of Paris Hilton's weight loss over the course of six weeks.
--**Wednesday**: Time to get down to studying! Right after one more game of *Madden '09*.
--**Thursday**: Ok, now it's really time to get serious. Wait... where are my books?

The phrase, "cramming for a test," means to wait until the last minute to study and then *cram* as much information into your head as possible. In case you haven't learned this yet, cramming for tests is not the most productive study strategy. Now, I know what you're thinking: *"But, I do best when I cram!"* First of all, that's not true. If this *is* your response, it means you haven't tried studying any other way. Secondly, even if you *are* a good crammer--if you are able to learn a large amount of information at the last minute--there are a number of good reasons not to wait until the last minute. Two that come to mind are:

--Unforeseen emergencies can disrupt your plans to study.
--If you don't understand some of the material, there is no time left to ask questions.

So, relying on cramming as your main study strategy isn't a good idea. Let's talk about what *is* a good idea.

Lesson 2, Page 8

Page text…

Six Days to Studying Success.

Plan ahead! When you have a test, start preparing at least five days before, using the following steps as guidance:

--**5 Days Before:** Ask your teacher what specific material will be on the test, as well as what *won't* be on the test. Make sure you have all test-related handouts and worksheets from the teacher.
--**4 Days Before:** Begin to review your materials. Rewrite (or type) any class notes that

pertain to the test. Make sure to go through your textbook and write out the important stuff. You don't have to write out every word. Paraphrase and just write down the important stuff.

--**3 Days Before:** Rewrite your notes BY HAND. When you write notes by hand, you form a physical memory to associate with those notes, ingraining them more thoroughly into your brain. Keep these new notes down to a minimum number of words. Use index cards if you like to study with flashcards.

--**2 Days Before:** Start coming up with mnemonic devices--strategies for remembering facts--for those hard to remember notes. A good rundown on some common mnemonic devices can be found on the Lesson Resources page. Continue studying the rest of your handwritten notes.

--**1 Day Before:** Write up a list of questions that you think could be asked on the test and then answer them. Nobody expects you to be able to tell the future. The point of this is to get you to think carefully about what might be on the exam, and then to quiz yourself on how much of this info you know. Then, try to get a good night's sleep.

--**TEST DAY:** Your brain needs fuel to be at its best--eat breakfast. If possible, look over your re-re-written notes and mnemonic devices before school and/or during lunch. Sharpen your pencils. Put on your thinking cap.

(adapted from Strichart, Mangrum, & Ianuzzi, 1997)

These steps are guidelines for good test preparation. Of course, you may know that you need more time than this to study. If so, start studying earlier!

Continue on for an example of a completed six day study plan.

Lesson 2, Page 9

This page is comprised of a single Flash animation, an illustration of the study strategy explained in lesson 2, page 9. Please access this animation through http://staycoolsystem.org/groupb/lesson2_page9.html.

Lesson 2, Page 10

Page text…

(Almost) Final Words.

So, if you have been paying attention, you now know how to:

--create a **Study Zone** that will help you be the best studier you can be,
--build a schedule to start planning ahead for upcoming tests, and

--organize your work to get the most time out of your studying.

You have some homework this week. That's right. Homework. And it has three parts:

1) First, post to the MySpace Discussion Board. Same thing you did last week.
2) Take a look at your **Study Zone** at home. Remember what makes a good study zone and a bad study zone. Which one do you have? Set up a good one! I will be coming to your home to check the results. Not really. Because that would be illegal.
3) Check with your teachers about any upcoming tests you may have. Create a calendar to plan out your study schedule. Start getting organized now!

By the way, you can download and print both a calendar and a study plan template, as well as handouts that summarize the main points from this lesson. That's right! Cheat sheets and other helpful paper tools can (*and should*) be downloaded at: The Lesson Resources Page.

We are not quite done, though. Remember last week when I told you that each lesson from now on would end with a quiz? Well, now is the time for that quiz. Click the "Quiz" button at the right (or the one right below) to continue!

Lesson 2, Page 11

Page text…

So, here is how the quiz works:

--Click on the orange link, below. This will open a new window in your browser.
--Follow the on-screen instructions to begin the quiz.
--You will need a password. The password for this week is: **studying**

[Click here to take the QUIZ!]

Once you're done with the quiz, remember to do this week's homework! That includes posting to the discussion board!

Lesson 2, Quiz

STAY COOL Week 2 Quiz: What have you learned?

1. Which one of the following could you find in a Good Study Zone?
A. A television
B. A cell phone.
C. The Internet.
D. Loud music.
E. A comfy, sleep-ready bed.

2. Which of the following are good places to study (check all that apply)?
A. At a desk.
B. At a rock concert.
C. At the library.
D. At your friend's house while (s)he is playing Xbox.
E. At your kitchen table.
F. Sitting on your bed.

3. Please fill in the blank: "Chromatic notes are the five pitches that, together with the seven pitches of a _____ scale, make up a complete chromatic scale."
A. cryogenic
B. demographic
C. diatonic
D. histrionic
E. photoelectric

4. In this lesson, we discussed three things that make for a Good Study Zone. What were these three things?

5. In this lesson, we discussed two things that make up a good location for studying. What are those two things?

6. In your own words, please describe what "cramming for a test" means.

7. True or False: Cramming for a test is a great way to study.

8. According to this lesson, you should start studying at least how many days before a test?

9. According to this lesson, what is the first thing you need to do when preparing to study for an exam?

10. According to this lesson, what should you always do on the morning of a big test?

Lesson 3, Page 1

Page text…

Lesson 3: How to Relax...

In our first week, we discussed what Anxiety is and what it feels like. You were introduced to some common physical symptoms of test anxiety. Let us take a minute to review these symptoms:

--headaches,
--stomach aches,
--dry mouth,
--nausea or diarrhea,
--frequent urination,
--cold sweat,
--trouble taking full breaths,
--rapid heartbeat.

Remember, you may experience all, some, or only one of these symptoms. You may have really bad stomach cramps, only a small problem with sweating, and never get a headache. Regardless of how you experience the symptoms of test anxiety, they can be pretty annoying and can certainly get in the way of your ability to study! This week, you will be learning two techniques for reducing these bad feelings:

1) Deep Breathing, and
2) Progressive Deep Muscle Relaxation.

Now, you don't have to remember what these techniques are called--you just have to learn how to do them. Over the next few minutes, I will guide you through both of these techniques. Follow my directions closely, and you should be a championship relaxer in no time! At the end of this lesson, I will be providing you with resources to help you practice these techniques on your own.

Lesson 3, Page 2

Page text…

Breathing Right

Let's start with a question. Is carbon dioxide good for you or bad for you? You may know that we breathe in oxygen, and breathe out carbon dioxide, and so may think that carbon dioxide is bad. In fact, it's actually very necessary. Of course, you need *way* more oxygen than carbon dioxide in order to survive. Carbon dioxide, though, is one of our body's natural tranquilizers--in other words, it keeps us calm.

When humans breathe the correct way, we get a good balance of carbon dioxide and oxygen in our blood. Too much carbon dioxide will put you to sleep. The way we tend to breath when we get nervous or tense gives us too much oxygen, which makes us jittery.

Lesson 3, Page 3

Page text…

How do you breathe?

Before we go any further, I want you to do something for me. First, sit up straight. Next, place one hand, it doesn't matter which, on your stomach. Place the other on your chest. Now breathe normally. Which hand moves first? If it's your chest-hand, then you are chest-breathing. That often leads to too much oxygen, which, again, can increase feelings of nervousness.

I'm about to teach you how to do something called ***Deep Breathing***, which will slightly increase the amount of carbon dioxide in your body. This should have a calming effect. First, you need to make sure you are ready. In order to learn controlled breathing, you should be in a place where you can be comfortable and relaxed; a quiet room in your favorite chair, for example. If you have to learn this in a public place--a school library, for example--make sure to practice later at home where you can get the full effect.

When you are as comfortable as you can get, please continue.

Lesson 3, Page 4

Page text…

Let's get breathing!

Ok, now that you're ready, let's begin:

--As before, sit up straight and place one hand on your chest and one hand on your stomach.
--Breathe normally, paying close attention to which hand moves first. Your goal is to have your stomach-hand move first and more than your chest-hand. Breath in, and try to use your diaphragm--that muscle between your stomach and lungs--to pull the air down. Breathe out naturally.
--Repeat.

Right now, I just want you to practice getting your breath into your stomach. Don't worry about taking deep breaths; just breathe in to your stomach. I want you to practice breathing into your stomach for a minute or so. When you think you have it down, click "Continue."

Lesson 3, Page 5

Page text…

Let's get breathing! (*continued*)

Now that you know *where* to breathe, let's talk about *how* to breathe. When we breathe in, we take in oxygen, and when we breathe out, we let go of carbon dioxide, right? It makes sense that long, deep breaths in will increase the amount of oxygen in your body. If you let long, slow breaths out, you increase the amount of time that carbon dioxide stays in your blood. Therefore, when we want to calm down, we can try to slightly increase the amount of CO2 in our body by making a longer exhale than normal.

So, here's what I want you to do. As always, relax and get comfortable. And then...

1) Breathe in to your stomach, counting to "*3 Mississippi*" ("One Mississippi... Two Mississippi... Three Mississippi").
2) Now, when you exhale, make it last twice as long as your inhale, counting to "*6 Mississippi*".
3) Breathe in, deep into your stomach, for three seconds. Breathe out, long and slow.
4) Breathe in, deep into your stomach, for three seconds. Breathe out, long and slow.
5) Repeat for about a minute

Even better, I can guide you through your breathing. Put on some headphones, click the below button, close your eyes, and just follow along.

[Click here for an audio breathing guide!]

Make sure you are using your stomach muscles to bring that air down. It shouldn't be long before you feel your body beginning to relax. When you think you have it, continue on to the next page.

Lesson 3, Page 6

Page text…

Deep Breathing Summary

You should practice this breathing technique daily. It only takes about five minutes to get in a good, thorough practice session. Also, since controlled breathing helps you relax and calm your mind, it is a great way to fall asleep at night.

Incidentally, if you are trying to wake yourself up and make your mind more alert, you need to get more oxygen in your system. To do this, try the opposite of what you just learned. Take a longer, deeper inhale, with a normal exhale.

If you would like printable directions for *Deep Breathing*, visit the "Lesson Resources" page from the STAY COOL homepage--just click "Lesson Resources" in the "Main Menu," and then select the "Lesson 3: Relaxation Strategies" folder.

Ready to learn your second relaxation technique? Click the "Continue" button.

Lesson 3, Page 7

Page text…

Relaxed Muscles

When was the last time you thought about the muscles on the back of your head? How about the muscles around your eyes? There are over 650 muscles in the human body and we are only consciously aware of a small fraction of them at any given time. When we are anxious and feeling stressed, we carry that tension in muscles that we may not even know we have.

In this portion of the lesson, you are going to learn a technique known as *Progressive Deep Muscle Relaxation* (PDMR). With this technique, you relax your whole body by focusing on one little muscle, or muscle group, at a time. In order to practice *PDMR* the most effectively, you may need to make some accommodations that aren't possible in your school library or classroom. If that is the case, remember to return to this lesson when your environment is more relaxing!

On the next page, we will discuss how you will learn *Progressive Deep Muscle Relaxation*.

Lesson 3, Page 8

Page text…

PDMR Continued

Progressive Deep Muscle Relaxation is a technique that is used to train your body to relax from head to toe. The best way to learn PDMR is to have somebody walk you through it a time or two before you try to do it without guidance. That is what I am here for. As with the breathing exercise before, click the below button to play an audio guide.

[Click here for an audio relaxation guide!]

Just a note on this audio file. I know it's cheesy. For better or worse, cheese is relaxing. If you can get past the cheese, though, it really is quite helpful.

Once you have finished listening along and following the directions, click "Continue" to complete this week's Lesson.

Lesson 3, Page 9

Page text…

(Almost) Final Words.

Assuming that you have done everything I have asked you to do in this lesson, you now know how to:

--use **Deep Breathing** calm your nerves and begin to focus, and
--use **Progressive Deep Muscle Relaxation** to let go of the tension that builds up when

you are nervous.

Both are great ways to relax and start to ease the physical symptoms of anxiety. If you want them to work, though, you have to practice!! So, this is your homework:

--Practice **Deep Breathing** daily. As you may have figured out at this point, it takes about one minute to really get some good breathing in. You can practice on the bus, at lunch, while trying to fall asleep--lots of places. Use the audio file if you like. You can also download and print out paper instructions from the Lesson Resources page.
--Practice **Progressive Deep Muscle Relaxation** at least three times this week. This takes a little longer than the deep breathing, of course, and is a little more awkward to do in public. Practice while you're trying to fall asleep at night, or when you first get home from school. Again, you can download both an mp3 file and printable instructions from the... wait for it... Lesson Resources page.

By the way, if you are having trouble getting the audio files to work, I can make a CD for you with both files. Simply send an email to rwesbaker@gmail.com with your request and I will have one to you ASAP!

We are not quite done, though. Just like last week, now is the time for the quiz. Click the "Quiz" button at the right (or the one right below) to continue!

Lesson 3, Page 10

Page text…

This Week's Quiz.

So, here is how the quiz works:

Click on the orange link, below. This will open a new window in your browser.
Follow the on-screen instructions to begin the quiz.
You will need a password. The password for this week is: **relax**

[Click here to take the QUIZ!]

Once you're done with the quiz, remember to visit the...

[MySpace Discussion Group]

Lesson 3, Quiz

STAY COOL Week 3 Quiz: What have you learned?

1. Which one of the following is NOT a common physical symptoms of Test Anxiety?
A. Headaches
B. Rapid heartbeat
C. Itchy scalp
D. Cold sweat

2. If you want to help yourself relax, you need to breath in a way that...
A. gives you less carbon dioxide and less oxygen.
B. gives you less carbon dioxide and more oxygen.
C. gives you more carbon dioxide and less oxygen.
D. give you more carbon dioxide and more oxygen

3. When you are trying to relax by using Deep Breathing, which of the following is the correct way to breathe?
A. Just breathe normally.
B. Long breath in, normal breath out.
C. Normal breath in, long breath out.

4. When you are practicing Deep Breathing, which part of your body should you try to breathe with?
A. Your chest
B. Your stomach
C. Your feet.

5. When you learned Progressive Deep Muscle Relaxation this week, what was the first part of the body we started relaxing?

6. I offered you three ways to get the mp3 files for this week's lesson. What were those three ways?

7. Your homework this week is to: 1) practice deep breathing every day and 2) practice progressive deep muscle relaxation three times. Will you commit to practicing?
A. Yes.
B. No.
C. I'd like to, but I don't think I'll have time.
D. Yes, and this time I mean it.

8. In Lesson 2, we talked about how to set up a Good Study Zone. In your own words, what makes up a good study zone?

9. According to Lesson 2, what is the first thing you need to do when preparing to study for an exam?

10. According to Lesson 2, what should you always do on the morning of a big test?

Lesson 4, Page 1

Page text…

Lesson 4: How *not* to think

So far, we have discussed a number of strategies and techniques to combat test anxiety:

--In **Lesson 2**, you learned some good study habits, which will help you prevent the test anxiety that comes as a result of being poorly prepared for tests.
--In **Lesson 3**, you learned how test anxiety affects the way you *feel*, and also how to relax and fend off some of the bad feelings that come along with test anxiety.

Hopefully, you've been practicing these new skills!

This week, you will learn how test anxiety affects the way you *think* and *act* as you work through the following three topics:

1) Thinking Errors
2) Avoidance Behavior
3) The Cognitive-Behavioral Model of Test Anxiety

These topics can be a little more complicated than those from past weeks. Remember to use the Lesson Resources and Frequently Asked Questions to get some input! When you are ready to begin, click the "Continue" button on the right.

Lesson 4, Page 2

Page text…

Thinking Errors

Let's pretend for a minute. Imagine you are interested in somebody in your class and would like to take this person out on a date. You say to yourself one morning...

"Today after school, I'm going to find (*insert name here*) and ask him/her to go to the movies/dinner/a concert/whatever with me."

You spend all morning thinking about what you're going to say and trying to figure out how you're going to pay for the date.

Unless you're the coolest kid in school, though, asking another person on a date probably makes you a little nervous. As morning turns into afternoon, your excitement starts to wear off a little and you start to think about all the little bad "what ifs" that go along with this scenario. You think...

"What if she/he says 'no'? If she/he says 'no,' then everyone will think I'm a loser and *no one* will *ever* want to go out with me."

And now you don't feel excited anymore. Now, you feel like garbage.

Do you remember in the first lesson when we talked about the negative thoughts that happen when you're anxious? That's this.

"Thinking Errors" is a term that describes our tendency to think in unrealistic ways. Regardless of how smart we may be, we all have occasional thoughts that, with a little logic, we may *know* aren't true, but that we *believe* nonetheless.

There are a number of different types of thinking errors...

Lesson 4, Page 3

Page text…

Nine Types of Thinking Errors—The First Four

Here is the list of thinking errors. You don't necessarily need to memorize the names of these thinking errors. It is helpful, though, to know what they look like. If you can learn to recognize them in yourself, you can learn to stop this kind of thinking in its path. These are the most common thinking errors, with examples of how they may look for Test Anxiety:

Black and White Thinking: You only see the extremes--you're either perfect, or you're worthless.

[*Ex: You're doing pretty well on a quiz, but can't figure out one question. You tell yourself, "I've totally failed this test!"*]

Catastrophizing: You exaggerate the likelihood of something bad happening, *or* you exaggerate how bad it would be if that thing did happen.

[*Ex: You don't do well the first time you take the SAT. You convince yourself you'll never get in to college as a result.*]

Overgeneralizing: Based on one or two examples, you make a conclusion about all similar situations.

[*Ex: Because you failed one math quiz at the beginning of this year, you are now convinced that you're "not a math person."*]

"Yes, but..." Thinking: You tend to ignore the positive examples in your past and focus on the negatives.

[*Ex: You forget about all the times you've studied for a quiz or test and gotten a good score, instead telling yourself that you're just "not a good test taker."*]

Lesson 4, Page 4

Page text…

Nine Types of Thinking Errors—The Next Five

Telling the Future: You think that you can predict the future and "know" that things will turn out badly.

[*You tell yourself, "it doesn't matter how much I study for this test, I'm just going to fail."*]

"Should" Statements: You pressure yourself by saying "I should..." or "I shouldn't..." do or be something.

[*Ex: You get frustrated with all the studying you have to do for a test and say, "I shouldn't have to study this much! I should be smarter than this!"*]

Labeling: You give yourself negative labels and call yourself names.

[*Ex: You don't do as well as you wanted to on a test and think, "I'm so stupid!"*]

Emotional Reasoning: You let your feelings think for you.

[*Ex: You have studied really hard for a test, but because you're still nervous, you think, "I didn't study enough. If I had studied enough, I wouldn't be nervous.*]

Mind Reading: You act as if you know what other people are thinking.

[*Ex: You think, "my teacher expects me to fail this test. I don't have a chance!"*]

Lesson 4, Page 5

Page text…

Bad Thoughts Lead to Bad Feelings

Let us return to our pretend scenario. This time, though, let's consider what is going on from the point of view of thinking errors. If you remember, you were excited about asking a person out on a date, but then you start having *the thoughts*...

"What if she/he says 'no'? If she/he says 'no,' then everyone will think I'm a loser and *no one* will *ever* want to go out with me." -- **Catastrophizing.**

"Of course she/he will say no!" -- **Telling the future.**

"I remember when that one kid at the beginning of the year got rejected. He's been sitting alone at lunch ever since then." -- **Overgeneralizing.**

"If this is supposed to be a good thing, why do I feel so bad about it? It must not be meant to be." -- **Emotional Reasoning.**

And the list goes on and on...

So, at this point, you've convinced yourself that asking this person out after school will only lead to disaster. You will be rejected. You will lose any chance of ever going on a date. Your friends will abandon you. Your dog will spit in your face and find a new owner.

Of course, you still *want* to ask this person out, but now, instead of being excited about the idea, as you were this morning, the mere thought of seeing him/her in the halls makes you feel pretty crappy. Your stomach hurts. You feel all flushed and have trouble concentrating. You may start to sweat and get a headache. Whatever it is, you feel *bad*, and you know you want it to stop.

So, what is one way to make it stop?

Page text…

Bad Feelings Lead to Avoidance

Now, if you were hitting your hand with a hammer and it hurt--which it would--you would stop hitting your hand, right? Well, you might think that it's sort of the same thing here. When you start to think about all the bad possible outcomes of asking this guy/gal on a date, you start to feel really bad. You are aware, because you're a pretty smart person, that the easiest way to make those feelings go away is to just change your plans...

Don't ask him/her out.

All of a sudden, the future looks brighter! Since you aren't going to ask him/her out, he/she won't reject you, you won't get embarrassed, and everything will be ok. And, if you want, you can try again tomorrow! Right? *RIGHT?!*

Umm, maybe not.

Because, you see, this situation isn't *exactly* like hitting yourself with a hammer. When you stop with the hammer, all you've lost are a few more bruises. If you don't ask this person out, though, you have potentially missed out on something pretty cool. A good date? A new boyfriend or girlfriend? The satisfaction of having done something difficult and succeeding?

Furthermore, the *next* time you try to ask someone out, what do you think will be going through your head? Visions of success and romantic bliss? Or the last time you tried to do the same thing and chickened out like the failure you are (*your words, not mine*)?

What you have just done, by deciding to not ask this person out, is what we call **"AVOIDANCE"** and it is the most common negative behavioral response to anxiety. When you practice avoidance, you are choosing to not do something that makes you anxious, so that you will not experience the bad feelings that go along with anxiety. Avoidance may work in the short run, but it can have some pretty serious consequences.

Lesson 4, Page 7

Page text…

Avoidance and Test Anxiety

Let us think about how avoidance behavior works in terms of test anxiety. If you have test anxiety, when you sit down to take a test you probably feel pretty bad. You can't really avoid most tests--once you've sat down and the timer starts, you are pretty much stuck. You can, though, avoid all the other little things that make you think about tests.

Say, for example, that you have a big math test this Friday. You've tried to study, but every time you do, you start to predict your eventual failure on the test, and then the bad feelings kick in. Studying makes you feel bad. On the other hand, surfing the web for an hour or so calms you down a little.

And so we have the Avoidance Behavior series of equations:

1) Studying = feel bad right now.
2) Waste time online = feel good right now.
3) Natural outcome: Avoidance wins.

Once you experience the healing powers of avoidance, it becomes easier and easier to skip out on the things that make you feel anxious. Study for the math test? I'll do it later. Math homework? Whoops, I "forgot" my book at school. Stick around for after school tutoring? I just remembered, my mom asked me to water the plants.

So, now that you've avoided studying when you had the opportunity, what do you think is going to happen when you actually try to take the test? You will probably be underprepared, which will only make your anxiety worse in the moment, and you will not perform as well as you could have, which will make your anxiety worse in the long run. Worse anxiety means more avoidance in the future, which leads to worse anxiety, and so on.

Lesson 4, Page 8

Page text…

The Cognitive-Behavioral Model of Anxiety

What you have just learned is what we'll call "The Cognitive-Behavioral Model of Anxiety," and it is one way psychologists explain how anxiety works. It may sound fancy-schmancy, but it is, in fact, pretty straight forward. The word, "cognitive," means "thoughts." The "Cognitive-Behavioral Model" describes how thoughts influence the way we feel and behave, and vice-versa.

In general, when we're placed in a situation about which we're anxious, we start to get negative thoughts about how we will perform in that situation. Those negative thoughts lead to negative feelings. When faced with those negative feelings, we do all sorts of things, including practice avoidance, in order to cope.

And so, the model, at its worst, looks a little something like... (*click "Continue" to see the model*)

Lesson 4, Page 9

**This page is comprised of a single Flash animation, an illustration of the avoidance cycle described in lesson 4, page 8. Please access this animation through http://staycoolsystem.org/groupb/lesson4_page8.html.*

Lesson 4, Page 10

Page text…

Breaking the Cycle

As you may have realized, the Avoidance Cycle can lead to a pretty vicious downward spiral. But fret not--the cycle you just saw is really a worst-case scenario presentation of the Cognitive-Behavioral model. You can learn skills to intervene in the cycle and turn that downward spiral around. For example, what if, instead of bad thoughts, you were able to think good thoughts in response to your Test Anxiety? The cycle might look something more like this...

Here follows a Flash animation depicting a positive re-imagining of the animation in lesson 4, page 9. Please access this animation through http://staycoolsystem.org/groupb/lesson4_page9.html.

Lesson 4, Page 11

Page text…

First Things First

So, yes, with a little bit of practice, you can break the downward spiral. Next week, you will learn specific strategies for correcting the thinking errors associated with Test Anxiety. First, though, you need to learn to recognize how you, personally, contribute to that cycle. That is your assignment for this week--to think seriously about how you get in the way of your own test success. Here is what you are to do:

1) Print out the [Cognitive Model Worksheet] (you can also find this worksheet on the Lesson Resources page).
2) Keep this worksheet in your pocket and carry it around with you. When you find yourself in a situation in which you are feeling anxious, fill out a line on the worksheet. Each line asks you:

--What the situation is.
--What you are thinking.
--What you are feeling.
--How you respond.

I repeat, use this worksheet every time you get anxious! Next week you will learn what to do to fix your thinking errors, so it is very important to spend this week learning what your thinking errors are. Print out more than one worksheet, if you need!

Now, similar to last week and the week before, it is time for a short quiz!

Lesson 4, Page 12

Page text…

This Week's Quiz

This week's quiz is new and improved! Here's how to make it work:

1) On the first page, enter your name! All of your answers will be sent to a private

database that can only be accessed by Wes Baker (the STAY COOL webmaster). I need your name to match your quiz scores to your file.
2) Click "Start Quiz."
3) Answer each question to the best of your ability. At the end, you will be provided a score, plus answers and explanations.
4) When you are done with the quiz and have received your score, click the "Continue" arrow on the right to go to the end of the lesson.

STAY COOL Week 4 Quiz: What have you learned?

1) Which of the following is a general term that describes common mistakes our brains make when deciding what is true and what is not?

A. Catastrophizing.
B. Low IQ.
C. My brain don't work.
D. Thinking Errors.
E. All of the above.

2) Which of the nine types of thinking errors does the following represent?

Your teacher tells you that you're doing very well in the class. You think, "he's just saying that to be nice. I can't be doing very well--I didn't understand last night's homework."

A. "Yes, but…" Thinking
B. Catastrophizing
C. Telling the Future
D. Black and White Thinking
E. Overgeneralizing

3) Which of the nine types of thinking errors does the following represent?

You think that you didn't study enough for an English test. You tell yourself, "if I get a bad score on this test, colleges will see that on my transcript and then I'll never get into a good school!"

A. Black and White Thinking
B. Emotional Reasoning
C. Mind Reading
D. Telling the Future
E. Catastrophizing

4) Which of the nine types of thinking errors does the following represent?

You are taking a Science test and doing pretty well, you think. Halfway through, though, a question asks about a term you've never heard. Because you don't know this one question, you convince yourself that you've failed the test.

A. Mind Reading

B. Black and White Thinking
C. Emotional Reasoning
D. Labeling
E. Telling the Future

5) What do you call it when you don't do something you want to, or should, do because it makes you feel anxious? (*free response question*)

6) During this lesson, I contrasted not asking a person on a date with hitting yourself in the hand with something. What was that something? (*free response question*)

7) What model was used to describe how anxiety can lead to negative actions.
A. The Anxiety Model
B. The Cognitive-Behavioral Model
C. The Behavioral-Cognitive Model
D. The Super Model
E. The Lego Hogwarts Castle Model

8) Which of the following most specifically illustrates the Avoidance Cycle, as it was described in Lesson 4?
A. Anxiety → Negative Feelings → Negative Thoughts → Avoidance → More Anxiety
B. Anxiety → Avoidance → Negative Feelings → More Anxiety → Negative Thoughts
C. Anxiety → Negative Thoughts → Negative Feelings → Avoidance → More Anxiety
D. Anxiety → Avoidance → More Anxiety

9) If possible, which of the following should be left out of the Study Zone?
A. Computer
B. Cell phone
C. Books
D. Calculator

10) Which of the following is NOT a common physical symptom of test anxiety?
A. Rapid heart-rate
B. Nausea
C. Headache
D. Labeling
E. Shortness of breath

Lesson 4, Page 13

Page text…

Final Words

Just to reiterate, you do have homework this week (just as you did after Lessons 2 & 3). Here is what you are to do:

1) Print out the [Cognitive Model Worksheet] (you can also find this worksheet on the Lesson Resources page).
2) Keep this worksheet in your pocket and carry it around with you. When you find yourself in a situation in which you are feeling anxious, fill out a line on the worksheet. Each line asks you
   --What the situation is.
   --What you are thinking.
   --What you are feeling.
   --How you respond.
3) I repeat, use this worksheet every time you get anxious! Next week you will learn what to do to fix your thinking errors, so it is very important to spend this week learning what your thinking errors are. Print out more than one worksheet, if you need!

Remember to keep practicing your new study and relaxation skills!

Now it is time to access the MySpace Discussion Group. Ask your teacher for your login information.

Lesson 5, Page 1

Page text…

Lesson 5: How to Think

Last week, you learned a lot about how anxiety affects the way we think. If you remember, when we feel anxious, we have a tendency to think negative thoughts that warp the way we interpret what is real.

This week, you will learn what to do to counter those negative thoughts when they crop up--as they will. You will do so as you work through the following two topics:

1) Automatic Thoughts
2) Coping

Make sure to go through each page carefully. When you are done, check out the Lesson Resources for some handy print-outs from today's lesson!

Lesson 5, Page 2

Page text…

Automatic Thoughts

Before we go any further, it's time to learn a new concept--**Automatic Thoughts**. Automatic Thoughts are:

--involuntary (i.e. they happen without our control)
--cognitive (i.e. they happen in our brains)
--repetitive (i.e. they are the same for similar situations)
--self-statements (i.e. they are comments we make to ourselves)

In other words, Automatic Thoughts are the little comments our brains make about what's going on around us. Unlike things we *say*, we don't generally make the conscious decision to have Automatic Thoughts. They just happen. Sometimes we are aware of our Automatic Thoughts, but most of the time we aren't.

One important thing about Automatic Thoughts... they can be **positive** or **negative**.

Remember **Thinking Errors** from Lesson 4? Those are ***negative* Automatic Thoughts**.

It's amazing how it all comes full-circle, isn't it?

Lesson 5, Page 3

Page text…

Remember the Thinking Errors?

Speaking of Thinking Errors, it's time for a quick review. There are a nine different types of thinking errors. As I said last week, you don't need to memorize this list. What is important, though, is that you have a sense of what types of thinking errors you tend to be guilty of. Here is the list:

--Black and White: you only see extremes--you're either perfect or you're worthless.

--**Catastrophizing:** you exaggerate the likelihood of something bad happening, or you exaggerate how bad it would be if that thing did happen.
--**Overgeneralizing:** based on one or two examples, you draw a conclusion about all similar situations.
--**"Yes, but...":** you tend to ignore the positive examples in your past and focus on the negatives.
--**Telling the Future:** you think that you can predict the future and "know" that things will turn out badly.
--**"Should" Statements:** you pressure yourself by saying "I should..." or "I shouldn't..." do something, be something, or know something.
--**Labeling:** you give yourself negative labels and call yourself names.
--**Emotional Reasoning:** you let your emotions, or your "gut," do your thinking for you.
--**Mind Reading:** you act as if you know what others are thinking.

What kind of a thinker are you? Are you a *Labeler*? In other words, do you tend to call yourself names--"Stupid!"--in response to mistakes, eventually believing the label once you've said it enough? Are you a *Future Teller*--convincing yourself that your future failure is something you can predict, regardless of what you might do to succeed?

As you'll soon see, when you have learned what types of thinking errors you make, you can act to stop those thinking errors in their tracks!

Lesson 5, Page 3

Page text…

Cognitive-Behavioral Model Revisited

Another quick review. In Lesson 4, you learned about the Cognitive-Behavioral Model. Remember, this model describes how our thoughts affect our behaviors. In general:

--You are placed in a particular **Situation**, in which you have...
--Automatic Thoughts, which lead to...
--Feelings, which make you...
--Behave a certain way, which...
--Affects the **Situation**.

If we were to think about the Cognitive-Behavioral Model as a relay race, Automatic Thoughts would be the first leg of the race and the captain of the team. When the gun goes off to start the race (i.e. when the test starts), Automatic Thoughts kick in... *automatically* (for lack of a better word) . In a relay race, how that first person runs his or her leg can determine the outcome of the race. It is the same here--the types of Automatic Thoughts you have can determine the outcome of this cycle.

Good Automatic Thoughts can lead to a good outcome.

Bad Automatic Thoughts can lead to a bad outcome.

Lesson 5, Page 4

Page text…

The Avoidance Cycle

In Lesson 4, you learned what happens when you have primarily negative Automatic Thoughts in response to being placed in a testing situation. In this negative scenario you...

--Have Test Anxiety, which leads to...
--Thinking Errors, which produce...
--Symptoms of Test Anxiety, which lead to..
--Avoidance Behavior, which leads to...
--More Test Anxiety, which leads to...
--More Thinking Errors, ...

And so on. Last time, we called this **The Avoidance Cycle** because it describes, in part, how detrimental Avoidance Behavior can be. We could just as easily call it **The Thinking Error Cycle**, though, because it also describes how bad it can be if we let ourselves get overwhelmed with negative Automatic Thoughts.

Remember, though, that this is not the way it has to be!

Lesson 5, Page 6

Page text…

The Coping Cycle

The Coping Cycle is the positive version of the Avoidance Cycle. The Coping Cycle involves some of the same concepts as its more negative cousin, but includes some pretty important differences. In the Coping Cycle you...

--Have Test Anxiety, which leads to...
--Negative Automatic Thoughts, which you respond to with...

--Coping Statements, which help lessen the...
--Symptoms of Test Anxiety, which you further reduce with...
--Relaxation Strategies, which lead to...
--Productive Behaviors, which result in...
--Less Test Anxiety.

And so on.

There are some important things to point out here. Notice that the Coping Cycle isn't all sunshine and roses. Here, you still have Test Anxiety. You still have negative Automatic Thoughts. And, you still experience the negative physical symptoms of test anxiety.

On the plus side, you have the addition of two powerful intervention: **Coping Statements** and **Relaxation Strategies**. One of these you know. In Lesson 3, you learned some techniques to help yourself relax, to help deal with the unfortunate physical symptoms associated with Test Anxiety. You should still be practicing these relaxation strategies on a regular basis!

As of yet, you don't know what Coping Statements are. Click "Continue" to learn."

Lesson 5, Page 7

Page text…

Coping Statements

You already know that negative Automatic Thoughts lead to a bad outcome--more Test Anxiety. It should make sense to you, then, that positive Automatic Thoughts would lead to a good outcome. Of course.

There's a problem, though. When you are anxious about something and are having negative Automatic Thoughts, you can't just flip a switch and turn those frowns upside down. You can't go from thinking, "I'm no good at this," to, "I'm the best test-taker there is," overnight. There has to be a midpoint on your journey from the bad to the good.

That's where **Coping Statements** come in.

Coping Statements are very effective tools to use in response to negative Automatic Thoughts. In general, Coping Statements are little comments that you make to yourself when you catch yourself making Thinking Errors. At the risk of oversimplifying a very important concept, here is how Coping Statements work:

1) When you notice that you are beginning to feel anxious, try to focus on what you are thinking at that moment. You may not realize you are anxious until you feel the physical symptoms of Test Anxiety (do you remember what those are)?
2) While you are focusing on your thoughts, try to gauge whether those thoughts are realistic or overly negative. Be honest with yourself! Remember, when you are anxious, you tend to believe unrealistically negative things.
3) When you have identified your thinking error, come up with a response that is both **more realistic** and **more positive** than the negative thought you are having.
4) This **realistic** and **positive** comeback is your Coping Statement. Repeat your Coping Statement to yourself until you begin to feel your symptoms lessen!

Now, these four steps may sound simple, but getting the hang of Coping Statements can actually be a little tough. Continue on to the next page to get some examples of how this works.

Page text…

Watch them in Action

Let's check out an example.

You sit down to begin studying for a big test and you start to feel overwhelmed by the amount of material you have to study. You say to yourself, **"There's no way I can learn all this material! I might as well just give up now."**

1) First, what is the Thinking Error? Well, you are **Telling the Future** by predicting that you can't learn everything in time. You are also doing a little **Black and White Thinking**, by telling yourself that if you can't learn it all, then it won't do you any good to learn even a little bit.
2) Second, what is a more **positive** and **realistic** thought under the circumstances? How about, **"There's a lot here to study! I may not be able to learn it all, but something is better than nothing!"**

Ok, that's certainly more **realistic**. If you study, you can always learn *something*, and that will be better than not learning anything at all.

The Coping Statement is also more **positive**. The Thinking Error above will probably lead to *Avoidance Behavior*. If you respond with this Coping Statement, you will be more motivated to get at least a little studying done.

One more important thing to point out about this Coping Statement. You notice that the Coping Statement isn't, **"I'm the smartest person out there! I can learn all this material tonight and then ace that test!"** While that may be true for some, if that *is* true for you, you probably don't have Test Anxiety. This is not a good Coping Statement.

Again, the Coping Statement has to be **realistic**. If it is unrealistically *negative*, then it won't help you cope. Similarly, if the Coping Statement is unrealistically *positive*, then there's no chance you'll believe it, and that also won't help you cope. A good Coping Statement strikes a balance!

Lesson 5, Page 9

Page text…

A Few More Examples

Here are a few more examples of good Coping Statements. Read carefully and focus on how each Coping Statement is a **positive** and **realistic** response to the Thinking Error.

Example 1:
--**Thinking Error**: "There's no way I'm going to pass this test! (*Telling the Future*) I'm no good at math! (*Labeling*)"
--**Coping Statement**: "Math has never been my strongest subject, but I can study this and get some extra help from the teacher if I need. I may not get an 'A' on the test, but I don't have to fail."

Example 2:
--**Thinking Error**: "If I don't do well on the SAT, I won't get into any good colleges! (*Catastrophizing*)"
--**Coping Statement**: "If I don't do well on the SAT this time, I can take it again and again until I get the score I want. Also, there are *lots* of schools that don't really care about the SAT."

Example 3:
--**Thinking Error**: "I've waited too long to get any good studying done! (*Black & White Thinking*) I'm so stupid! (*Labeling*)"
--**Coping Statement**: "I'm not stupid--I'm human. I made a bad choice to procrastinate on studying, but if I turn off the XBox and get to work, I can still study *something*!"

I can't say it enough. Coping Statements are **positive** and **realistic**. A good Coping Statement will make it less likely that you will practice Avoidance Behavior.

Want to take a shot at it? You'll get that opportunity with this week's quiz.

Lesson 5, Page 10

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This Week's Quiz

The quiz this week will be a little different, so pay attention to following instructions!

1) Enter your first and last name on the first page of the quiz! I need to be able to match your answers with your name!
2) Click "Start Quiz".
3) During this week's quiz, you will have an opportunity to practice picking out good Coping Statements. Just as with last week, you'll be graded, so pick carefully!
4) When you are done with the quiz and have been given your score, click the "Continue" arrow on the right to go to the end of the lesson.

If you cannot see the quiz above, click on the following link:

[Lesson 5 Quiz: How to think...]

Lesson 5, Quiz

STAY COOL Week 5 Quiz: What have you learned?

1) First things first. In this lesson, you repeatedly heard that Coping Statements are both BLANK and BLANK. What is one of the words that would work in these blanks?

2) What is the other word that would go in those blanks?

3) In your own words, why is it important that Coping Statements be both BLANK and BLANK (*see your answers to Questions 1 & 2*)?

4) Okay, here's the scenario. You are sitting down to begin studying for a test and start to get nervous. You focus on what you are thinking and find the following thoughts: **"I can't do this. There's so much to learn. I'm going to fail this test."** Which of the following is the best Coping Statement?

A. Yes, I probably will fail, but I should have started studying earlier.
B. I'm not going to fail.
C. I can do this.
D. There is a lot to learn, but I can study and learn enough that I probably won't fail.

E. I will study and study and get an "A"!

5) You are in the middle of a test, and you don't know the answer to a question. You think: **"I should know this. I've been studying so much! Oh no--what if I've been missing all of the questions!"** Which of the following represents the best Coping Statement?

A. I will convince myself that I do know it and the answer I pick is the right one.
B. There's always going to be things I don't know. Just pick an answer, move on, and do my best on the rest.
C should have studied more.
D. Even if I fail this test, I can try harder on the next one.
E. There's no use in crying about it now. Suck it up, quit whining and move on.

6) Scenario: doing difficult math homework.
Thought: **"There's no way I'll get this! I'm so stupid!"**
In your own words, write out a good Coping Statement for this thought. Remember, positive and realistic.

7) Scenario: there are only five minutes left on the test, and you haven't answered 10 questions.
Thought: **"Oh no, I can't answer all of these questions! I'm going to fail!"**
Write a good Coping Statement for this thought. (*free response answer*)

8) Scenario: you wake up the morning of a big test, and start to worry.
Thought: **"I haven't studied enough. I'm going to fail. My GPA will go down. Colleges won't even look at me."**
Write a good Coping Statement for this thought.

9) What is the goal of a good Coping Statement?

10) On a scale from 1-5, with 1 being "Not at all" and 5 being "Very well," how well do you think you understand the concept of Coping Statements?

Lesson 5, Page 11

Page text…

Final Words

You should be used to it by now. You have homework this week. And here's what it is:

1) Print out the [Coping Statements Worksheet] (you can also find this worksheet on the

Lesson Resources page).
2) Keep this worksheet with you. When you are feeling anxious, fill out a new line on the worksheet. Each line asks you:
    --What negative thought are you having?
    --What type of Thinking Error is that?
    --What is a good Coping Statement?
3) Remember, using Coping Statements is one of the best ways to defeat those negative Automatic Thoughts! You can't do it when it counts, though, if you don't practice. Carry this worksheet with you and use it--it works!

At this point, you have learned the skills that you need in order to beat Test Anxiety. In fact, you have learned the skills that you need to beat Anxiety in many forms! In the next lesson, you will get a review of the strategies you have learned. Until then, make sure to keep up the practice.

Breathe deep and stay cool.

Now it is time to access the MySpace Discussion Group. Ask your teacher for your login information.

Lesson 6, Page 1

Page text…

Lesson 6: What's the Big Picture?

So, this is it. You have reached the final lesson of the STAY COOL System for Test Anxiety. At this point, you have already learned what you need to know in order to beat the symptoms of Test Anxiety. This week, we will put everything together in a Big Picture, then review and practice your new skills as you work your way through the following topics:

1) Painting the Big Picture
2) Study Skills Review
3) Relaxation Skills Review
4) Cognitive Skills Review
5) Final Practice

As you can see, there is a lot of cover today, so we should get started ASAP! One final note: **you will need headphones**. There is audio in today's lesson, so grab some headphones (ask your teacher if you need), and then click "Continue" to move on!

Lesson 6, Page 2

Page text…

Painting the Big Picture

Some of you smarties out there may have already figured out the Big Picture. Just in case you haven't, though, here is a clue:

Remember, Test Anxiety affects three general aspects of who you are:

--Your Thoughts.
--Your Feelings.
--Your Behaviors.

Remember, that's the Cognitive-Behavioral Model, which you learned about in Lesson 4. Here's a reminder of how it works.

Flash module re-presented from lesson 4, page 8.

Lesson 6, Page 3

Page text…

See it. Stop it.

And, what have you learned up to now?

You can fix your **bad thoughts** by...
1) recognizing **Thinking Errors**, and then...
2) using **Coping Statements**.

You can fix your **bad feelings** by...
1) recognizing the **Physical Symptoms** of Test Anxiety, and then...
2) using **Relaxation Strategies**.

You can fix your **bad behaviors** by...
1) admitting when you are practicing **Avoidance Behavior**, and then...
2) using good **Study Skills**.

So, for each of the ways Test Anxiety can negatively affect your life, you now have the ability to...
1) **See it** coming, and then...

2) **Stop it** in its tracks.

Kind of takes some of Test Anxiety's power away, doesn't it?

Lesson 6, Page 4

Page text…

Study Skills Review: the Study Zone

Ok, time for a quick Study Skills review.

First, you learned how to set up a good **Study Zone**. If you recall, a good Study Zone is:

1) Distraction free!
2) Slightly less than *too* comfortable.

And, what are some common distractions? Really, anything that is unrelated to what you are studying at the moment.

Is **music** a distraction? If it doesn't help you focus on your work, then, yes.

Is your **computer** a distraction? If you're not using it for studying or to complete homework, then probably, yes.

How about your **cell phone**? Almost certainly, yes.

How about a comfortable chair, some pretzels for snacking, and a stack of sharpened pencils? Not a distraction, not a distraction, and--you guessed it--not a distraction.

Lesson 6, Page 5

Page text…

Study Skills Review: 6 Days to Study

Second, you learned about cramming (always a bad idea) and how to set up a good study schedule.

A good study schedule for any big test will give you at least a few days to plan ahead, organize your notes, learn new material, refresh old knowledge, and come up with some

little tricks (called **mnemonic devices**) to help you keep it all straight in your head.

One study schedule you could use is the "6 Days to Studying Success" schedule we talked about in Lesson 2. Briefly, here is what you should do in the week leading up to the test:

--**5 Days Before:** Ask your teach what will and won't be tested. Have all the handouts you need.
--**4 Days Before:** Rewrite class notes. Go through your textbook and write out the important stuff. Paraphrase and just write down the important stuff.
--**3 Days Before:** Rewrite your notes BY HAND, using a minimum number of words. Index cards make good flashcards.
--**2 Days Before:** Come up with mnemonic devices for the more difficult facts. Continue studying the rest of your handwritten notes.
--**1 Day Before:** Write up a list of questions and then answer them. Then, try to get a good night's sleep.
--**TEST DAY:** Eat breakfast. Look over your final notes before school and/or during lunch. Plan to succeed.
(adapted from Strichart, Mangrum, & Ianuzzi, 1997)

Use the following links to get more details and resources from the "How to Study" lesson:

--[6 Days to Study Success] detailed instructions from Lesson 2.
--[Lesson 2 Resources], including complete study calendars and a list of mnemonic devices.

Now, "Continue" on for a review of Relaxation strategies.

Lesson 6, Page 6

Page text…

Relaxation Skills Review: Deep Breathing

When we get anxious, about anything, our bodies tend to respond with uncomfortable physical feelings. We get queasy, flushed, have a headache... we just don't feel ourselves.

Deep Breathing, as you learned in Lesson 3, is a great way to calm those nerves in the moment and reduce some of those bad physical feelings.

Ready to practice? Let's get breathing:

1) Sit up straight, or lie flat on your back.
2) Breathe in to your stomach, counting to "*3 Mississippi*" ("One Mississippi... Two Mississippi... Three Mississippi").
3) Now, when you exhale, make it last twice as long as your inhale, counting to "*6 Mississippi*".
4) Breathe in, deep into your stomach, for three seconds. Breathe out, long and slow.
5) Breathe in, deep into your stomach, for three seconds. Breathe out, long and slow.
6) Repeat for about a minute.

Deep Breathing is a fairly simple strategy to practice any time you need to calm your nerves a little. If you need something a little more hardcore, though, you'll need to start focusing on your muscles. Which is exactly what you'll do when you click "Continue."

Lesson 6, Page 7

Page text…

Relaxation Skills Review: PDMR

Progressive Deep Muscle Relaxation (PDMR) is a great way to relax your whole body when you have a couple of minutes. It takes longer than Deep Breathing, but it helps you relax all of your muscles, from your head to your toes, and eases the tension you may carry around with you as a result of Test Anxiety (or *any* kind of anxiety).

If you don't already have good practice with PDMR, it is much easier to have someone walk you through it. Click the button below to open up an mp3 file with an audio guide to PDMR. If you *have* been practicing PDMR and you feel comfortable enough to do it on your own, please take a couple of minutes now and do so. Otherwise:

[*Click to Relax*]

Check out the links below if you need more guidance with the techniques from Lesson 3:

--Deep Breathing detailed instructions from Lesson 3.
--PDMR detailed instructions from Lesson 3.
--Lesson 3 Resources, including printable instructions for Deep Breathing and PDMR.

Page text…

Thinking Skills Review: Thinking Errors

Thinking Errors are the ninjas of the Anxiety world. The enter your head without you knowing, they assassinate your senses of confidence and self-worth, and then they sneak away silently, leaving only bad grades and worse memories in their wake. We are often only aware of the Thinking Errors we make when we are looking for them specifically. Otherwise, we let them pass as truthful thoughts, which is why they are so problematic!

In Lesson 4, you learned about nine different types of Thinking Errors. Most likely, you aren't guilty of all of these Thinking Errors on a daily basis, but you probably commit at least one a day!

To continue the earlier metaphor--if you know to look out for the ninja, it's harder for him to sneak in through the window.

Once again, for your benefit, here is the list of Thinking Errors:

--**Black and White:** you only see extremes--you're either perfect or you're worthless.
--**Catastrophizing:** you exaggerate the likelihood of something bad happening, or you exaggerate how bad it would be if that thing did happen.
--**Overgeneralizing:** based on one or two examples, you draw a conclusion about all similar situations.
--**"Yes, but...":** you tend to ignore the positive examples in your past and focus on the negatives.
--**Telling the Future:** you think that you can predict the future and "know" that things will turn out badly.
--**"Should" Statements:** you pressure yourself by saying "I should..." or "I shouldn't..." do something, be something, or know something.
--**Labeling:** you give yourself negative labels and call yourself names.
--**Emotional Reasoning:** you let your emotions, or your "gut," do your thinking for you.
--**Mind Reading:** you act as if you know what others are thinking.

Remember, if you can learn to recognize your particular brand of Thinking Error, you can learn to Cope!

Lesson 6, Page 9

Page text…

Thinking Skills Review: Coping Statements

If Thinking Errors are the ninjas of the Anxiety world, **Coping Statements** are... whatever it is that kills ninjas.

Coping Statements are **positive** and **realistic** comments you make to yourself in response to the thoughts that are causing you anxiety. For example:

--Thinking Error: *"I can't do this. I'm going to fail."*
--**Coping Statement**: *"I've done this before. I can't predict the future. It's more likely I'll get a 'C' than I'll fail."*

--Thinking Error: *"I should have studied more!"*
--**Coping Statement**: *"That's in the past. What is important now is that I show the teacher what I do know and get the best score I can. Focus!"*

--Thinking Error: *"I'm so stupid!"*
--**Coping Statement**: *I'm not stupid. I'm human. I'll get some questions wrong, but it's not the end of the world."*

Remember how I said that people tend to make the same types of Thinking Errors over and over? Well, you may be able to use the same Coping Statements over and over, too! Come up with a few good ones and use them when you're nervous!

If you need more review with the topics from Lessons 4 & 5, check out these links:

--Lesson 4 Resources, with a helpful guide to common Thinking Errors.
--Lesson 5 Resources, complete with guided practice in Coping Statements!

Lesson 6, Page 10

Page text…

(Almost) Final Words

So, there you have it. We have come, *almost*, to the end.

At this point, you have learned how to recognize Test Anxiety when it is affecting the way you *think*, the way you *feel*, and the way you *behave*.

You have learned how to avoid *Avoidance Behavior* and correctly *Study* for tests.

You have learned how to *Relax* from your head to your toes.

You have learned how to *Cope* with negative thoughts.

In short, you have learned how to break the Test Anxiety cycle.

Now it's time for your weekly quiz. This week, though, will be different. On the next page, you will get to practice your new skills in a way that counts--during a real test. To make sure you get the most accurate experience, pick your grade level, below:

[9th Grade]

[11th Grade]

Lesson 6, Quiz

This final quiz presents each intervention participant with multiple choice academic problems reprinted from previously release TAKS Math exams, specifically the April 2009 administration. The quiz contains 12 problems, and students are instructed that they will have 7 minutes to complete the quiz.

Copies of both the 9th Grade TAKS Math and Exit Level (11th Grade) TAKS Math from the April 2009 administration may be found at www.tea.state.tx.us/index3.aspx?id=3839&menu_id=793.

APPENDIX B: LESSON 1 SUMMARY SHEET

In this lesson, you learned some of the basics about anxiety, in general, and Test Anxiety, specifically. You also learned how you will go about beating Test Anxiety. Here are some of those basics:

Anxiety…

- is a fancy word for "fear."
- can be a *general* feeling of fear or worry.
- can be a *specific* fear, which is called a "phobia." There are a lot of phobias. If it exists, someone is afraid of it, and there is a word for that phobia. Afraid of computers? *Cyberphobia*. Afraid of chopsticks? *Consecotaleophobia*. I'm serious.

Test Anxiety…

- is a specific fear of what will happen if you perform poorly on a test.
- is usually considered to be a specific form of *Social Anxiety*, or the fear of social interactions.

GOOD Anxiety…

- is also known as "facilitative" anxiety.
- helps us be aware of real dangers, and helps us prepare for those dangers.
- is necessary.

BAD Anxiety…

- is also known as "debilitative" anxiety.
- gets in the way of our ability to do what we need to do, when we need to do it.
- is something you can learn to deal with.
- has *Physical* as well as *Mental* symptoms.

Common physical symptoms of Test Anxiety:

- headaches,
- excessive sweating,
- nausea,
- diarrhea,
- frequent urination,
- shortness of breath, and
- rapid heartbeat.

Common (probably untrue) thoughts associated with Test Anxiety:

- "I'm not a good test taker."
- "I always fail these tests."
- "If I don't do well on this, people will think I'm stupid."
- "I don't know this material."
- "People can see me sweating."
- "Man, I *am* stupid."

The 3 ways to beat Test Anxiety:

1. Learn and *use* good study skills to become better prepared to take tests.
2. Learn and *use* good relaxation strategies to reduce the physical symptoms of Test Anxiety.
3. Learn and *use* good thinking strategies to reduce the mental symptoms of Test Anxiety.

APPENDIX C: LESSON 2 SUMMARY SHEET

In this lesson, you learned a number of ways to improve how you study for tests. Setting up a good study zone and practicing good study skills are a good way to start down the path to reduced test anxiety. If you think about it, the better prepared you are a for a test, the less you have to worry about while taking the test. Here's what you learned in Lesson 2.

Your Study Zone is made up of…

- Where you study.
- What you have around you when you study.
- How you feel when you study.

You are in a *Bad* Study Zone when…

- You are distracted.
- You are uncomfortable.
- You are tired.
- You are frustrated.
- You are unprepared.

Steps to setting up a *Good* Study Zone:

1. *Pick a time when you are awake and relaxed:*

   Of course, you can't always choose when you study, and sometimes you *have* to study when you are tired and cranky. The best time to study, though, is when your brain is well-rested and your body is at ease. If you try to start studying at 10 pm, after two hours of playing Modern Warfare 2, or after an argument with your parents, you may find that your brain doesn't quite do what you want it to.

2. *Find a good location:*

   The best place to study is one that is free from distractions and slightly less than too comfortable. Good places to study include the library, at a desk in a quiet room, sitting (not lying) on your bed, or at the kitchen table when there isn't a lot going on in the room. Of course, this isn't a complete list.

3. *Get rid of common distractions:*

   There are a lot of things that are much more fun to do than study. Get rid of those things. Cell phones, videogames, Internet (except for research), television, loud music, friends who are not studying… Put them aside for your study session.

Don’t worry, you can have them back when your homework is done (and your friends can live without you for an hour or so).

Cramming is Bad!

“Cramming” is what we call waiting until the last minute to study for a test. Cramming is bad for a number of reasons. First of all, one night usually isn’t enough time to thoroughly study the information for a test. Even if you *are* a super-genius, though, and can learn everything you need to know in a couple of hours the night before the test, cramming is *still* bad. What happens if an emergency comes up that interferes with your night of studying? What happens if you accidentally leave important study materials at school? What happens if you realize you don’t understand something and need to ask the teacher a question? If you start studying early, these issues won’t matter as much.

Prepare for Tests in Advance!

For average tests, give yourself at least a week to begin preparing. Of course, this assumes that you have been keeping up with the class work and doing the homework. Bigger tests need longer. If you are taking a week to study, try following the below guide as a way to prepare (or stretch out the steps if you need a little longer).

Six Days to Study Success:

- 5 Days Before: Ask your teacher what specific material will be on the test, as well as what *won't* be on the test. Make sure you have all test-related handouts and worksheets from the teacher.
- 4 Days Before: Begin to review your materials. Rewrite (or type) any class notes that pertain to the test. Make sure to go through your textbook and write out the important stuff. You don't have to write out every word. Paraphrase and just write down the important stuff.
- 3 Days Before: Rewrite your notes BY HAND. When you write notes by hand, you form a physical memory to associate with those notes, ingraining them more thoroughly into your brain. Keep these new notes down to a minimum number of words. Use index cards if you like to study with flashcards.
- 2 Days Before: Start coming up with mnemonic devices--strategies for remembering facts--for those hard to remember notes. Continue studying the rest of your handwritten notes.
- 1 Day Before: Write up a list of questions that you think could be asked on the test and then answer them. Nobody expects you to be able to tell the future. The point of this is to get you to think carefully about what might be on the exam, and then to quiz yourself on how much of this info you know. Then, try to get a good night's sleep.

- TEST DAY: Your brain needs fuel to be at its best--eat breakfast. If possible, look over your re-re-written notes and mnemonic devices before school and/or during lunch. Sharpen your pencils. Put on your thinking cap.

(adapted from Strichart, Mangrum, & Ianuzzi, 1997)

APPENDIX D: LESSON 3 SUMMARY SHEET

In this lesson, you learned a couple of good ways to relax when you are starting to get nervous, about tests or anything else! Here's what you learned in Lesson 3.

You know you need to relax when you start feeling…

- headaches
- stomach aches/cramps
- dry mouth
- nausea
- diarrhea
- frequent need to urinate
- cold sweat
- short breaths
- rapid heartbeat

Deep Breathing…

- is a great way to trick your body into thinking it's more relaxed than you feel. When your body thinks it is relaxed, your brain tends to believe it!
- gets a little more carbon dioxide into your system.
- focuses on getting the air you breathe deep into your stomach.
- involves taking a long, slow breath in, with a normal breath out.

Progressive Deep Muscle Relaxation…

- is a good way to train your body to release tension from even your most hidden muscles.
- involves slowly relaxing each muscle in your body, in small groups, starting at your head and working toward your feet.
- gets easier and easier the more you do it.

Make sure to download the "At Home…" instructions for both Deep Breath and Progressive Deep Muscle Relaxation so you can do them on your own!

APPENDIX E: LESSON 4 SUMMARY SHEET

In this lesson, you learned how your brain, which is supposed to be on your side, can get in the way of your success. Here's what you learned in Lesson 4.

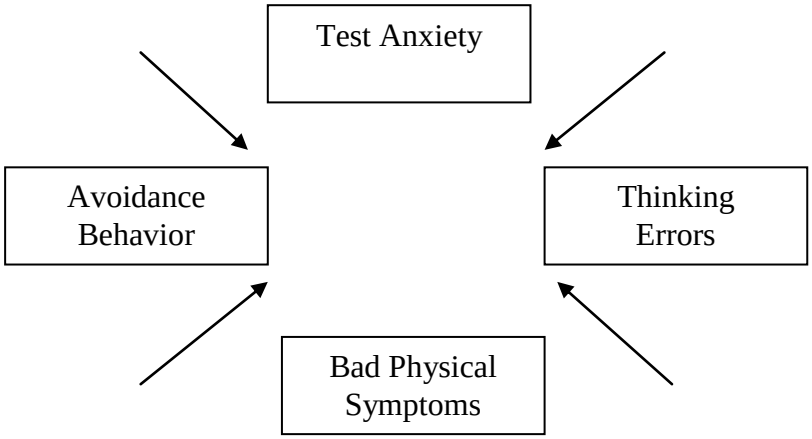
Thinking Errors: the common mistakes our brain tend to make when deciding what we "know" to be true and untrue. There are nine common thinking errors (download the "Thinking Errors" handout for a complete description and examples):

- Black and White Thinking
- Catastrophizing
- Overgeneralizing
- "Yes, but..." Thinking
- Telling the Future
- "Should" Statements
- Labeling
- Emotional Thinking
- Mind Reading

Avoidance Behavior:

- happens when we don't do something we want to, or should, do because that thing makes us feel anxious.
- is the most common negative behavioral reaction to anxiety.
- leads to more avoidance behavior.
- gets in the way of test preparation,
- results in you being unprepared for exams,
- contributes to the poor test performance you were so nervous about to begin with.

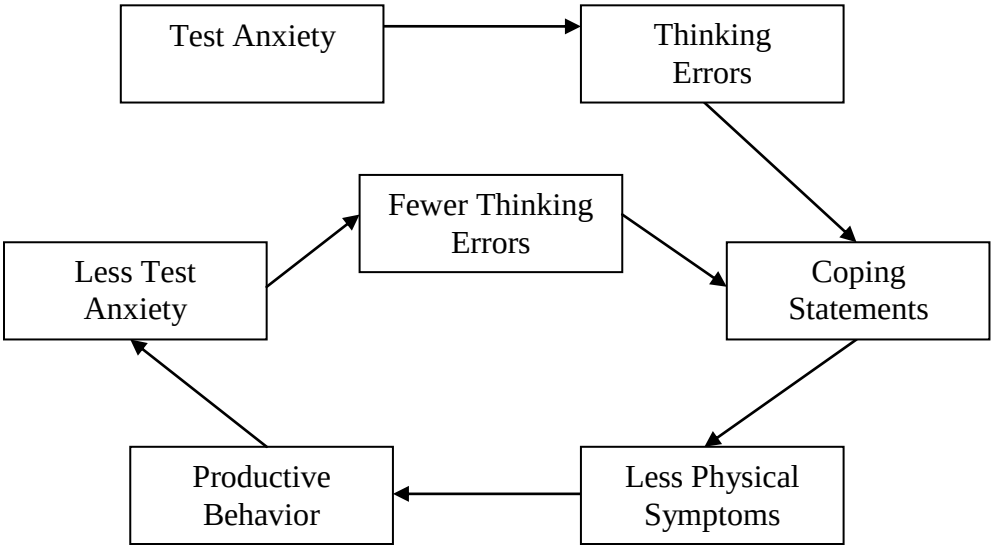
The Cognitive Behavioral Model of Test Anxiety (the worst case-scenario):



APPENDIX F: LESSON 5 SUMMARY SHEET

In this lesson, you learned how to expect what your brain will do when it's under stress and how to bounce back from all the little thinking errors that may come up. Here's what you learned in Lesson 5.

The Coping Cycle of Test Anxiety (the best case-scenario): Remember the *bad* cycle from Lesson 4? This is the good version.



Long story short, when you have a thinking error, use a coping statement—that'll make it all better.

Coping Statements are…

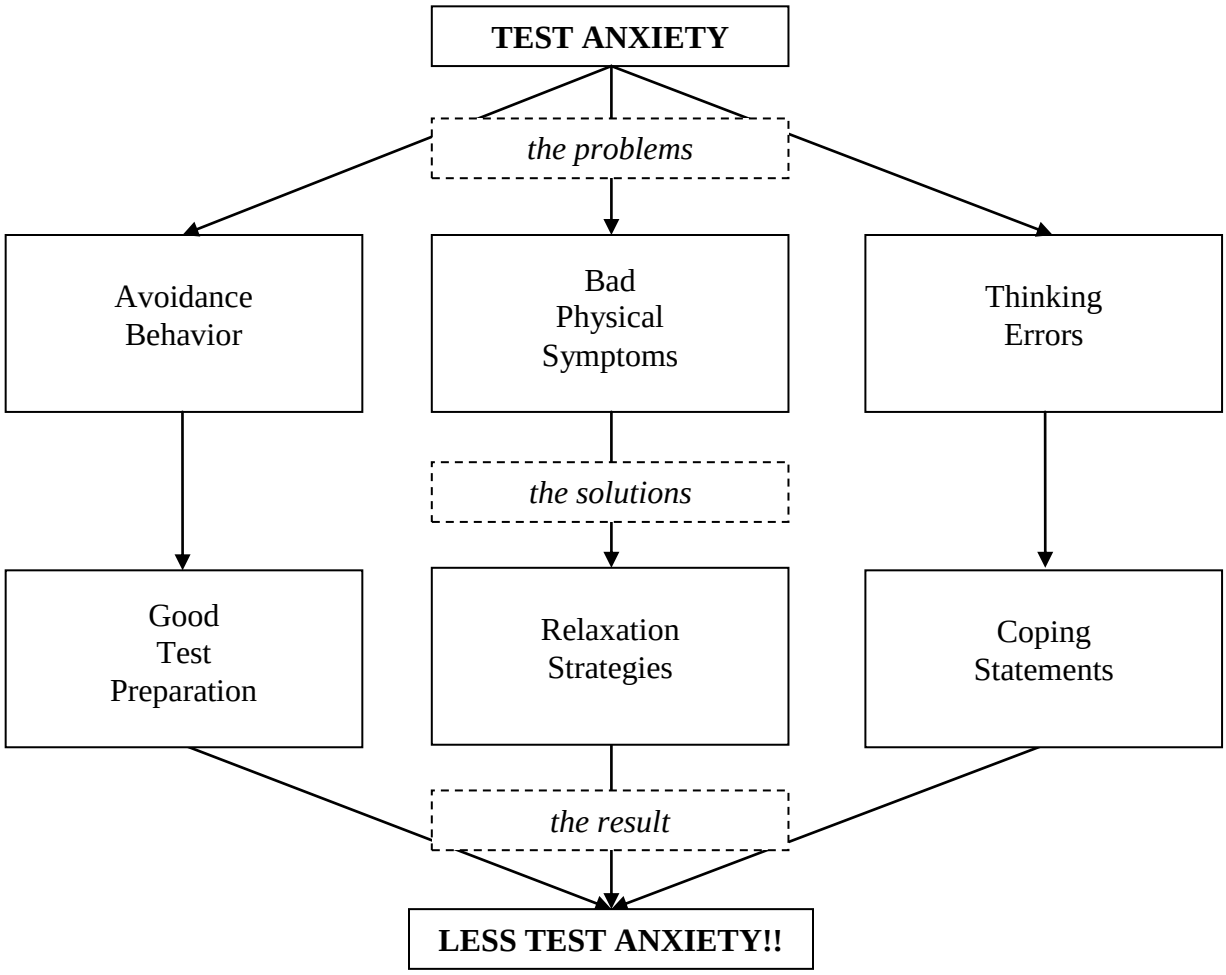
- POSITIVE. They have to balance out the negative content in thinking errors.
- REALISTIC. If the coping statement is too positive—if it's just feel-good, fluffy sunshine—you won't believe it.

The key to a good coping statement is that it is
MORE BELIEVABLE
than the
THINKING ERROR

APPENDIX G: LESSON 6 SUMMARY SHEET

STAY COOL
Lesson Cheat Sheet
Lesson 6: The Big Picture

The Big Picture



Keep up with your practice! These techniques get *much* easier the more you use them!

APPENDIX H: STUDY CALENDAR PRINTOUT (LESSON 2)

STAY COOL
My Study Calendar

____, 2010						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Six Days to Studying Success!
5 Days Before: Know exactly what's on the test and make sure you have all the necessary study materials.
4 Days Before: Paraphrase and write out the important stuff.
3 Days Before: Handwrite the most important notes. Use flash cards if it helps.
2 Days Before: Come up with mnemonic devices for the points you can't remember. Keep up the studying!
1 Day Before: Write up questions your teacher might ask you on the test. Answer those questions. Get a good night's sleep.
Test Day: Eat a healthy breakfast. Study your notes during your down time. Sharpen your pencils. Succeed.

APPENDIX I: COMMON MNEMONIC DEVICES PRINTOUT (LESSON 2)

Mnemonic Devices are little tricks or strategies we can use to help us remember important information. Here are some common ones that students use all the time:

Acronym: a word formed from the first letters or groups of letters in a name or phrase.

- PEMDAS = Parentheses, Exponents, Multiplication, Division, Addition, Subtraction. This is a mnemonic device to remember the algebraic Order of Operations.
- HOMES = Huron, Ontario, Michigan, Erie, Superior. If you didn't know, these are the five American Great Lakes.

Acrostic: a memorable sentence in which the first letter of each word represents the first letter of the words you need to remember.

- My Very Excited Mother Just Served Us Noodles = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. The eight (not counting Pluto) planets in our Solar System.

Rhymes: Put what you need to memorize into a rhyming sentence!

- In 1492, Columbus sailed the ocean blue.
- "i" before "e" except after "c" or when it sounds like "ay" as in "neighbor" or "weigh."

Grouping: Group what you need to remember into meaningful categories.

- The First 10 US Presidents are: George Washington, John Adams, Thomas Jefferson, James Madison, James Monroe, John Quincy Adams, Andrew Jackson, Martin Van Buren, William Henry Harrison, and John Tyler.

And now… grouped!

- President on Money: George Washington (25 cent coin, 1 dollar bill), Thomas Jefferson (5 cent coin, 2 dollar bill), Andrew Jackson (20 dollar bill)
- Presidents named "John": John Adams, John Quincy Adams, John Tyler
- Presidents named "James": James Madison, James Monroe
- Presidential "Middle Namers": John Quincy Adams (repeated from above), Martin Van Buren, William Henry Harrison

Imagery: Create a memorable image that helps represent the definition, phrase, or fact you need to remember. The sillier and more vivid the image, the more memorable it will be!

- Raconteur (rak-uh n-tur): a person who is skilled in relating stories and anecdotes interestingly.
    - My Mental Image: a **RACOON**, going **ON TOUR**, telling stories to all the little forest animals. **RACOON-ON-TOUR = RACONTEUR.**

Many thanks to the folks at ThinkQuest:
http://library.thinkquest.org/C0110291/tricks/mnemonics/index.php.

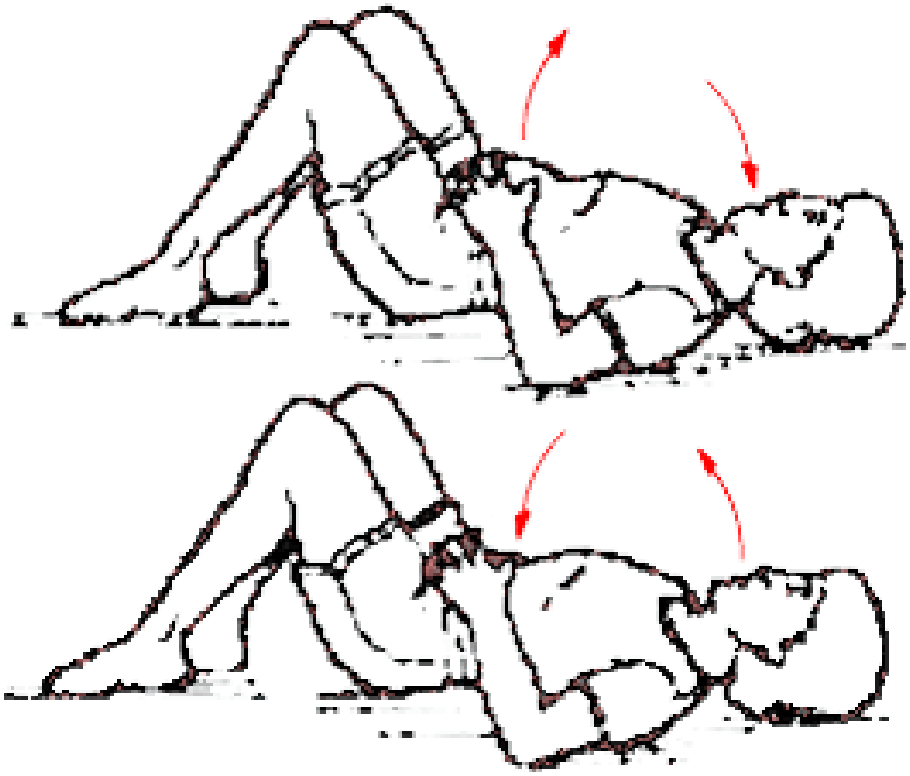
APPENDIX J: DEEP BREATHING INSTRUCTIONS PRINTOUT (LESSON 3)

Deep Breathing the correct way is easy as pie. Following the below directions, practice daily, and pretty soon you'll be relaxing like a pro.

(While your are practicing this technique, remember to count your seconds using "Mississippi".)

1. Sit with your back straight, or lie with your back flat on the ground (see the below diagram).
2. Place one hand on your stomach and one hand on your chest.
3. Breathe slowly into your stomach.
4. Make sure the hand on your stomach is moving with your breath. Your chest hand should not be moving at all.
5. Breathe in for six seconds (One Mississsippi… Two Mississippi… etc.).
6. Exhale for three seconds.
7. Repeat steps 5 and 6 until you begin to feel yourself calming!

The better you get at this, the more natural it will become. Also, the more quickly your body will respond by calming itself when you begin to breathe deeply!



APPENDIX K: PDMR INSTRUCTIONS PRINTOUT (LESSON 3)

You can guide yourself through the relaxation exercise in the same way we did during Lesson 3. Following the below list, tense the described muscle or muscle group, one at a time, for **5 seconds**. Then, relax the same area for **10 seconds**. Move down the list until you reach the end. Repeat.

Tense: **5 seconds** Relax: **10 seconds**

1. Clenching the fists into tight balls.
2. Bending the wrists to tighten the muscles in the back of the hands
3. Clenching both hands into fists and bringing them toward shoulders to tighten biceps
4. Shrugging the shoulders to the ears
5. Wrinkling the forehead
6. Squeezing the eyes tightly
7. Pushing the tongue against the roof of the mouth
8. Clenching the jaws
9. Squeezing the lips together
10. Pushing the head into the floor or back of the chair
11. Pressing the chin into the chest
12. Arching the back; filling lungs with air and holding it
13. Tightening stomach muscles
14. Tightening the buttocks
15. Stretching both legs until tense
16. Pointing toes toward the head to tighten calves

After two times through the list, concentrate on combined muscle groups, releasing any remaining tension.

1. Arms, hands, and biceps
2. Face and neck
3. Chest, shoulders, back, and stomach
4. Leg, calf, and foot

Practice this in your free time. Soon, you should be able to relax each muscle group without tensing. Ten minutes before each test, concentrate on relaxing each of the muscle groups.

APPENDIX L: COMMON THINKING ERRORS PRINTOUT (LESSON 4)

Below is a list of the nine most common thinking errors people tend to make. We make each of these thinking errors on a regular basis, not just when we're feeling anxious! These types of errors, though, contribute to anxiety as they make us more afraid of reality than we typically should be. Can you identify any errors that are more common for you?

Black and White Thinking: You only see the extremes--you're either perfect, or you're worthless. *(You're doing pretty well on a quiz, but can't figure out one question. You tell yourself, "I've totally failed this test!")*

Catastrophizing: You exaggerate the likelihood of something bad happening or you exaggerate how bad it would be if that thing did happen. *(You don't do well the first time you take the SAT. You convince yourself you'll never get in to college as a result.)*

Overgeneralizing: Based on one or two examples, you make a conclusion about all similar situations. *(Because you failed one math quiz at the beginning of this year, you are now convinced that you're "not a math person.")*

"Yes, but..." Thinking: You tend to ignore the positive examples in your past and focus on the negatives. *(You forget about all the times you've studied for a quiz or test and gotten a good score, instead telling yourself that you're just "not a good test taker.")*

Telling the Future: You think that you can predict the future and "know" that things will turn out badly. *(You tell yourself, "It doesn't matter how much I study for this test, I'm just going to fail.")*

"Should" Statements: You pressure yourself by saying "I should..." or "I shouldn't..." do or be something. *(You get frustrated with all the studying you have to do for a test and say, "I shouldn't have to study this much! I should be smarter than this!")*

Labeling: You give yourself negative labels and call yourself names. *(You don't do as well as you wanted to on a test and think, "I'm so stupid!")*

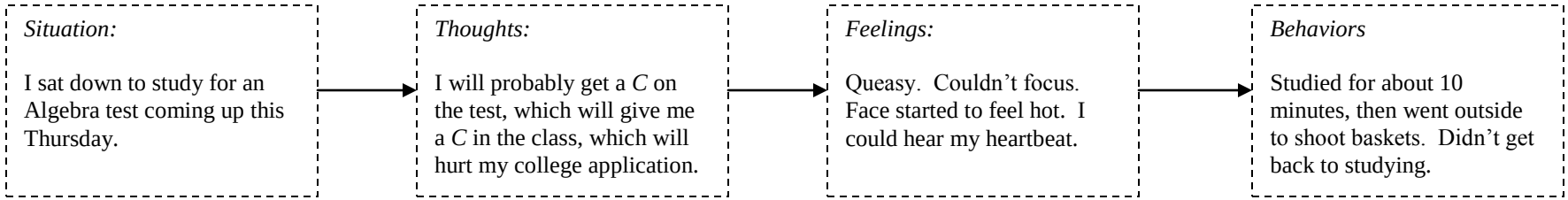
Emotional Reasoning: You let your feelings think for you. *(You have studied really hard for a test, but because you're still nervous, you think, "I didn't study enough. If I had studied enough, I wouldn't be nervous.)*

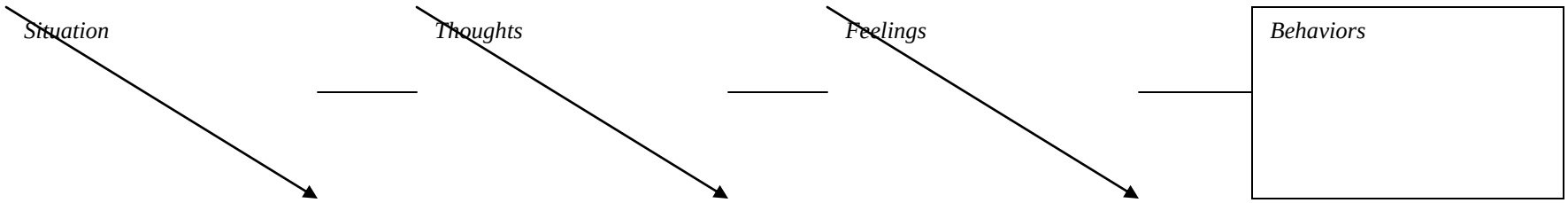
Mind Reading: You act as if you know what other people are thinking. *(You think, "My teacher expects me to fail this test. I don't have a chance!")*

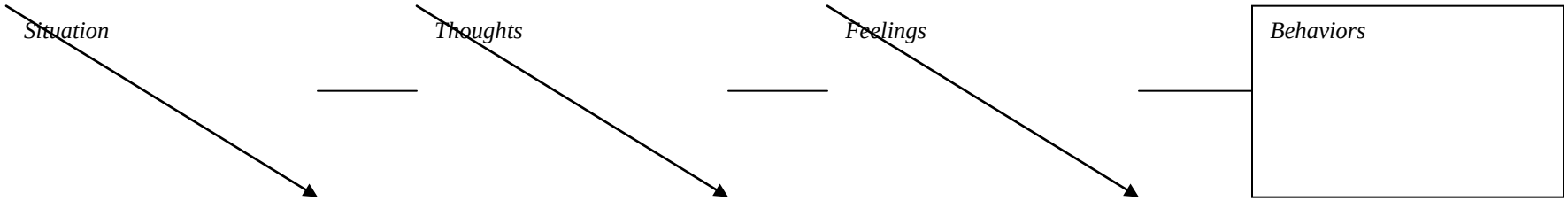
APPENDIX M: COGNITIVE MODEL WORKSHEET (LESSON 4)

Instructions: Each time you experience anxiety, carefully consider what you are *thinking* at the moment. Write that thought in the appropriate box. Then, consider how you are *feeling*, physically, and write that into the following box. Then, write how you chose to behave in the situation. By filling out these charts, you will begin to learn how you respond to anxiety, which is the first step in *changing* how anxiety affects your life!

Example:







APPENDIX N: COPING STATEMENTS WORKSHEET (LESSON 5)

Instructions: When you catch yourself feeling anxious, focus on your thoughts. For each negative thought:

1. Write down the thought in the space provided.
2. If possible, identify the Thinking Error (check the *Lesson Resources* for Lesson 4 for a complete list).
3. Come up with a good Coping Statement in response to the Thinking Error.

Example:

Negative Thought: There's no way I can learn this material—I'm not smart enough.

Thinking Error: Telling the Future; Labeling.

Coping Statement: I'm certainly smart enough to learn some of this material, if not all. I've learned difficult things before—I can do it again.

Practice #1:

Negative Thought:
_____

Thinking Error:
_____

Coping Statement:
_____

Practice #1:

Negative Thought:
_____

Thinking Error:
_____

Coping Statement:
_____

Practice #1:

Negative Thought:
_____

Thinking Error:
_____

Coping Statement:
_____

APPENDIX O: DEMOGRAPHIC/INTERNET-USE SURVEY

Demographic Survey

Participant ID: School:

Birthday: Grade:

Sex (circle): Male Female

Race (please choose one):

a. White/Anglo/Caucasian
b. Black/African-American
c. Asian/Asian-American
d. Pacific Islander
e. Native American
f. Other (includes bi-racial or multi-racial): _____

Ethnicity (please choose one):

a. Latino/a or Hispanic-American
b. Non-Latino/a or non-Hispanic
c. Other (includes multi-ethnic): _____

Please indicate the range of your family's total annual income:

a. under $10,000
b. $10,000 – $19,999
c. $20,000 – $29,999
d. $30,000 – $39,999
e. $40,000 – $49,999
f. $50,000 -- $74,999
g. $75,000 or above

What is the highest level of education attained by one of your parents?

a. some high school
b. high school graduate
c. some college
d. college graduate
e. post-college graduate education
f. other: _____

Please see other side for Internet Use Survey

Internet Use Survey

1) Do you have Internet access at home?

2) On average, how much time per day do you spend using the Internet?

_____ minutes _____ hours

3) For what do you use the Internet? (*circle all that apply*)
   a. Email
   b. Instant Messenger
   c. Social-networking (ex. MySpace, Friendster, Facebook, etc.)
   d. Research/Homework
   e. Games
   f. Shopping
   g. Music/Videos
   h. News/Weather/Sports
   i. Random surfing
   j. Other: _____

4) If you marked "Social-networking" (letter "c"), on which site(s) do you have a profile?

5) Which of these social-networking sites is your favorite? Why?

APPENDIX P: TEST ANXIETY INVENTORY

Test Attitude Inventory

Please provide the following information:
Participant ID: _____ Date _____

Gender (*please circle*): Male Female

A number of statements which people have used to describe themselves are given on the following page read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally* feel.

1 = Almost Never, 2 = Sometimes, 3 = Often, 4 = Almost Always.

There are no wrong or right answers. Do not spend too much time on one statement but give the answer which seems to describe how you generally feel. Please answer every statement.

1. I feel confident and relaxed while taking tests. 1 2 3 4
2. While taking examinations I have an uneasy, upset feeling. 1 2 3 4

…

…

…

19. After an exam is over I try to stop worrying about it, but I can't. 1 2 3 4
20. During examinations I get so nervous that I forget facts I really know. 1 2 3 4

Score: T_____ W_____ E_____

APPENDIX Q: WOODCOCK-JOHNSON TESTS OF ACHIEVEMENT, 3RD ED., SAMPLE ITEMS

Reading Fluency

Sample Question 1 |	A bird can fly:	Y	N
Sample Question 2 |	People like to drink gum:	Y	N
Sample Question 3 |	Some people go swimming on hot days:	Y	N

Math Fluency

Sample Question 1	*Sample Question 2*	*Sample Question 3*
4	7	10
+6	-2	-5
----------	----------	----------

Writing Fluency

Instructions: Use the following words in a full sentence.

Sample Question 1 |	good	cake	is
Sample Question 2 |	ball	catch	can
Sample Question 3 |	time	clock	tells

APPENDIX R: PARTICIPANT FEEDBACK SURVEY (COMPUTER MODULES GROUP)

For each of the following questions, please circle the number that most closely corresponds to your response.

1. How effective do you feel this program was at reducing your symptoms of test anxiety?

☹ ☺

0 1 2 3 4 5 6 7 8 9 10

2. How effective do you feel this program was at improving your performance on tests?

☹ ☺

0 1 2 3 4 5 6 7 8 9 10

3. How helpful were the computer modules?

☹ ☺

0 1 2 3 4 5 6 7 8 9 10

4. How much of the assigned homework did you complete?

None ~1/2 All

0 1 2 3 4 5 6 7 8 9 10

5. How would you rate your overall experience with this program?

☹ ☺

0 1 2 3 4 5 6 7 8 9 10

6. Of the six computer modules, which was your favorite (if any)?

_____

7. Of the six computer modules, which was your least favorite (if any)?

_____

8. Which of the following modules did you complete (circle all that apply):

Lesson 1 (What is Test Anxiety)	Lesson 2 (How to Study)	Lesson 3 (How to Relax)	Lesson 4 (How not to Think)	Lesson 5 (How to Think)	Lesson 6 (The Big Picture)

Were there any aspects of this program that you found particularly helpful or unhelpful? Your comments, opinions, and suggestions are appreciated. Please use the back of this form if needed.

APPENDIX S: PARTICIPANT FEEDBACK SURVEY (FULL PROGRAM GROUP)

For each of the following questions, please circle the number that most closely corresponds to your response.

1. How effective do you feel this program was at reducing your symptoms of test anxiety?

☹					😐					☺
0	1	2	3	4	5	6	7	8	9	10

2. How effective do you feel this program was at improving your performance on tests?

☹					😐					☺
0	1	2	3	4	5	6	7	8	9	10

3. How helpful did you find online discussions?

☹					😐					☺
0	1	2	3	4	5	6	7	8	9	10

4. How helpful were the computer modules?

☹					😐					☺
0	1	2	3	4	5	6	7	8	9	10

5. How much of the assigned homework did you complete?

None					~1/2					All
0	1	2	3	4	5	6	7	8	9	10

6. How would you rate your overall experience with this program?

☹					😐					☺
0	1	2	3	4	5	6	7	8	9	10

7. How much time per week, on average, did you spend in the online discussions? _____

8. Of the six computer modules, which was your favorite (if any)? _____

9. Of the six computer modules, which was your least favorite (if any)? _____

10. Which of the following modules did you complete (circle all that apply):

Lesson 1 (What is Test Anxiety)	Lesson 2 (How to Study)	Lesson 3 (How to Relax)	Lesson 4 (How not to Think)	Lesson 5 (How to Think)	Lesson 6 (The Big Picture)

Were there any aspects of this program that you found particularly helpful or unhelpful? Your comments, opinions, and suggestions are appreciated. Please use the back of this form if needed.

APPENDIX T: SITE LETTER FROM YES! PREP PUBLIC SCHOOLS

Dr. Jody Jensen, Ph.D.
Chair, Institutional Review Board
P.O. Box 7426
Austin, TX 78713
irbchair@austin.utexas.edu

Dear Dr. Jensen:

The purpose of this letter is to grant Wes Baker, a graduate student at the University of Texas at Austin, permission to conduct research at YES Prep Public Schools. The project, "Assessing the effectiveness of an Internet-based intervention for test anxiety" entails:

- using our premises to provide 50-100 of our high school students (age 14-17) with a test anxiety intervention of his design,
- collecting data relating to those students' anxiety symptoms and academic performance,
- collecting basic demographic information about the students involved in his study.

YES! Prep Public Schools were selected because we have a prior working relationship with Mr. Baker. A number of our teachers and administrators have worked with Mr. Baker in the past to introduce a SAT/PSAT test preparation course to our standard curriculum.

At the end of this study, we understand that we are to receive the aggregate results of this study's findings, but will not be provided any information at the individual student level. I, Donald Kamentz, do hereby grant permission for Wes Baker to conduct the study--"Assessing the effectiveness of an Internet-based intervention for test anxiety"--at YES Prep Public Schools.

If you have any additional questions or require further information, please do not hesitate contact me at (713) 208-1517 (cell) or by email at donald.kamentz@yesprep.org.

YES Prep
Public Schools

Sincerely,

Donald Kamentz
Director of College Initiatives

APPENDIX U: PARENT CONSENT/YOUTH ASSENT FORM (ENGLISH)

PARENT CONSENT FORM/YOUTH ASSENT FORM

Title: "Assessing the effectiveness of an Internet-based intervention for test anxiety. IRB PROTOCOL# 2009-02-0030

You are being asked to allow your son or daughter to participate in a research study. This form provides you with information about the study. The person in charge of this research will also describe this study to you and answer all of your questions. Please read the information below and ask any questions you might have before deciding whether or not to allow your son/daughter to take part. All participation is entirely voluntary. You can refuse to allow participation without penalty or loss of benefits to which you are otherwise entitled. You may also skip any question in any survey you may fill out at any time. You can stop your participation at any time and your refusal will not impact current for future relationships with UT Austin or participating sites. If you ever want to withdraw from the study, simply tell the researcher you wish to stop participation. The researcher will provide you with a copy of this consent for your records.

Conducted By:

Principle Investigator
R. Wes Baker
rwesbaker@gmail.com
713-254-4224

Faculty Supervisor
Janay B. Sander
janay.sander@mail.utexas.edu
512-471-0279

All researchers and their faculty supervisor are affiliated with the University of Texas at Austin.

The purpose of this study assess the effectiveness of a new intervention for test anxiety. This study will involve approximately 50-100 participants.

If you allow your son/daughter to be in this study, we will ask him/her to do the following things:

- Meet with the Principle Investigator twice in order to complete a series of short measures. The measures administered in each of these meetings will proceed as follows:
    - *Meeting #1:* measures will include one assessment of the severity of your child's test anxiety symptoms and one academic achievement measure. The total time of this meeting is expected to be approximately 30 minutes.
    - *Meeting #2:* measure will include one assessment of the severity of your

child's test anxiety symptoms and one academic achievement measure. The total time of this meeting is expected to be approximately 30 minutes.

- Complete two computer-administered questionnaires assessing test anxiety levels.
- Participate in one of three groups (group assignment will be randomly determined):
    - *Group A* members will be asked to interact with a computer program designed to help children reduce symptoms of test anxiety. Children in this group will also be asked to access the Internet to participate in online discussions about test anxiety. The computer program and weekly discussions are designed to be completed over the course of six weeks, with a weekly commitment of approximately 45 minutes.
    - *Group B* members will be asked to interact with a computer program designed to help children reduce symptoms of test anxiety, only. The weekly commitment for this group is approximately 30 minutes.
    - *Group C* members will be placed on a waitlist and asked only to complete the measures described in #1 above. Children on this waitlist will be provided the intervention described above following the completion of this study.

Total estimated time to participate in study is approximately 6 hours (4.5 hours for intervention participation, plus 1.5 hours total time completing measures) for *Group A.* *Group B* total commitment will be approximately 4.5 hours (3 hours for intervention participation, plus 1.5 hours total time completing measures). Students in *Group C* will only be asked to commit the approximately 1.5 hours necessary to complete the measures.

Risks of being in the study

- The only known risk associated with this study is a *loss of privacy*.
- This study may involve risks that are currently unforeseeable. If you wish to discuss the information above or any other risks your son/daughter may experience, you may ask questions now or call the Principal Investigator listed on the front page of this form.

Benefits of being in the study

- Study participants will be introduced to the roots and course of test anxiety. They will also be taught specific techniques for reducing the symptoms of test anxiety, including relaxation techniques, coping skills, and study strategies.

Compensation:

- At this time, no financial compensation is offered.

Confidentiality and Privacy Protections:

- Participants are expected to maintain the privacy of all other participants.

- The researcher will not discuss or otherwise share the personal information in any identifiable way of any group participant.
- During this study, participants will be asked to complete a number of measures that will assess test anxiety symptoms severity and academic achievement. These surveys will be collected and kept locked within a cabinet. Names will be removed and replaced with a researcher-assigned ID number.
- For the purposes of statistical analysis, all participants' responses will also be stored within a password-protected database on the computer of this researcher.
- The data resulting from your participation may be shared at professional conferences or in professional publications. In those cases, the data will contain no identifying information that could identify you or your son/daughter.

The records of this study will be stored securely and kept confidential. Authorized persons from The University of Texas at Austin and members of the Institutional Review Board have the legal right to review your research records and will protect the confidentiality of those records to the extent permitted by law. All publications will exclude any information that will make it possible to identify your child as a subject. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

Contacts and Questions:

If you have any questions about the study please ask now. If you have questions later, want additional information, or wish to withdraw your participation call the researchers conducting the study. Their names, phone numbers, and e-mail addresses are at the top of this page. If you have questions about your child's rights as a research participant, complaints, concerns, or questions about the research please contact Lisa Leiden, Ph.D., Chair of The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512) 471-8871 or email: orsc@uts.cc.utexas.edu.

Statement of Parental Consent:

You are making a decision about allowing your son/daughter to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow him or her to participate in the study. If you later decide that you wish to withdraw your permission for your son/daughter to participate in the study, simply tell me. You may discontinue his or her participation at any time.

_____ Date: _____
Signature

_____ Date: _____
Signature of Person Obtaining Consent

_____ Date: _____
Signature of Principle Investigator

Statement of Youth Assent:

You are making a decision about your participation in this study. Your signature below indicates that you have read the information provided above and have decided to participate in this study. If you later decide that you wish to withdraw from this study, simply tell me. You may discontinue your participation at any time without any consequences.

_____ Date: _____
Youth Signature

_____ Date: _____
Signature of Person Obtaining Consent

_____ Date: _____
Signature of Principle Investigator

Please detach this sheet and return to me.

APPENDIX V: PARENT CONSENT/YOUTH ASSENT FORM (SPANISH)

FORMULARIO DE CONSENTIMIENTO DE LOS PADRES

Título: "Evaluación de la efectividad de una intervención basada en Internet para síntomas de ansiedad sobre pruebas.

IRB PROTOCOL# 2009-02-0030

Realizada por:

Principio Investigador
R. Wes Baker, M.A.
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Department of Educational Psychology
School Psychology Program
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Facultad Supervisor
Janay B. Sander, Ph.D.
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512-471-0279

Se le ha pedido que le permita a su niño a participar en un estudio de investigación. Este formulario le proporciona información sobre el estudio. La persona a cargo de esta investigación le va explicar este estudio y responder a todas sus preguntas. Por favor, lea la información abajo antes de decidir si o no a participar. Su participación es totalmente voluntaria. Puede retira la participación de su niño sin penalización o pérdida de los beneficios a los que está titulad. Puede retirar su participación en cualquier momento, y su rechazo no afectará relaciones futuras con UT Austin o sitios participantes. Si usted decide a no participar, le puede decir al investigador que usted desea dejar de participar. El investigador le proporcionará una copia de este consentimiento para su archivo.

El propósito de este estudio es evaluar la eficacia de una nueva intervención para la ansiedad sobre pruebas. This study will involve approximately 50-100 participants.

Le pediremos a su hijo las siguientes cosas si permite que su niño participara en este estudio:

- Reúnase con el principio investigador cuatro veces para completar una serie de medidas. Las
  medidas administradas en cada una de estas reuniones se procederá como sigue:
  - *Reunión #1*: medidas incluirán una evaluación de la gravedad de los síntomas de ansiedad sobre pruebas, una medida de logro académico, y una evaluación de la capacidad cognitiva. El tiempo total de esta reunión sea aproximadamente 1 hora.
  - *Reunión # 2*: medida incluirá una evaluación de la gravedad de los síntomas de ansiedad sobre pruebas y una medida de logro académico. El tiempo total de esta reunión sea aproximadamente 30 minutos.
- Complete two computer-administered questionnaires assessing test anxiety levels.
- Participar en uno de los tres grupos de intervención:
  - Grupo A, los miembros se les pedirá que interactuar con un programa de computador diseñado para ayudar a los niños a reducir los síntomas de ansiedad sobre pruebas. Los niños en este grupo también se pedirá acceder a Internet para participar en discusiones sobre ansiedad de pruebas. El programa semanal y debates se han diseñado para ser completado en el curso de seis semanas, con un

compromiso semanal de aproximadamente 45 minutos.

- *Group B* members will be asked to interact with a computer program designed to help children reduce symptoms of test anxiety, only. The weekly commitment for this group is approximately 30 minutes.
- Grupo C miembros serán invitados a participar en cara-a-cara reuniones con grupos de estudiantes y el principio investigador (igual como el Grupo A) para completar programas de computador para la ansiedad sobre pruebas (igual como el Grupo B).

Total estimado de tiempo para participar en el estudio es aproximadamente 8 horas para el Grupo A y Grupo B (6 horas de intervención para la participación, más 2 horas para completar las medidas) y 14 horas para el Grupo C (12 horas de intervención para la participación, más 2 horas para completar las medidas). Los estudiantes en la lista de espera sólo se pidan aproximadamente 2 horas necesarias para completar las medidas.

Riesgos de estar en el estudio:

- La única riesgo asociados con este estudio es una pérdida de privacidad.
- Este estudio puede implicar riesgos que son actualmente imprevisibles. Si desea examinar la información anterior o cualquier otro riesgo que su hijo / hija puede experimentar, por favor llame el investigador principal que aparece en la portada de este formulario.

Beneficios de estar en el estudio:

- Los participantes en todos los grupos se presentara a las raíces y el curso de la ansiedad sobre pruebas. También se enseñan técnicas específicas para la reducción de los síntomas de la ansiedad de pruebas, incluyendo las técnicas de relajación, habilidades y estrategias de estudio.

Compensación:

• En este momento, no se ofrece una compensación financiera.

Confidencialidad y Protección:

- Los participantes en todos los grupos se espera que mantenga la privacidad de todos los demás participantes. Una de las reglas de la participación de los grupos de intervención es que los miembros del grupo mantengan toda la información personal privada discutido durante los debates.
- El líder de cada grupo no debe discutir o compartir la información personal identificable en cualquier manera de cualquier grupo participante.
- Durante este estudio, los participantes se les pedirá que completan una serie de medidas de prueba para evaluar la ansiedad y la severidad de síntomas de tipo, el logro académico, y la capacidad cognitiva. Estas encuestas serán recogidos y mantenidos bajo llave en un gabinete. Nombres se retira y se sustituye con un número de identificación asignado por el principio investigador.
- Las respuestas de participantes también serán almacenados en una base de datos protegida por contraseña en el equipo de este investigador.
- Los datos resultantes de su participación podrán ser puestos a disposición de otros investigadores en el futuro para fines de investigación no detallado en este formulario de consentimiento. En estos casos, los datos no contienen ninguna información de

identificación que podría asociarse con él o con su participación en cualquier estudio.

Los registros de este estudio se guardarán de manera segura y confidencial. Las personas autorizadas de la Universidad de Texas en Austin, los miembros de la Junta de Revisión Institucional, y (estudio de los patrocinadores, en su caso) tiene el derecho legal de revisar sus registros de la investigación y proteger la confidencialidad de los registros en la medida permitida por la ley. Todas las publicaciones se excluye cualquier información que permita identificarle como un tema. A lo largo del estudio, los investigadores le notificará de la nueva información que se pueda obtener y que podrían afectar su decisión de permanecer en el estudio.

Contactos y Preguntas:

Si tiene alguna pregunta sobre el estudio, por favor pregunta ahora. Si usted tiene preguntas después, desea obtener información adicional o desea retirar su consentimiento de participación, por favor llame los investigadores de este estudio. Sus nombres, números de teléfono y direcciones de correo electrónico están en la parte superior de esta página. Si usted tiene preguntas acerca de sus derechos como participante en la investigación, las quejas, preocupaciones o preguntas acerca de la investigación pueden ponerse en contacto con Lisa Leiden, Ph.D., Presidente, Universidad de Texas en Austin Junta de Revisión Institucional para la Protección de Sujetos Humanos al (512) 232-2685 o la Oficina de Apoyo a la Investigación en el (512) 471-8871 o correo electrónico: orsc@uts.cc.utexas.edu.

Se le dará una copia de esta información para mantener en sus archivos.

Declaración de Consentimiento de los Padres:

Usted está haciendo una decisión acerca de permitir que su hijo / hija participar en este estudio. Su firma abajo indica que usted ha leído las informaciones mencionadas más arriba y han decidido permitir que él o ella participa en el estudio. Si más tarde decide que desea retirar su permiso para que su hijo / hija no participaran en este estudio, simplemente póngase en contacto con el principio investigador. Usted puede suspender su participación en cualquier momento.

_____ Fecha: _____
Firma

_____ Fecha: _____
Firma de la persona que obtener el consentimiento

_____ Fecha: _____
Firma de principio investigador

Statement of Youth Assent:

You are making a decision about your participation in this study. Your signature below indicates that you have read the information provided above and have decided to participate in this study. If you later decide that you wish to withdraw from this study, simply tell me. You may discontinue your participation at any time without any consequences.

_____ Date: _____
Youth Signature

_____ Date: _____
Signature of Person Obtaining Consent

_____ Date: _____
Signature of Principle Investigator

Please detach this sheet and return to me.

APPENDIX W: INTRODUCTORY LETTER TO PARENTS

Dear *YES Prep* Parent,

These days, students face an increasing number of high-stakes exams, such as the TAKS, the PSAT, the SAT, etc. How your child performs on these tests can have an impact on such important life events as graduating from high school or being admitted to the college of his or her choice. Unfortunately, test anxiety—a student's fears concerning the outcomes of the test—can have a significant impact on a test's score. Over the course of the next few weeks, I hope to be able to teach your child a number of helpful skills and strategies for overcoming the detrimental effects of test anxiety. Many children who learn and apply these strategies see their test scores increase.

You and your child should read the consent form together. It explains the goals of this study, as well as all that we will ask your child to do should you choose to allow him/her to participate. This form is yours to keep and refer to throughout the coming weeks.

Once you have both read the form and agree to participate, sign and date the last page and return that same page to your child's school.

Again, thank you for your time and interest in this project. If you have any questions, please feel free to contact me.

Sincerely,

Wes Baker, M.A.
Doctoral Candidate
The University of Texas at Austin
(713) 254-4224
rwesbaker@gmail.com

APPENDIX X: TEST ANXIETY INTERVENTION TEACHER INSTRUCTIONS

The STAY COOL System is designed to be used once a week, for six weeks total. Each week, students should do the following:

1. Access the program: www.staycoolsystem.org
2. This first page is simply there to allow students to access the appropriate experimental group. Students should click on their group placement (see "Teacher's List" on facing page for students' assigned groups).
3. Clicking on either Group A or Group B will take students to the homepage for the STAY COOL System. The assignment for that week will be posted on the homepage. In general, here is what they will be doing:

Group A

- In the right-hand menu, click into the appropriate lesson (Lessons 1-4 correspond to Weeks 1-4; Lessons 5 & 6 have special instructions that will be noted on the home page).
- Read through each page of the week's lesson.
- The final page of the lesson will contain the homework for that week. The homework is also posted under the instructions for each week on the homepage.

Group B

- Follow the three bulleted steps from Group A, above.
- Once students have completed the lesson for the week, they are to sign in to the discussion board. To do so, they should click on the MySpace Discussion Group link on the left-hand side of the homepage.
- On the Discussion Group page, they will need to do the following:
    - Sign in using the provided username and password (see "Teacher's List" on facing page for students' usernames and passwords)
    - Read the prompt that is provided for that week.
    - Post one unique comment related to that prompt.
    - Respond to one comment from a peer.
- Students are allowed to post as many related comments as they like. The above is just a minimum!

APPENDIX Y: TEST ANXIETY INTERVENTION PARTICIPANT INSTRUCTIONS (GROUP A)

The STAY COOL System is a 6-week program designed to help adolescents deal with the symptoms of Test Anxiety. Each week of this program, you are to do the following:

1) Sign on to the STAY COOL System website: www.staycoolsystem.org.
2) Click on "GROUP A". This will take you to the homepage for the STAY COOL system.
3) Read and follow the instructions for that week that are posted on the homepage. This usually involves going through the week's lesson.
4) Except for the lesson in Week 1, each lesson ends with a short quiz. The instructions for taking the quiz will be contained on the homepage and at the end of each lesson. TAKE THE QUIZ!!
5) Once you have gone through the week's lesson, including the quiz, you are finished with the computer-based part of the program. After each lesson, you will be asked to practice your new skills throughout the week.

Practice your new skills each week!!

If you have any questions, send me an email: rwesbaker@gmail.com.

APPENDIX Z: TEST ANXIETY INTERVENTION PARTICIPANT INSTRUCTIONS (GROUP B)

The STAY COOL System is a 6-week program designed to help adolescents deal with the symptoms of Test Anxiety. Each week of this program, you are to do the following:

1) Sign on to the STAY COOL System website: www.staycoolsystem.org.
2) Click on "GROUP B". This will take you to the homepage for the STAY COOL system.
3) Read and follow the instructions for that week that are posted on the homepage. This usually involves going through the week's lesson.
4) Except for the lesson in Week 1, each lesson ends with a short quiz. The instructions for taking the quiz will be contained on the homepage and at the end of each lesson. TAKE THE QUIZ!!
5) Once you have finished each week's lesson (including the quiz!) go to the STAY COOL homepage (follow steps 1 and 2, above, if needed) and click on the "MySpace Discussion Group" link on the left-hand side of the page.
6) Your login information has been set up for you:

   My MySpace username is: _____

   My MySpace password is: _____

7) Each week on the discussion page, you need to do the following:
   a. Post one new comment to the discussion board, related to the prompt on the page.
   b. Respond to one of your peer's comments.
8) Once you have gone through the week's lesson and posted your comments on the discussion board, you are finished with the computer-based part of the program. After each lesson, you will be asked to practice your new skills throughout the week.

If you have any questions, send me an email: rwesbaker@gmail.com.

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