Examination of Anxiety and Substance Use Symptoms in Trauma Exposed Versus Environmentally Stressed College Students

Theresa M. Souza
Western Michigan University

Follow this and additional works at: https://scholarworks.wmich.edu/dissertations

Part of the Counseling Psychology Commons, Health Psychology Commons, and the School Psychology Commons

Recommended Citation
https://scholarworks.wmich.edu/dissertations/465

This Dissertation-Open Access is brought to you for free and open access by the Graduate College at ScholarWorks at WMU. It has been accepted for inclusion in Dissertations by an authorized administrator of ScholarWorks at WMU. For more information, please contact wmu-scholarworks@wmich.edu.
EXAMINATION OF ANXIETY AND SUBSTANCE USE SYMPTOMS IN TRAUMA EXPOSED VERSUS ENVIRONMENTALLY STRESSED COLLEGE STUDENTS

by

Theresa M. Souza

A Dissertation
Submitted to the Faculty of the Graduate College in partial fulfillment of the requirements for the Degree of Doctor of Philosophy
Department of Psychology Adviser: C. Richard Spates, Ph.D.

Western Michigan University
Kalamazoo, Michigan
December 2011
EXAMINATION OF ANXIETY AND SUBSTANCE USE SYMPTOMS IN TRAUMA EXPOSED VERSUS ENVIRONMENTALLY STRESSED COLLEGE STUDENTS

Theresa M. Souza, Ph.D.
Western Michigan University, 2011

Anxiety is a common problem among the college population, which rarely occurs in isolation. Oftentimes, an individual abuses substances in an attempt to eliminate the short term affect of these conditions. Post Traumatic Stress Disorder (PTSD), is the most persistent and severe type of anxiety disorder. It has been a long-standing belief within the psychological community that in order for PTSD to develop, the individual must first experience a traumatic event which meets certain criteria and must evidence a definable emotional response during the event. A recent study found PTSD in individuals who had not experienced the type of trauma described in the DSM-IV-TR, but had experienced long-term general life stressors. The purpose of the present pilot study was to determine if people with substance abuse disorder, who also reported high levels of anxiety and who had been excluded from a previous study based on enrollment criteria, also showed qualifying PTSD symptoms without a qualifying trigger event. The purpose was to determine if a larger scale study was merited. Participants completed a series of questionnaires on life stressors, trauma history, anxiety, depression, and substance use. They also completed a semi-structured clinical interview to evaluate PTSD symptoms. The results indicated that on most depression and anxiety measures, the groups were not significantly different from each other despite the presence or absence of a DSM-IV-TR
trauma qualifying event. Furthermore, clinical levels of PTSD symptoms were found among several individuals who had not experienced a traumatic event, indicating that a larger scale study is warranted.
I would like to begin by acknowledging those persons who had the greatest influence and assistance with the creation and completion of this dissertation project, specifically Dr. C. Richard Spates and the other members of my dissertation committee, Dr. Amy Naugle, Dr. Lisa Baker, and Dr. Lori Ryland. Thank you for taking the time to discuss directions for my research and to read multiple drafts of the proposal and completed work to ensure the best possible outcome.

I would also like to thank my family, without whose continued support of my educational aspirations; this project may never have been completed.

Theresa M. Souza
# TABLE OF CONTENTS

ACKNOWLEDGMENTS ...................................................................................... ii  

LIST OF TABLES .............................................................................................. v  

INTRODUCTION ................................................................................................. 1  

Anxiety ........................................................................................................... 1  

Specific Triggers Among College Age Students .................................... 2  

Prevalence of Anxiety .............................................................................. 2  

Post-traumatic Stress Disorder ............................................................... 4  

PTSD Comorbidity ....................................................................................... 6  

Substance Abuse .......................................................................................... 7  

Substance Types .......................................................................................... 8  

Substance Use and College Students .................................................. 10  

Anxiety and PTSD-SA Comorbidity ..................................................... 10  

Pathways to Anxiety-SA Diagnoses ..................................................... 15  

Summary Overview .................................................................................. 18  

Present Study ............................................................................................. 20  

Hypotheses ................................................................................................. 19  

METHOD ....................................................................................................... 20  

Participants ............................................................................................... 20  

Measures .................................................................................................... 21  

Study Design ............................................................................................. 23
# Table of contents—continued

- **Procedure** ................................................................. 24
- **RESULTS** ....................................................................... 25
  - Analysis of Individual Measures ........................................ 26
  - Analysis of Covariates ..................................................... 31
  - Analysis of Measures as One Variable .............................. 32
  - Results of Hypotheses ..................................................... 33
- **DISCUSSION** ................................................................. 33
- **APPENDICES**
  - A. Demographic Questionnaire ........................................ 37
  - B. Substance Use Checklist .............................................. 38
  - C. Assessment Protocol .................................................. 39
  - D. Informed Consent ...................................................... 40
  - E. Alternative Treatment Services .................................... 42
  - F. HSIRB Approval Letter ............................................... 43
- **REFERENCES** .............................................................. 44
### LIST OF TABLES

1. Demographic Information ................................................................. 25
2. BDI Results ................................................................. 27
3. BAI Results ................................................................. 27
4. DAST Results ................................................................. 28
5. IES Re-experiencing Results ................................................................. 29
6. IES Avoidance Results ................................................................. 29
7. IES Arousal Results ................................................................. 30
8. IES Total Results ................................................................. 30
9. CAPS Results ................................................................. 31
10. MANOVA Results ................................................................. 32
11. Summary of Findings ................................................................. 33
INTRODUCTION

This dissertation seeks to explore the relationship between trauma and non-trauma causes of anxiety, substance use, and the symptoms of Posttraumatic Stress Disorder (PTSD) among a college population. The paper will first explore the development of anxiety in general, as well as specific triggers and presentation among college students. Additional attention will be given to the development of PTSD and its various symptom clusters. Secondly, the development of substance use disorders will be explored; again both in general and in regards to a college population. Following a thorough review of each classification of disorder, it will be made clear how the symptoms of both relate to each other in terms of etiology, presentation, and heightened level of interconnectedness. Lastly, how this relationship relates to the present study, as well as the importance of focusing exclusively on individuals with a history of both anxiety and substance use, will be described.

Anxiety

Anxiety is defined by a sense of uncontrollability with regards to current or future events that may have negative outcomes for the individual or people they care about. These negative cognitions about future outcomes are often accompanied by physiological symptoms such as increased heart rate, muscle tension, pupil dilation, sleeplessness, and other characteristics of hyper-vigilance (Barlow, 2003).
Specific triggers among college-age students

The very process of attending college lends itself to a variety of predictable life stressors for this age group. Some of these may be linked to leaving home, adjusting to a new place, meeting new people, difficulties of long distance relationships, loneliness, managing financial, social and academic responsibilities (Osberg, 2004), and changing sexual or social identity (Sisk, 2006). Furthermore, sexual assault is the most common violent crime in United States universities. The United States Department of Justice reports that the incidence of rape on college campuses is estimated to be 35 per 1000 female students per year (U.S. Department of Justice: Office of Justice Programs, National Institute of Justice, 2005).

In addition to the stressors of college life, one’s personal history can also place them at risk for developing anxiety and a myriad of other psychological disorders. In a sample of 6053 undergraduate students from colleges in the Southwest and Midwest US, approximately 55% to 85% of them reported having experienced adverse life events. In a subset of 97 of these students, 9% met criteria for PTSD and 11% reported subclinical symptoms of PTSD (Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008).

Prevalence of Anxiety

Approximately 40 million adults (18.1%) experience an anxiety disorder in a given year (Kessler, Chiu, Demler, & Walters, 2005). Nearly 75% of them experience their first episode at about 21½ years of age (Kessler, Berglund, Demler, Jin, & Walters, 2005). OCD, PTSD and panic disorder are diagnosed in 1%, 3.5% and 2.7% of the general adult population respectively (Kessler, Chiu, et al., 2005) and their median ages of onset are 19, 23 and 24 years respectively (Kessler, Berglund, et al., 2005).
In regards to college students, the most recent American College Health Association survey reported 49.1% of students experiencing overwhelming anxiety, 9.3% experiencing “tremendous stress” and 10.4% having received a diagnosis of anxiety in the past year. Panic attacks were diagnosed in 5.1%, OCD in 2.1% and specific phobia in 1.1% of students (American College Health Association - National College Health Assessment [ACHA-NCHA], 2008).

Benton et al., (2003) reported that between the years 1988-2001 the number of students presenting at university counseling centers with anxiety doubled and those presenting after sexual assault quadrupled. In the sample of this study, the student breakdown presenting for therapy were 16.1% freshmen, 18.3% sophomores, 22.7% juniors, and 26.8% seniors.

The most common anxiety related issues reported by college students are social anxiety and test anxiety. Given the nature of college campuses, students suffering from social anxiety are primed for a host of additional problems including cognitive disturbances, poor social performance, decreased satisfaction with interpersonal relationships, depressed thinking about one’s life and achievement, and a heightened risk of the subsequent development of comorbid Major Depressive Disorder. Additionally, individuals who are socially anxious tend to consume alcohol in the hope that it will help them relax. This combined with the availability of alcohol on college campuses predisposes them to the development of alcohol use disorders (Sailer & Hazlett-Stevens, 2009).

In regards to test anxiety, studies indicate that 20% of students consistently suffer from decreased academic performance and increased physiological distress as a result.
Once academic performance is affected, students are susceptible to a negative, downward spiral of anxiety, depression, and decreased self-efficacy (Kassim, Hanafi, & Hancock, 2009).

Post-traumatic Stress Disorder

Post-traumatic Stress Disorder (PTSD) was first recognized by the American Psychiatric Association as a diagnosable condition in 1980 when it was introduced into the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DMS-III) (American Psychiatric Association, 1980). Since that time, PTSD etiology, symptomology, and treatment have been extensively studied.

PTSD is defined as the development of three categories of symptoms following exposure to a traumatic event in which the individual both (1) came into contact with an event that involved actual or threatened death or serious injury to self or others, and (2) responded to this event with intense fear, helplessness, or horror (American Psychiatric Association, 2000). In essence, exposure to a traumatic event is not sufficient to warrant a diagnosis of PTSD. The subjective, emotional experience of the individual in the aftermath of the trauma must also be taken into account (APA, 2000). The three clusters of symptoms that classify PTSD are reexperiencing, avoidance and numbing, and hyperarousal. Each of these symptom clusters is distinct and affects different areas of psychological functioning. Additionally, disturbances in each category can give rise to comorbid diagnoses associated with that cluster of symptoms that will further disrupt the individual’s level of functioning (Taylor, 2006). Lastly, the DSM-IV-TR (2000) states that the symptoms must occur for a minimum of one month and cause clinically significant distress and impairment in several areas of functioning.
The first cluster of symptoms, reexperiencing, refers to the persistent emergence of thoughts and feelings associated with the traumatic event. This can occur in several modalities. These include intrusive images, distressing nightmares, acting and feeling as if the event were occurring again, and psychological distress and/or physiological reactivity when confronted with reminders of the traumatic event (American Psychiatric Association, 2000).

The second cluster of symptoms, avoidance and numbing, involves both the persistent avoidance of stimuli associated with the trauma and the numbing of general responsiveness that was not characteristic of the individual prior to the trauma (American Psychiatric Association, 2000). Examples of avoidance include all efforts to keep oneself from coming into contact with thoughts, feelings, conversations, activities, places, or people that remind the individual of the trauma. Symptoms of numbing include the inability to remember aspects of the event, decreased interest in pleasurable activities, feelings of detachment from others, restricted range of affect, and a sense of shortened future. Recent research indicates that avoidance and numbing may be separate clusters of symptoms as they differ in both their clinical correlates and in responsiveness to treatment (Taylor, 2006).

The final cluster of symptoms is hyperarousal. This category refers to persistent symptoms of increased physiological arousal that were not present prior to exposure to the traumatic event. Examples include sleep difficulties, irritability, anger, difficulties concentrating, hypervigilance, and an exaggerated startle response (American Psychiatric Association, 2000).
PTSD Comorbidity

The best evidence suggests that PTSD is often comorbid with other Axis I and Axis II disorders (Barlow, 2002). However, most clinical trials targeting symptoms of the disorder utilize individuals with PTSD as a sole diagnosis, or at least they are silent with respect to other comorbid conditions. Unfortunately, cases of uncomplicated PTSD are likely the exception, not the rule, for individuals exposed to a traumatic event. While PTSD itself is estimated to occur in 8% of the population, the prevalence rates increase dramatically in persons suffering from other mental disorders (Riggs, Volpicelli, Kalmanson, & Foa, 2003). The National Comorbidity Survey (1995) estimates that over 88% of men and 79% of women who meet the criteria for chronic PTSD also meet the criteria for one or more additional psychiatric diagnoses (Kessler, Sonnega, Hughes, & Nelson, 1995). The most frequent diagnoses comorbid with PTSD include Major Depressive Disorder, substance abuse disorders, Borderline Personality Disorder, Paranoid Personality Disorder, and Bipolar Disorder.

The prevalence rates of comorbid disorders vary considerably. Studies indicate that PTSD and depression co-occur in rates between 15% and 53% (Holtzheimer, Russo, Zatzick, Bundy, & Roy-Byrne, 2005). Higher rates are reported in refugee and war veteran samples than in other forms of trauma. Inpatient substance abuse treatment centers report that up to 50% of their clients also meet criteria for PTSD (Brown, Stout, & Mueller, 1999). An average of 17.8% of individuals with PTSD will also suffer from a personality disorders. Of these, 29% will meet criteria for paranoid personality disorder, 26% for borderline personality disorder, and the remaining personality disorder range from 10-14% respectively (Golier, Ychuda, Bierer, & Mitropoulou, 2003). Lastly,
approximately 16% of individuals suffering from PTSD will also meet criteria for Bipolar Disorder (Otto, Perlman, Wernicke, Reese, Bauer, & Pollack, 2004).

The effects of comorbid diagnoses negatively affect both the course of the disorder and outcome (Holtzheimer et al., 2005). The previously described symptoms of PTSD become intensified with the existence of further disruptions in psychological functioning introduced by the additional disorders. The specific presentation of symptoms will vary depending on the nature of the comorbid disorder. However, some commonalities to all the comorbid diagnoses are increased distress for the individual, worsened PTSD symptoms, increased rates of premature therapy termination, and decreased rates of successful treatment (Najavits, Runkel, Neuner, Frank, Thase, Crits-Christoph, & Blaine, 2003).

Substance Abuse

Problems with substance abuse and dependence are among the most prevalent disorders diagnosed in the United States. Prior to determining the comorbid effects of substance use and PTSD, it is important to understand the distinction between abuse and dependence. The DSM-IV-TR defines substance abuse as a maladaptive pattern of substance use leading to impairment and/or distress within a 12 month period in one or more of four different areas of functioning. These areas include (1) failure to fulfill major obligations in work, school, or home; (2) recurrent substance use in hazardous situations such as driving while impaired; (3) recurrent legal problems associated with substances including use, possession, and dealing, and; (4) continued use despite social or interpersonal problems caused or worsened by the substance use (American Psychiatric
Association, 2000). In substance abuse, the individual can continue to function in daily life. However, a continuous risk of developing substance dependence is present.

Substance dependence is characterized as a more pervasive pattern of substance use. The time spent engaged in activities associated with obtaining, using, and recovering from the substance creates severe impairment in the individual’s daily functioning. The degree of impairment far exceeds that which is seen in substance abuse. The DSM-IV-TR defines substance dependence as a maladaptive pattern of substance use leading to impairment and/or distress within a 12 month period in three or more different areas of functioning. These areas include (1) tolerance (either an increase in the amount of a substance to achieve the desired effect or a decrease in effects associated with use of the same amount of the substance); (2) withdrawal, characteristic symptoms associated with cessation of a substance that vary based on the substance of use; (3) use of the substance in greater amounts over a longer period of time than was originally intended; (4) persistent desire or unsuccessful attempts to control the use of the substance; (5) increasing amounts of time spent obtaining, using, and recovering from the substance; (6) reduction or elimination of social, occupational, and recreational activities not associated with substance use, and; (7) continued substance use despite recurrent physical or psychological problems caused or worsened by use of the substance (American Psychiatric Association, 2000). For the purposes of this paper, substance use will refer to substance dependence as described by the DSM-IV-TR.

Substance Types

The DSM-IV-TR (2000) refers to a substance as a drug of abuse, a medication, or a toxin. These substances are further grouped into 11 different classes based on their
physiological and psychological effects. The classes utilized are alcohol, amphetamines, caffeine, cannabis (marijuana), cocaine, hallucinogens, inhalants, nicotine, opiates, phencyclidine, sedatives, hypnotics, and anxiolytics. Each class was formed based upon the substance’s effects on nervous system functioning. Several classes in the DSM-IV-TR can be combined into larger groups based upon these effects, and were separately identified for reasons to be presented shortly.

Scientifically, there are five general categories of substances. The first is depressants. This category of substance results in behavioral sedation. Their purpose is to induce relaxation in the individual. The two DSM-IV-TR classes of substances that can be described as depressants are alcohol, and the sedative, hypnotic, and anxiolytic group (Durand & Barlow, 2006).

The second category of substances is stimulants. These substances result in mood elevations. They cause the individual to become more alert and active. The DSM-IV-TR classes included in this category are amphetamines, cocaine, nicotine, and caffeine (American Psychiatric Association, 2000).

The third category of substances is opioids. These substances produce analgesic effects, as well as euphoria. This class of substance is not combined with any other class in the DSM-IV-TR.

The fourth category is the hallucinogens. These substances alter the sensory perceptions of the user. They can result in delusions, paranoia, and hallucinations. Substances that are included in this class from the DSM-IV-TR are cannabis and other hallucinogens (Durand & Barlow, 2006).
The final category of substances includes all other drugs of abuse. These are substances that do not fit neatly into one of the previous categories. They include inhalants, steroids, and some over-the-counter medications. They produce a wide variety of effects on the brain and body that may span more than one of the previously discussed classes (American Psychiatric Association, 2000).

The prevalence rates of substance dependence are difficult to determine due to the secrecy and illegality of the behaviors associated with the disorder. Alcohol has historically been considered to be the most prevalent drug of choice. It is estimated that over 15 million Americans are dependent on alcohol alone. Twenty-three percent of adults report engaging in binge drinking. This can be defined as consuming five or more alcoholic drinks in one sitting. In regards to college aged adults, the numbers rise to over 40% (Durand & Barlow, 2006). The prevalence rates of other substances vary widely.

Substance Use and College Students

Research indicates that college students in general are the highest-risk group for alcohol consumption and that among this age group, individuals who attend college drink far more than their peers who do not. Over half a million college students are injured annually from alcohol related accidents (Wechsler & Nelson, 2006). When students suffering from symptoms of PTSD engage in maladaptive coping strategies such as self-medication with alcohol or other substances, the likelihood of academic and social problems increase exponentially (Brown, Stout, & Mueller, 1999).

Anxiety and PTSD-SA Comorbidity

As previously stated, approximately 50% of individuals in inpatient substance abuse treatment centers will also meet criteria for comorbid PTSD (Brown et al., 1999)
with a greater percentage reporting symptoms of general anxiety. This combination of disorders has severe consequences for the individual in terms of course, symptom severity, and effectiveness of treatment.

When working with an anxious or PTSD-SA population, there are several forms of substances which are more likely to be abused when compared to substance users that do not meet criteria for PTSD. Furthermore, these substances appear to be related to the specific symptoms pattern exhibited by the individual (Stewart, Conrod, Pihl, & Dongier, 1999). This can occur in two different forms. The first refers to the PTSD symptom clusters of intrusion, arousal, numbing, and avoidance. Self-medication through substances in order to relieve symptoms of PTSD can lead to abuse and dependence for the substance class whose function is associated with this type of symptom. Second, classes of substances that serve to exacerbate the symptoms of PTSD can be negatively reinforced by substance-intoxication-induced or withdrawal-induced intensification (Stewart et al., 1999).

Many classes of abused substances are correlated with PTSD. These include alcohol, opiates, anxiolytics, analgesic, and cocaine. (Stewart et al., 1999). Although it is difficult to obtain accurate data regarding alcohol use, this class of substance is believed to be the most commonly abused substance among individuals with PTSD. Studies indicate that alcohol consumption is correlated with an increase in PTSD symptoms associated with the arousal symptoms.

Through urinalysis, it is possible to determine with increased accuracy the prevalence of illicit substance use in PTSD individuals. Studies indicate that opiate abuse occurs in approximately 23% of PTSD cases. This is followed by marijuana (20%),
Benzodiazepines (11%), and cocaine (8%). Other categories of substances, when present, were found in less than 5% of the cases (Calhoun, Bosworth, Hertzberg, Sampson, Feldman, Kibry et al., 2000).

Substance dependence on anxiolytics is correlated with the symptoms clusters of arousal and numbing, while analgesic dependence is correlated with the symptom clusters of arousal, intrusion, and numbing (Stewart et al., 1999).

Estimates indicate that the prevalence rates of PTSD and cocaine dependence are high. Studies suggest that approximately 45% of cocaine-dependent individuals will meet criteria of PTSD (8% PTSD individuals (Calhoun et al., 2000)) at some point during their lifetime. Furthermore, 24% of cocaine-dependent individuals will meet criteria for current PTSD (Back, Dansky, Carroll, Foa, & Brady, 2001). In general, cocaine and opiate users report higher rates of exposure to traumatic events when compared to individuals who abuse other groups of substances. Additionally, cocaine users appear more vulnerable to developing PTSD after exposure to a trauma, as well as experience more severe symptoms of PTSD and increased levels of social impairment (Back et al., 2001). PTSD and cocaine dependence appear to be related through the second pathway (Stewart et al., 1999). The effects of cocaine serve to intensify PTSD symptoms, especially while one is withdrawing from cocaine. As a result, any attempts to reduce cocaine use serve to induce both symptoms of cocaine withdrawal and a concurrent increase in distress associated with trauma symptoms (Back et al., 2001).

Research also indicates that some symptoms of anxiety are more likely than others to elicit substance use in general (Sharkansky, Brief, Peirce, Meehan, & Mannix, 1999). Within the substance dependence literature, a taxonomy of situations that lead to
relapse has been proposed. This taxonomy includes the following intrapersonal risk situations: negative emotional states, negative physical states, positive emotional states, testing personal control, and giving in to temptations or urges. Additionally, several interpersonal risk situations are also proposed. These include social pressure to use substances and positive interpersonal interactions (Marlatt & Gordon, 1985).

First, consistent with the self-medication hypothesis, PTSD-SA individuals experience an increased likelihood for exposure to high-risk, trauma inducing environmental conditions than the general population (Kellogg & Triffleman, 1998). The relationship between substance use and violent personal histories has been well-documented. Threats to one’s self may be presented through gang activity, accidents while under the influence of substances, illegal activity to obtain substances, and violent acts committed while under the influence of substances (Kellogg & Triffleman, 1998). Exposure to these types of situations can result in the risk factors of negative emotional states; and in many instances, negative physical states. As previously stated, the primary requirement for PTSD diagnosis is the existence of an event that involved actual or threatened death or serious injury (American Psychiatric Association, 2000). A cycle of trauma and substance might easily be envisioned through these combined diagnoses.

Second, both the intrapersonal risk factors of negative emotional states and negative physical states are characteristic symptoms of anxiety (Sharkansky et al., 1999). It is not essential for the individual to experience repeated stressors/traumas in order to be affected by the combined symptoms of them, or to be at increased risk for relapse as a result of them. Several of Marlott’s (1985) relapse risk factors exist within anxiety diagnoses. Negative emotional states are elicited by the intrusive and hyperarousal
symptoms characteristic of anxiety in general and PTSD specifically (American Psychiatric Association, 2000). Negative physical states are induced by the physiological reactions to the fear and panic associated with anxiety, and with stimuli that remind the individual of a traumatic event.

Third, some evidence exists to suggest that PTSD symptomology, and anxiety itself are not solely a result of interpersonal conflict, negative emotional states, and physical illness, but that once anxiety/PTSD has been established, it can be elicited by these states as well (Sharkansky et al., 1999).

Last, the negative impact that substance use relapse risk situations have on an individual may further interfere with the individual’s ability to cope effectively with the symptoms of anxiety, which would lead to an increase in general anxiety, PTSD and SA symptoms/behaviors (Sharkansky et al., 1999). The intrusive symptoms of PTSD have demonstrated increases in both levels of distress and negative emotional states. This led to subsequent increases in drug and alcohol cravings for the individuals. Additionally, analog studies indicate increased craving for substances following the presentation of anxiety-related stimuli as compared to neutral stimuli (Coffey, Schumacher, Brimo, & Brady, 2005).

To summarize, of the various relapse risk factors proposed in the Marlatt taxonomy of substance use; unpleasant emotions, physical discomfort, and interpersonal conflict appear to elicit higher rates of substance use in anxious populations than in substance dependent only populations.
Pathways to Anxiety-SA Diagnoses

While it has become apparent that various forms of comorbidity exist when dealing with anxiety and SA separately, simply assessing for and identifying these conditions are not the only problems faced by researchers and clinicians. The pathway through which the disorders emerged jointly in the individual should be determined in order to identify the most appropriate treatment modality for the individual (Jocobsen & Kosten, 2001). Although this area of study is recent, early stages of research indicate that knowledge of the etiological pathway to PTSD and its comorbid disorders may influence the method of therapeutic intervention likely to elicit the greatest degree of changes in psychological functioning. This relationship is present in both successful treatment, and in the exasperation and intensification of existing symptoms (Hien et al., 2004).

At present, there are three proposed pathways through which comorbidity can occur. The first theory views PTSD as a secondary disorder (Otto et al., 2004). This pathway occurs in individuals who suffer from a history of psychiatric illness. The presence of a psychiatric condition with these individuals places them at increased risk of being exposed to a traumatic event, and they also have an increased risk of developing PTSD following exposure to the traumatic event. One such example involves individuals with a diagnosis of schizophrenia. Epidemiological studies conducted with this population found rates of comorbid PTSD ranging as high as 42% (Muenzenmaier, Castille, Shelly, Jamison, Battaglia, Opler, & Alexander, 2005). The theory posits that the symptoms and lifestyles associated with schizophrenia predispose an individual to victimization. Such factors include psychosis, paranoia, homelessness, and physical and psychological abuse.
This pathway can relate directly to substance use. Individuals with substance abuse disorders frequently engage in high-risk behaviors in order to obtain their substance of choice. These behaviors include drug dealing, theft, assault, prostitution, gang activity, and more (Kellogg & Triffleman, 1998). These behaviors have the potential of placing the individual in a variety of traumatic situations that could subsequently lead to the development of PTSD. Once established, the symptoms of PTSD can increase the individual’s use of substances in order to cope with the additional stressors that tax their psychological functioning.

The second pathway involves PTSD as the primary disorder. These individuals displayed no signs of severe psychological distress prior to their exposure to the traumatic event and the subsequent emergence of PTSD. It is hypothesized that the intrusive thoughts, nightmares, avoidance behaviors, hyperarousal, dissociation, and depersonalization symptoms characteristic of PTSD serve as catalysts for further deterioration in psychological functioning (Brown, Stout, & Mueller, 1999). For example, the increased physiological arousal in public settings associated with PTSD frequently gives rise to the avoidance of an increasing number of situations. The decreased anxiety associated with this avoidance negatively reinforces such behavior. As a result, the individual becomes more and more secluded from previously enjoyable activities and the social support that has demonstrated positive effects on psychological functioning. Given time, these actions may develop into Major Depressive Disorder, which is the most frequent comorbid diagnosis to PTSD (Otto et al., 2004).

Similarly, the individual may turn to alcohol or other substances in order to reduce the negative impact of the intrusive symptoms of PTSD, or to calm themselves
from the hyperarousal symptoms (Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa, 2003). Unfortunately for the individual, the use of substances will not permanently eliminate the symptoms. As the drug leaves the system, the symptoms return and or intensify. A negative reinforcement cycle develops. The individual continues to utilize substances in order to reduce or avoid the symptoms of PTSD. As with most substances, physical tolerance to the drug develops. The individual’s body will require increasing amounts of the substance in order to achieve the desired effects. In time, physical dependence on the substance develops as well (Coffey et al., 2005). This is most likely in instances where the primary disorder has gone untreated or not treated successfully. Research on alcoholism has demonstrated that individuals, who suffered from intense anxiety and panic symptoms prior to their use of alcohol, were more likely to consume alcohol in 8 out of 12 situations compared to alcoholic without a history of anxiety (Sharkansky et al., 1999).

The third and final pathway is referred to as reciprocal increased vulnerability. This theory recognizes that individuals with histories of trauma, particularly in childhood, are at heightened risk for several psychological disorders as adults. Each of these disorders increases the likelihood of further trauma and decreases levels of healthy psychological functioning. As a result, proponents of this theory posit that the primary diagnosis is inconsequential for the individual. Only the presentation of symptoms should be considered when treating the individual, and this treatment should be tailored towards that person’s specific needs (Meenzenmaier et al., 2005).
Summary Overview

Much of the existing research and knowledge in this area comes from studies involving individuals who have experienced a trauma severe enough to elicit PTSD, and who have subsequently met criteria for PTSD. However, two studies, the only ones which could be found in the literature, indicated that clinical levels of PTSD were found in a significant number of participants reporting high levels of anxiety who had not experienced this type of trauma. These individuals reported PTSD type symptoms in reaction to general life stressors such as divorce, financial difficulties, relationship dysfunction, natural death of a family member, etc.

The first study distributed assessment packets to college students during class and asked them to complete the forms and return them within 2 weeks. The researchers then categorized the traumas reported in terms of DSM-IV A1 consistent (PTSD qualifying event) or A1 inconsistent (non-qualifying stressful life event), and analyzed the levels of PTSD symptoms in each group (Gold, Marx, Solor-Baillo, & Sloan, 2005). The study resulted in a small difference between the two groups, which did not support the hypothesis that an A1 qualifying event was necessary for the development of PTSD symptoms. One problem with the study was that packet return rate may have had a deleterious effect on the results. Lancaster et al. (2009) conducted a study designed to explore the relationship between the types of traumas that college students have experienced and the resultant levels of depression, anxiety, affect change, and social functioning. A total of 771 college students were recruited from various psychology classes and administered assessments which targeted lifetime trauma experiences, depression, anxiety, PTSD symptoms, affect, and social functioning. Participants were
categorized as A1 qualifying and A1 non-qualifying as per the Gold et al. study and analyzed in a similar fashion. The study resulted in 96 students (approximately 12%) screening positive for PTSD on symptom measures, although only 66 of these students reported a PTSD qualifying event. One third of the PTSD symptom positive group had not experienced a DSM-IV qualifying event. The analysis was consistent with that of the Gold et al. study. Only a small difference was found in overall depression, anxiety, social disturbances, and PTSD symptom levels between the two groups that experienced stressful life events.

Neither of these two studies explored the relationship between substance use and exposure to both stressful life events and/or trauma.

Present Study

The theory that individuals can exhibit symptoms of PTSD without first experiencing an A1 qualifying trauma is relatively new, and few previous studies have examined the implications of this. Additionally, the two studies that were found did not address issues related to comorbid disorders, despite the fact that PTSD rarely occurs in isolation.

The current study is a pilot study that seeks to first replicate the findings that individuals who have experienced an A1 qualifying trauma and those who have experienced intense general life stressors exhibit similar levels of anxiety, depression, and trauma reactivity within a college-age population. Different from previous studies in the area, the current study utilizes a substance abusing sample, as substance use disorders are commonly found among anxious individuals and PTSD in particular.
Hypotheses

It is hypothesized that individuals who had experienced an A1 qualifying trauma and those who have experienced significant life stressors without an A1 qualifying trauma will report similar levels of depression as measured by the BDI.

It is hypothesized that individuals who had experienced an A1 qualifying trauma and those who have experienced significant life stressors without an A1 qualifying trauma will report similar levels of general anxiety as measured by the BAI.

It is hypothesized that both individuals who had experienced an A1 qualifying trauma and those who have experienced significant life stressors without an A1 qualifying trauma will report similar levels of impact on daily functioning as measured by the IES.

It was hypothesized that individuals who had experienced an A1 qualifying trauma would report higher levels of substance use than those who had experienced significant life stressors without an A1 qualifying trauma as measured by the DAST.

It was hypothesized that the A1 qualifying trauma group would have an increased rate of PTSD as measured by the CAPS.

METHOD

Participants

Participants were 21 volunteer psychology students at Western Michigan University who were recruited through classroom announcements and posted fliers. All participants received documentation of their participation which earned them extra credit per departmental policy at the discretion of their psychology professor. Three participants were excluded from the final analysis due to incomplete assessment data.
One participant had reported a history of narcolepsy and left the assessment session prematurely stating he “felt an episode coming on.” A second participant left without completing assessments stating she did not realize it would take the stated time and did not want to be late for class. A third reported the highest level of suicidality on the BDI. As per study protocol, the planned assessments were terminated and the participant met with a trained therapist for a suicide assessment and safety planning. As a result, the final analysis contained 18 participants.

To qualify for the study, all participants must have been at least 18 years of age, currently experiencing stress, and have used either alcohol or other substances in the 30 days prior to evaluation.

Exclusion criteria for participation in the study included presence of mental retardation which may have rendered the individual incapable of comprehending the assessment material, and current suicidal ideation as measured by question number nine on the BDI.

Measures

A series of questionnaires and a semi-structured clinical interview were utilized. All participants completed a brief demographic questionnaire (Appendix A), a substance use checklist (Appendix B), Drug Abuse Screening Test (DAST), Life Stressor Checklist – Revised (LSC-R), Beck Depression Inventory II (BDI), Beck Anxiety Inventory (BAI), Impact of Events Scale – Revisited (IES), and the Clinician Administered PTSD Scale (CAPS).

Demographic Questionnaire. The demographic questionnaire was constructed by the researchers and was administered to acquire basic information about the participant.
The participant will answer questions that, for example, inquire the participants’ age, marital status, race/ethnicity, occupation, and income.

*Clinician Administered PTSD Scale (CAPS) (Blake et al., 1990).* The CAPS is a structured clinician administered measure that assesses the frequency and severity of PTSD symptoms. The measure consists of subscales that assess 17-core symptoms of PTSD and symptoms that are associated with PTSD. The CAPS demonstrates high internal consistency, high convergent validity, as well as high discriminate validity (Blake et al., 1990). The CAPS is considered a reliable and valid PTSD measure (Blake et al., 1990). Prior to delivering this assessment to participants interviewers underwent preliminary training in CAPS administration.

*Drug Abuse Screening Test (DAST). (Skinner, 1982).* The DAST is a 28 item self-report measure on situations and feeling associated with problematic substance use. The DAST has demonstrated adequate validity and reliability in multiple studies.

*Substance Use Checklist.* The substance use checklist was constructed by the researchers and administered to acquire information regarding past and present substance use, frequency, and amount.

*Life Stressor Checklist Revised.* The Life Stressor Checklist-Revised is a relatively short, 30 item questionnaire that assesses for exposure to traumatic events throughout the life span which could act as triggers for PTSD as well as general life stressors. The potentially PTSD inducing stressors include physical assault, sexual abuse, robbery, being mugged, and accidents. The general life stressors include financial difficulties, adoption, miscarriage, caring for an ill loved one, and death of a loved one.
This measure provides information on exposure to multiple traumas throughout the lifespan which could complicate current anxiety.

*Impact of Events Scale (IES).* The Impact of Events Scale (IES) is a diagnostic measure that briefly assesses for the effects of traumatic events in an individual’s life. It is a 15 item self-report questionnaire designed to tap into the PTSD areas of re-experiencing, intrusion, and avoidance. The individual utilized the questionnaire to rate the frequency of statements that pertain to the most stressful event in their life (Hien, Cohen, Miele, Litt, Capstick, 2004).

*Beck Depression Inventory-II (BDI-II).* (*Beck, Steer, & Brown, 1996*). The BDI-II is a measure of depression symptom severity. As a self-report measure, participants answer this 21-item questionnaire based upon how their overall mood has been over a two week period. As examined by Dozois, Dobson, & Ahnberg (1998), the BDI-II demonstrates high internal reliability and generalizability across gender. The BDI-II also demonstrates adequate test-retest reliability, and construct validity (Dozois, Dobson, & Ahnberg, 1998).

*Beck Anxiety Inventory (BAI).* (*Beck & Steer, 1990*). The BAI is a widely used measure of anxiety symptoms severity. As a self-report measure, participants answer a 21-item questionnaire based on their overall anxiety over a two-week period. The BAI demonstrates high internal reliability and generalizability across gender.

**Study Design**

The study was a two-group descriptive comparative design. All participants had experienced a traumatic event. One group consisted of those who qualified for an A1 qualifying trauma event via the Life Stressor Checklist, and one group who had
experienced an A1 non-qualifying event via the same measure. Analysis was then conducted to determine the presence/absence of PTSD symptoms between the groups, as well as their effects on daily life functioning, substance use patterns, and levels of depression and anxiety.

Procedure

Individual participants were tested in a single session (Appendix C). All participants were read and given a brief description of the study, and informed consent for assessment was obtained. Any questions were answered at that time. Once the participants agreed to participate, they were administered the LSC-R by a research assistant. The participants were then given the following questionnaires to complete on their own: demographics, substance use checklist, DAST, BDI, BAI, and IES. During this time the LSC-R was given to a trained evaluator to review in preparation for the CAPS trauma assessment. Once the participants had completed the questionnaires, the research assistant checked the BDI for suicidality. If the participant was actively suicidal, further study-relevant evaluation was suspended and the individual underwent a suicide assessment and safety planning. If the participant was not actively suicidal, they met with the evaluator to complete the CAPS on the event they indicated was most distressing to them at the time of the evaluation.

Upon completing all assessments, the participant was given a list of treatment resources, should they wish to obtain therapeutic intervention for anxiety and documentation of participation was awarded at that time.
RESULTS

Table 1 depicts an overall summary of the demographic information. Of the 18 participants for whom full data was available, 9 were male (50%) and 9 were female (50%). The ages ranged from 18 to 45 years, with an average of 24.1 years. The ethnic distribution of the sample was as follows: 14 Caucasian (77.8%), 3 African American (16.7%), and 1 Hispanic/Latin American (5.5%). Sixteen of the participants were single, 1 married, and 1 divorced. Based on the information gathered in the LSC-R, 12 participants had experienced at least 1 A1 qualifying trauma and were placed into group 1, and 6 participants had experienced life stressors that did not qualify as an A1 trauma and were placed into group 2. Within group 1, 6 of the 12 participants (50%) scored at or above a 65 on the CAPS, which indicates that they qualify for a diagnosis of PTSD. Within group 2, 2 of the 6 participants (33.3%) scored above a 65 on the CAPS, which indicates that they qualify for a diagnosis of PTSD if the A1 trauma qualifier condition is ignored.

Table 1: Demographic Information

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>TOTAL</th>
<th>PERCENT</th>
<th>GROUP 1</th>
<th>GROUP 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>9 male</td>
<td>50%</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9 female</td>
<td>50%</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>14 Caucasian</td>
<td>77.8%</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>3 African American</td>
<td>16.7%</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1 Hispanic</td>
<td>5.5%</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Marital Status</td>
<td>16 single</td>
<td>88.9%</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 1—continued

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 married</td>
<td>5.6%</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1 divorced</td>
<td>5.6%</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>A1 Trauma</td>
<td>12 yes</td>
<td>66.67%</td>
<td>6 PTSD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 no</td>
<td>33.33%</td>
<td>2 PTSD</td>
<td></td>
</tr>
</tbody>
</table>

Analysis of Individual Measures

A Two-Sample-Wilcoxon-test was conducted between groups to determine if they varied significantly from each other. For the purposes of this study findings in which there is no difference between groups or in which group 2 is more distressed than group 1 are of greatest interest. This is because one would expect individuals who had experienced A1 trauma qualifying events to display more severe emotional and functional reactions.

The Wilcoxon test on the BDI showed no significant difference between groups 1 and 2 in regards to depressive symptoms (see Table 2). Average BDI scores were 30.5 (range 16-45) for the A1 qualifying trauma and 23.8 (range 9-39) for the A1 non-qualifying group. These findings indicate that the average individual in both groups is likely suffering from depression.
Table 2: BDI Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>48.0000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-0.7982</td>
</tr>
<tr>
<td>One-Sided Pr &lt; Z</td>
<td>0.2124</td>
</tr>
<tr>
<td>Two-Sided Pr &gt;</td>
<td>Z</td>
</tr>
</tbody>
</table>

The Wilcoxon test on the BAI showed no significant difference between groups 1 and 2 in regards to general anxiety symptoms (see Table 3). However, there was a trend towards group 1 experiencing greater anxiety severity than group 2 which may be found with a larger sample size. Average BAI scores per group were 23.3 (range 1-38) for the A1 qualifying trauma group and 15.3 (range 3-33) for the A1 non-qualifying group. These findings indicate that the average individual in both groups is likely suffering from anxiety.

Table 3: BAI Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>42.0000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-1.3616</td>
</tr>
<tr>
<td>One-Sided Pr &lt; Z</td>
<td>0.0867</td>
</tr>
<tr>
<td>Two-Sided Pr &gt;</td>
<td>Z</td>
</tr>
</tbody>
</table>

The Wilcoxon test on the DAST showed a significant difference between groups 1 and 2 indicating that those individuals who have experienced an A1 qualifying trauma
were found to be suffering from more severe substance related problems (see Table 4). Average DAST scores per group were 13.1 (range 4-21) for group 1 and 6 for group 2 (range 1-15). A score of 2 or more on the DAST indicates that a substance use disorder is likely, and all but 2 of the participants scored in this range. Furthermore, participants in group 1 reported a greater substance use history, and a larger number of substances used in the past 30 days on the substance use checklist than group 2. In group 2, with the exception of 1 individual, substances used past and present included alcohol, marijuana, and antidepressants. The average individual in this group had experimented with 2.3 classes of substances (range 1-5). Individuals in group 1 reported current and past use of alcohol, marijuana, antidepressants, cocaine, amphetamines, benzodiazepines, Xanax, stimulants, and hallucinogens. The average individual in this group had experimented with 4.5 classes of substances (range 2-9).

Table 4: DAST Results

<table>
<thead>
<tr>
<th>Statistic</th>
<th>35.5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilcoxon Two-Sample Test</td>
<td></td>
</tr>
<tr>
<td>Normal Approximation</td>
<td>-1.9740</td>
</tr>
<tr>
<td>One-Sided Pr ( Z )</td>
<td>0.0242</td>
</tr>
<tr>
<td>Two-Sided Pr (</td>
<td>Z</td>
</tr>
</tbody>
</table>

The Wilcoxon test on the IES was separated into four components. Each category of the IES (re-experiencing, arousal, and avoidance) was compared individually by group, and the total scores of the measure were compared by group. No significant differences were found between groups in the areas of re-experiencing and avoidance.
symptoms (see Tables 5 and 6 respectively) Average scores per group for re-
re-experiencing symptoms were 2.36 for the A1 qualifying trauma group and 2.45 for the
A1 non-qualifying trauma group. Scores are on a scale of 1-4 with 1 indicating no
symptoms present. Average scores per group for avoidance symptoms were 2.4 for
group 1 and 2.37 for group 2, also on a scale of 1-4.

Table 5 IES Re-experiencing Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>60 0000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>0.2350</td>
</tr>
<tr>
<td>One-Sided Pr &gt; Z</td>
<td>0.4071</td>
</tr>
<tr>
<td>Two-Sided Pr &gt;</td>
<td>Z</td>
</tr>
</tbody>
</table>

Table 6 IES Avoidance Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>54 5000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-0.1883</td>
</tr>
<tr>
<td>One-Sided Pr &gt; Z</td>
<td>0.4253</td>
</tr>
<tr>
<td>Two-Sided Pr &gt;</td>
<td>Z</td>
</tr>
</tbody>
</table>

The Wilcoxon test on arousal symptoms per group as measured by the IES
indicated that the A1 trauma qualifying group experiences significantly greater distress
than the A1 non-qualifying group (see Table 7). The average score per group was 2.28
for the A1 qualifying trauma group and 1.24 for the A1 non-qualifying group.
Table 7 IES Anxiety Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>37 0000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-1.8273</td>
</tr>
<tr>
<td>One-Sided Pr &lt; Z</td>
<td>0.0338</td>
</tr>
<tr>
<td>Two-Sided Pr ≥</td>
<td>0.0677</td>
</tr>
</tbody>
</table>

While one of the three subscales of the IES resulted in a significant difference between groups, the overall measure did not (see Table 8). Average scores for the A1 qualifying trauma group were 45 and the A1 non-qualifying group was 40.8.

Table 8 IES Total Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>43 5000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-1.2182</td>
</tr>
<tr>
<td>One-Sided Pr &lt; Z</td>
<td>0.1116</td>
</tr>
<tr>
<td>Two-Sided Pr ≥</td>
<td>0.2232</td>
</tr>
</tbody>
</table>

The Wilcoxon test on the CAPS showed no significant difference between groups in regards to symptoms of PTSD (see Table 9) which indicates that individuals without an A1 qualifying trauma experienced similar levels of distress as those with an A1 qualifying trauma. The data demonstrated a trend towards significance that may be better captured with a larger sample size. Average CAPS scores per group were 58.5 (range 17-92) for the trauma group and 32.5 (range 3-86) for the non-trauma group. Furthermore, 6 of the 12 participants in the trauma group (50%) met criteria for a diagnosis of PTSD.
Interestingly, 2 of the 6 participants in the A1 non-qualifying trauma group met criteria for a diagnosis of PTSD if the trauma criteria were to be overlooked. The range of scores in the trauma group was vast. Visually, however, the scores in the non-trauma qualifying group indicate a different picture. The two participants who met criteria for PTSD scored in the 80s, and all other participants scored at or below 15. This could indicate that there is some factor associated with the 2 individuals who met criteria for PTSD that sets them apart in regards to trauma reactions.

Table 9: CAPS Results

<table>
<thead>
<tr>
<th>Wilcoxon Two-Sample Test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>42.0000</td>
</tr>
<tr>
<td>Normal Approximation</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>-1.3595</td>
</tr>
<tr>
<td>One-Sided Pr &lt; Z</td>
<td>0.0870</td>
</tr>
<tr>
<td>Two-Sided Pr &gt;</td>
<td>Z</td>
</tr>
</tbody>
</table>

Analysis of Covariates

ANOVA models were fitted for each of the response variables (BDI, BAI, DAST, IES subscales and total, and CAPS) against each of the covariates (group, gender, age group). Given that all but 4 participants were Caucasian, and all but 2 participants were single; the covariates of race and marital status were not evaluated. Age was divided into three separate covariate groups; 0-19 years, 20-29 years, and 30+ years. No significant differences were found for gender and age group on any of the response variables. The A1 qualifying trauma group was found to be significantly more impaired than the A1
non-qualifying trauma group on both the DAST and the IES arousal subscale at the p<.05 level, which is consistent with the results found in the previous section.

**Analysis of Measures as One Variable**

A MANOVA was conducted by combining all response variables (BDI, BAI, DAST, IES subscales and total, and CAPS) into a single variable to see if the overall model of assessment data would differ between the A1 qualifying trauma and A1 non-qualifying trauma groups. The results indicated that as a whole, the A1 qualifying trauma group is more impaired than the A1 non-qualifying trauma group in a model including the BAI, IES (subscales and total), and the DAST. The BDI and the CAPS were found to be similar to existing assessment measures and unnecessary for the final analysis. The BDI was found to overlap significantly with the information gathered in the BAI, and the CAPS was found to overlap significantly with the information gathered in the IES (see Table 10).

**Table 10: MANOVA Results**

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>F Value</th>
<th>Num DF</th>
<th>Den DF</th>
<th>Pr &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilks' Lambda</td>
<td>0.35244288</td>
<td>3.37</td>
<td>6</td>
<td>11</td>
<td>0.0389</td>
</tr>
<tr>
<td>Pillai's Trace</td>
<td>0.64755712</td>
<td>3.37</td>
<td>6</td>
<td>11</td>
<td>0.0389</td>
</tr>
<tr>
<td>Hotelling-Lawley Trace</td>
<td>1.83733917</td>
<td>3.37</td>
<td>6</td>
<td>11</td>
<td>0.0389</td>
</tr>
<tr>
<td>Roy's Greatest Root</td>
<td>1.83733917</td>
<td>3.37</td>
<td>6</td>
<td>11</td>
<td>0.0389</td>
</tr>
</tbody>
</table>
Results of Hypotheses

In summary, some, but not all, of the hypotheses were supported by the data. While it has been clinically assumed that individuals who have experienced A1 qualifying traumas experience greater degrees of impairment than individuals exposed solely to general life stressors, the two studies found specifically targeting this area had shown different results. Those studies had indicated that both groups reported similar levels of anxiety, depression, and functional impairments, substance use was not addressed in either study. Furthermore, previous studies had indicated that individuals were capable of experiencing clinical levels of PTSD symptoms if the A1 qualifying trauma criterion was ignored. Table 11 depicts the results of the current study.

Table 11: Summary of Findings

<table>
<thead>
<tr>
<th>Clinical Measure</th>
<th>Statistical Differences</th>
<th>Relation to Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>None found</td>
<td>Supported</td>
</tr>
<tr>
<td>BAI</td>
<td>None found</td>
<td>Supported</td>
</tr>
<tr>
<td>DAST</td>
<td>Group 1 more impaired</td>
<td>Supported</td>
</tr>
<tr>
<td>IES (re-experiencing)</td>
<td>None found</td>
<td>Supported</td>
</tr>
<tr>
<td>IES (avoidance)</td>
<td>None found</td>
<td>Supported</td>
</tr>
<tr>
<td>IES (arousal)</td>
<td>Group 1 more impaired</td>
<td>Not Supported</td>
</tr>
<tr>
<td>IES (total)</td>
<td>None found</td>
<td>Supported</td>
</tr>
<tr>
<td>CAPS</td>
<td>None found</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

DISCUSSION

In regard to the present study’s question of the level of impairment of individuals with and without an A1 qualifying trauma, the present data are partly consistent with existing data purporting similar levels of anxiety, depression, and functional impairment
in both groups (Gold, Marx, Solor-Baillo, & Sloan, 2005; Lancaster et al., 2009). This data, however, is contrary to clinical beliefs on the effects of A1 qualifying trauma versus general life stressors to an individual. It has widely been believed that PTSD, the most severe anxiety disorder, and the only one with a known origin, required both a certain type of stressor and a predictable emotional response in order to form (APA, 2000). Recent evidence, supported by the current study, suggests that this may not be the case.

First, self-report data from the BDI, BAI, IES show that individuals are experiencing similar levels of subjective distress whether they have experienced an A1 qualifying trauma or a series of one or more general life stressors. It appears that within a college population, exposure to general life stressors can be as deleterious to the individual as exposure to more severe types of traumas. This can have an enormous impact on therapeutic expectations early in therapy and throughout treatment. Both groups demonstrated clinical levels of depression and anxiety. In regards to impact of the stressful event, only the area of arousal differed between groups, while re-experiencing and avoidance symptoms were similar. This was found to be true regardless of their score on the CAPS.

In regards to the CAPS, it had been hypothesized that the A1 qualifying trauma group would be more impaired than the A1 non-qualifying trauma group. This was not supported by the data. Additionally, two individuals were found to have symptoms severe enough to warrant a diagnosis of PTSD if the A1 criterion were ignored. It is believed that these two individuals skewed the data. CAPS scores on the remaining participants in this group were far below the average score of those in the A1 qualifying trauma group. However, the small sample size did not allow for a separate analysis of
this belief. The same statement did not hold true for the scores on the other measures. Responses on the BDI, BAI, and IES were similar throughout all participants in the group regardless of CAPS score. One possible explanation for this is that individuals’ subjective ratings of their distress may not reflect those of an objective observer, as the CAPS is a semi-structured clinical interview while the other measures are self-report. Additional study into this area would add much to this discussion.

In regards to the DAST and the self-reported substance use history, there were no previous studies to draw from. This information was not gathered in the two studies from which the current one was designed. However, substance use was the only area in which the A1 qualifying trauma group was consistently more impaired than the general life stress group. Individuals who had experienced a trauma reported a greater number of substances used, a greater amount of current use, and higher scores on the DAST indicating greater degree of difficulty related to substances. One area of concern is that while the general life stressor group reported lower levels of impairment, all but two participants in the entire study scored in the substance dependent range on the DAST. This information is consistent with previous studies on the elevated rates of alcohol use on college campuses (Wechsler & Nelson, 2006). A second question elicited by this finding is whether substance use should be added as a symptom of PTSD. It appears directly related to exposure to trauma, while some of the other symptoms attributed to trauma (re-experiencing and avoidance) did not demonstrate group differences.

Lastly, while no differences were found between the two groups on most measures, the data indicates that the overall model is significant. When considering the BAI, IES (subscales and total), and the DAST as a whole, the A1 qualifying trauma
group is more impaired than the A1 non-qualifying trauma group. The model as a whole was not addressed in previous studies, so it is not possible at this time to determine if this is consistent. Interestingly, the BDI was found to have no predictive value for the model. Its effects were subsumed by the information gained by the BAI. Additionally, the CAPS did not have any predictive value for the model. Further study is recommended to determine if the same will hold true in larger samples.

The present study had several limitations that should be addressed in future research. First, it was developed as a pilot study. As such, the sample size was small. It would be beneficial to determine if the differences found between the groups continues as the number of individuals in each group rises. This would be especially true in regards to substance use, as this information was not obtained in the two larger scale studies from which the present study was modeled. Second, future studies should attempt to encourage additional participation in the A1 non-qualifying trauma group. As personal histories of participants could not be known prior to data collection, this could not be planned for. Unfortunately, the current study chanced to have a much larger number of individuals who had experienced trauma than general life stressors, which may have affected the results. Third, both the present study and the two previous studies on this topic utilized a college population. It would be interesting to determine if similar results were found in different age groups and socio-economic populations.
Appendix A

Demographic Questionnaire

Code #: ____________  Date: ____________

Demographic Questionnaire

Gender:  M  F
Age: ____________
Marital Status: Single  Married  Divorced  Widowed
Race: ___________________
Age of First Substance Use: ____________
Substance Preferred: ___________________
Appendix B

Substance Use Checklist

Place an X next to any substance that you have used during the course of your life. For those substances that are marked, please answer the follow-up questions.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>HOW OFTEN?</th>
<th>HOW MUCH?</th>
<th>LAST USE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amphetamines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methamphetamines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methadone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription Drugs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Write in name)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecstasy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the Counter Drugs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Write in name)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

Assessment Session Protocol

**Items Needed for Assessment Session**
1. Informed Consent Form (2)
2. Demographic Questionnaire
3. Substance Use Checklist
4. CAPS
5. Life Stressor Checklist-Revised
6. Impact of Events Scale
7. BDI
8. BAI
9. Pen

**Agenda for Assessment Session**
1. Provide potential participant with a copy of the informed consent form. Verbally review the contents of the form.
2. Consent
   a. If consent is obtained continue to step 3.
   b. If consent is not obtained: Thank client for time and session is completed.
3. Complete Life Stressor Checklist-Revised with participant.
4. Ask participant to complete demographic questionnaire, substance use checklist, DAST, IES, BDI, and BAI.
5. Provide CAPS assessor with LSC-R for review.
6. Check question number 9 on BDI for suicidality.
   a. If a 3 is marked, inform assessor to complete suicide assessment and safety planning.
   b. If a 1 or 2 is marked, continue to step 7.
7. Have client meet with independent assessor to complete CAPS.
8. Thank client for time. Provide participant with Additional Services handout and documentation of participation.
Appendix D

Western Michigan University
Department of Psychology
Informed Consent to Participate in Research

Principal Investigator: C. Richard Spates, PhD.
Student Investigator: Theresa M. Souza, M.S.

You have been invited to participate in a research project entitled “Examination of anxiety and substance use symptoms in trauma exposed versus environmentally stressed college students.” This research study is seeking to compare how the symptoms of anxiety present themselves in college students who have been exposed to a traumatic event or have experiences other non-traumatizing stressful life events. This study will serve as Theresa Souza’s dissertation project.

This study is a descriptive study. As such, no treatment will be administered. However, referrals to appropriate mental health professionals will be given should you choose to seek treatment for your symptoms.

As a participant in this study you will be asked to attend a two-hour session where you will complete a series of assessments with a researcher of this study at the Anxiety Disorders Laboratory in Wood Hall. The researcher will first review this informed consent document with you. Following the review of this document, you will be administered a demographic questionnaire and some additional questionnaires related to anxiety, trauma, and substance use. Next, the researcher will ask you a series of questions from the Clinician Administered PTSD Scale (CAPS). Following completion of the assessments you will be given a list of additional services you can contact if you feel you need to seek treatment or intervention.

As in all research, there may be unforeseen risks to you as a participant in research. You may experience feelings of discomfort when sharing sensitive and personal information to the investigator and/or assessor. Any information you share will be confidential and protected, as outlined in the confidentiality of data portion of this document. You may experience unpleasant emotions, including anger, frustration, depression, and disappointment, which may result from recalling problems and experiences and engaging in tasks in an effort to reduce your trauma-related symptoms. Should any discomfort occur, a trained therapist will be available to help.

The primary benefit for you as a participant of this study is the opportunity to provide useful information to effectively classify and potentially treat others who are experiencing anxiety due to trauma-related symptoms or stressful life events.

All of the information collected from you is confidential. That means that your name will not appear on any papers on which this information is recorded. All documents in which
your data will appear will have a code number instead of your name. The researcher will keep a separate master list with the names of participants and the corresponding code numbers. The master list will be kept for the duration of the follow-up project to this study, and will be destroyed after the data from that project is analyzed. A signed consent document will also be retained for at least three years in a locked file in the principal investigator's office. You will be given a copy of this consent document for your records.

Once all the data have been analyzed, the researcher will contact you to make available a time and date for a debriefing session. You will be contacted and offered an opportunity to participate in this debriefing where you will learn about the study in more detail and a summary of findings.

You may refuse to participate or quit at any time during the study without prejudice or penalty. Participation or non-participation in this study will not affect your relationship with Western Michigan University or other affiliated sites and will not affect your ability to seek future services at Western Michigan University. If you have any questions or concerns about this study, you may contact either Dr. Richard Spates at 387-4332 or Theresa Souza at 387-4332. You may also contact the Chair of Human Subjects Institutional Review Board at 269-387-8293 or the vice president for research at 269-387-8298 with any concerns that you have.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is more than one year old.

Your signature below indicates that you have read and/or had explained to you the purpose and requirements of the study and that you agree to participate.

_________________________________________  _____________  
Signature                                      Date
Appendix E

Thank You

Thank you for your interest in the study. We greatly appreciate the time you have dedicated to our study. If you are concerned that you need treatment or intervention services, below is a list of agencies that you may contact.

Additional Services

- **Family & Children Services** ................................................................. (269) 344-0202
- **Psychology Clinic at Western Michigan University (WMU)** .......... (269) 387-8302
- **The Center for Counseling and Psychological Services at WMU** ........ (269) 387-5105
- **The WMU Counseling Center** ............................................................... (269) 387-1850
Date: November 9, 2010

To: Richard Spates, Principal Investigator
Theresa Souza, Student Investigator for dissertation
Cassie Rankin, Student Investigator
Tara Adams, Student Investigator
Colleen Cullinan, Student Investigator
Brice Bowers, Student Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 10-08-19

This letter will serve as confirmation that your research project titled “Examination of Anxiety and Substance Use Symptoms in Trauma Exposed versus Environmentally Stressed College Students” has been approved under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: September 15, 2011
REFERENCES


