COMPULSIVE COMORBIDITIES: LINKS BETWEEN GENERALIZED ANXIETY DISORDER AND SUBSTANCE USE DISORDERS AMONG AFRICAN AMERICAN WOMEN

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Community Health
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2016

Urbana, Illinois

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ABSTRACT

This study proposed to examine the impact of substance use and abuse on the treatment and coping mechanisms of generalized anxiety disorder (GAD) in African American women. Comorbid mental health problems such as depression and anxiety are common in individuals with alcohol and other drug problems. The co-occurrence of substance use disorders (SUDs) and anxiety disorders has now been well documented (Vorspan, Mehtelli, Dupuy, Bloch, & Lépine, 2015).

Research has shown that up to 80% of clients with alcohol or drug issues have comorbid mental health issues. However, little is known about the occurrence of this association in African American women. The findings of this research would have great implications for treatment and prevention in this underserved population.

The approach to data analysis involved two levels of examination: 1) univariate statistics (descriptive statistics will be used to provide simple summaries about the sample and all of the study measures) and 2) bivariate analysis for descriptive purposes (depending on the variable type), correlations, and survival analysis were performed to document the association between the independent variables and outcome variables.

The present study examined the link between mental (anxiety disorders and the severity of anxiety symptoms) and drug use disorders in a sample of African American females (N = 537, aged 19 to 56 years old). Preliminary analysis indicated that only *high* (and not low or moderate) perceived family support was shown to be a protective factor in terms of the mixed-effects regression analysis of GAD as well as the severity of anxiety/fear symptoms. Additionally, the following factors proved to be significant in

increasing the likelihood of GAD prevalence or having more severe anxiety/fear

symptoms: being dually diagnosed across all models, some level of moderate to severe

drug and alcohol composite scores, criminal justice charges, and having some type of

insurance that did not include Medicaid. Findings from the current study are discussed in

terms of their implications for prevention and treatment of comorbid drug use and mental

health disorders among minority populations.

DEDICATION

To my loving family,

Mommy, Mark, and Marissa Stephanie, you were all there

When my own anxieties almost got the best of me.

And for that, I say thank you and I love you.

I dedicate this dissertation to you.

ACKNOWLEDGEMENTS

I gratefully acknowledge the contributions of the following people to this research. First, I wish to thank my committee members who were more than generous with their abundance of patience and valuable time. A special thanks to Dr. Juliet Iwelunmor, my committee chair for her countless hours of guidance, encouragement, and wisdom throughout the entire process. I would not be completing this if it were not for her. Thank you Dr. Juliet Iwelunmor, Dr. Christopher Larrison, Dr. Reginald Alston, and Dr. Steven Petruzzello for agreeing to serve on my committee.

I would like to recognize the many staff members of Chestnut Health Systems in Bloomington, Illinois who have all contributed to the progress I have made. First and foremost, I'd like to thank Dr. Christy K. Scott and Dr. Michael Dennis for allowing me use of the Pathways dataset (NIDA grant number R01 DA015523). Next, I could not forget Rodney R. Funk, for his countless hours of help with statistics and gathering together the many variables that I requested. I'd also like to thank Dr. Bryan R. Garner for being a sounding board and providing many suggestions and feedback when I was first developing my research plan as well as being a great friend. Last but not least, I would be remiss if I did not thank Drs. Mark and Susan Godley for always being encouraging, helpful, and very generous in allowing me to begin my studies while still employed and working as an EBT Coordinator. Without the help of the entire Chestnut team, I would not be where I am today. Finally, I would like to thank Mr. Tim Feeney and his excellent copyediting services.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Anxiety does not empty tomorrow of its sorrows,

but only empties today of its strength.

— Charles Haddon Spurgeon

INTRODUCTION AND BACKGROUND

Substance use and mental health disorders can greatly affect the health of individuals, as well as their families and their communities. In 2014, almost 1 in 5 adults aged 18 or older (18.1%, or 43.6 million adults) reported to the National Survey on Drug Use and Health (NSDUH) that they had any mental illness in the preceding year. Additionally, 21.5 million people aged 12 or older reported a substance use disorder in the preceding year (Center for Behavioral Health Statistics and Quality, 2015). Both substance use and mental health disorders "are among the top conditions that cause disability and can carry a high burden of the disease, resulting in significant costs to families, employers, and publicly funded health systems" (Substance Abuse and Mental Health Services Administration [SAMHSA], 2004). According to SAMHSA (2004), "By 2020, mental disorders and substance use disorders will surpass all physical diseases as a major cause of disability worldwide." The coexistence of both a mental health issue and a substance use disorder is referred to as a co-occurring disorder.

The co-occurrence of substance use disorders and anxiety disorders has now been well documented (Vorspan, Mehtelli, Dupuy, Bloch, & Lépine, 2015; Chilcoat &

Breslau, 1998b; Drake, Mueser, & Brunette, 2007). In most instances, knowledge on the association between anxiety and substance use disorders can be drawn from clinical studies among patients in treatment either for anxiety disorders or for substance use disorders (Drake, Mueser, & Brunette, 2007; Himle, Baser, Taylor, Campbell, & Jackson, 2009). Despite the fact that much is known about generalized anxiety disorder (GAD) and substance abuse disorders separately, little has been discussed as to the potential reasons such large percentages of GAD sufferers also present with substance abuse disorder (National Institutes of Mental Health, 2013; SAMHSA, 1999). Previous research into comorbidity has often been limited to descriptions of the comorbid patterns (Chilcoat & Breslau, 1998b) or controlling for comorbidity among multiple disorders (Chilcoat & Breslau, 1998a). This approach does not provide complete information on the implications of comorbidity and the risk for developing drug use disorders. It is important to study the potential causal relationship between the two disorders because it will lead to effective treatment of each disorder and potentially preventative measures. Since these disorders can appear very similar, it is important to be able to distinguish between the two and to determine whether one is actually the symptom of the other.

Individuals suffering from some type of mental health condition are also more likely to use alcohol or drugs than those not affected by a mental illness (Kessler et al., 1996; SAMHSA, 1999). Additionally, research on adult clinical samples has shown that the presence of mental disorders increases an individual's risk for developing a drug use disorder (Kessler et al., 1996). The association of mental illness with substance-related disorders has been well established in both clinical studies and in population-based studies (Drake, Mueser, & Brunette, 2007; Himle, Baser, Taylor, Campbell, & Jackson,

2009). Previous studies that have reported this association have often not taken into account earlier substance use and its relationship to developing anxiety (Himle et al., 2009). According to Drake, Mueser, and Brunette,

> Lifetime prevalence rates of alcohol and drug use disorders are approximately 17% in the general population (those without mental health disorders); 55% for people with bipolar disorder; 47% to 50% for people with schizophrenia; 30% for people with other mood or anxiety disorders; 24% to 27% for people with posttraumatic stress disorder; 18% to 20% for people with antisocial personality disorder; and 17% to 18% for people with borderline personality disorder (2007).

Even though 30% of those with anxiety disorders will be afflicted with a substance abuse disorder in their lifetime, the relationship between substance abuse disorder and anxiety disorders still remains unclear. According to Sloboda, Glantz, and Tarter (2012), diagnoses of any mental illness, and particularly personality disorders and psychotic disorders (which includes generalized anxiety disorder), were found to be associated with higher prevalence of transition from substance use to a substance use disorder across most categories of substances. In other words, those with these mental health disorders were more likely to become dependent on substances, thus moving away from infrequent or causal use. In some instances the anxiety disorder precedes the substance use and abuse, but that is not always the case. More research is needed to determine whether there is really a causal relationship between the two disorders.

Additionally, research shows that minorities, who suffer from chronic stressors such as discrimination, racism, and prejudice, may experience more damaging physiological effects. More importantly, these race-specific stressors may contribute to

health disparities between minorities and nonminorities in the United States. According to SAMHSA (1999), racial and ethnic minorities have less access to mental health services than do their Caucasian counterparts. These minorities are also less likely to receive needed care for mental illness, and when they do receive treatment, it is more likely to be poor in quality (SAMHSA, 1999). Previous studies that have examined the link between anxiety disorders and drug use disorders have generally relied on predominantly White or Caucasian samples with participants under 60 years old (Chilcoat & Breslau, 1998a, 1998b). In studies where both sexes or non-White participants have been measured, sex and ethnic variations in risk for drug use disorders frequently went unexamined (Williams, Domanico, Marques, Leblanc, & Turkheimer, 2013; Lopez, Turner, & Saavedra, 2005; Neal-Barnett & Crowther, 2000). Furthermore, gender differences exist in the experience of stress and discrimination such that the influence of perceived discrimination on depression is greater for women than men (Flores et al., 2008). The purpose of this paper is to analyze and discuss the comorbidity of generalized anxiety disorder among a sample of African American women who have been diagnosed with substance use disorders so as to provide some potential reasons for the relationship.

STATEMENT OF THE PROBLEM

Generalized anxiety disorder is characterized by persistent, excessive, and unrealistic worry about everyday things (American Psychiatric Association [APA], 2000; Wittchen, 2002; Drake, Mueser, & Brunette, 2007; Kessler, Chiu, Demler, & Walters, 2005). GAD affects about 6.8 million adults, or 3.1% of the U.S. population, in any given

year. Anxiety disorders are a major cause of disability and are associated with increased health care service utilization (Sanderson & Andrews, 2002; Kessler, Chiu, Demler, & Walters, 2005). Women are twice as likely to be affected. The disorder comes on gradually and can begin across the life cycle, though the risk is highest between childhood and middle age. Even though the exact cause of GAD is unknown, there is some evidence that biological factors, family background, and life experiences, particularly stressful ones, play a role (National Institutes of Mental Health, 2013). As many as half of all adults with co-occurring disorders have not received treatment for either diagnosis. A national survey conducted in 2004 found that 50% of adults known to have comorbid mental illness and substance use disorder did not receive treatment for either condition within the preceding year (McGovern, Xie, Segal, Siembab, & Drake, 2006). Those who did not receive treatment for either illness may experience additional consequences. These consequences can include more severe symptoms regarding the mental illness, frequent relapses, hospitalizations, homelessness, violence, incarceration, or worse health outcomes, including serious infections associated with drug use such as HIV and hepatitis (Drake et al., 2007). It is thus necessary to conduct a study that explores the comorbidity of generalized anxiety disorder and substance abuse disorder in this underserved group.

PURPOSE OF THE STUDY

Comorbid mental health problems such as depression or anxiety are common in individuals with alcohol and other drug problems. Research on the link between mental and drug use disorders often has failed to incorporate individuals of varying sexes,

5

ethnicity, and age, thus limiting the generalizability of the findings (Lopez, Turner, & Saavedra, 2005; Kessler et al., 1996). Therefore, little is known about the occurrence of this association specifically in African American female substance abusers. This study proposed to examine the impact of substance use or abuse on the treatment and coping mechanisms of generalized anxiety disorder in African American women. This study also aimed to determine whether rates of anxiety decrease if a substance abuser becomes free of their addiction. The findings of this research would have great implications for treatment and prevention in this population.

RESEARCH QUESTIONS

The central research question that this study aimed to answer is what happens to the comorbidity of anxiety among African American women who have been diagnosed with substance use issues as they become free of alcohol and drug use? This study will also address the following research sub-questions:

1. How prevalent is generalized anxiety disorder among African American women aged 18+?

2. What is the relationship between anxiety and drug use in this population?

3. Are there any differences in the level of education and the relationship between substance use/abuse and GAD?

4. Is one possible motive for the drug use/abuse to alleviate anxiety symptoms?

HYPOTHESIS

Hypothesis #1: As a participant becomes free of substance use disorder (SUD), their rates of generalized anxiety disorder (GAD) will increase.

Hypothesis #2: A study participant's rates of GAD will be inversely related (as one decrease the other will increase) to rates of SUD.

Hypothesis #3: Coping skills are moderating factors on the relationship between GAD and SUD.

DEFINITION OF TERMS

Coping strategies are defined as individual efforts to resolve, endure, or alleviate problems and experienced stress (Lazarus & Folkman, 1984).

Hard-to-reach population – adults, young people, and children from any ethnic background, regardless of migration status. They are "hard to reach" if their social circumstances, language, culture, or lifestyle (or those of their parents or caregivers) make it difficult to access diagnostic and treatment services, self-administer treatment, or attend regular appointments for clinical follow-up (Faugier & Sargeant 1997).

Generalized anxiety disorder – characterized by chronic feelings of excessive worry and anxiety without a specific cause. Individuals with generalized anxiety disorder often feel on edge, tense, and jittery (APA, 2000).

Intolerance of uncertainty (IU) can be defined as a cognitive bias that affects how a person perceives, interprets, and responds to uncertain situations.

Negative affectivity is a broad and pervasive predisposition to experience negative emotions that has further influences on cognition, self-concept, and worldview (Watson & Clark, 1984).

Protective factors – events, conditions, or experiences that reduce, inhibit, or attenuate the likelihood of substance use or deviant behaviors to occur (Hawkins, Catalano, & Miller, 1992).

Psychiatric comorbidity is defined as the presence, either simultaneously or in succession, of two or more specific disorders in an individual within a specified period (Wittchen, Perkonigg, & Reed, 1996).

Substance abuse/misuse – the continued misuse of any mind-altering substance that severely affects person's physical and mental health, social situation, and responsibilities. A maladaptive pattern of substance use leading to clinically significant impairment or distress (APA, 2000).

SIGNIFICANCE OF THE STUDY

  The lack of research on sex, ethnic, or age variations in risk for drug use disorders associated with anxiety disorders raises questions about the true generalizability of

previous research findings to such populations. This study may prove significant in contributing to the underdeveloped area of research related to the comorbidity of anxiety disorders and substance abuse in African American women, a population that often does not present in mental health treatment clinics. Clinical research trials play a very important role in the development of safe and effective treatment methods to treat disease and impairment, and thus participation by minorities and women is extremely crucial to ensuring the safety and efficacy of new treatments (National Institutes of Mental Health, 2013).

In addition, this study will help to pose several pertinent questions to guide future research and potential treatment modalities. The relationship between co-occurring substance use and other psychiatric disorders may be particularly relevant for women, who have both higher overall rates of mood and anxiety disorders and higher rates of co-occurring substance use and psychiatric disorders relative to men (Kessler, Chiu, Demler, & Walters, 2005). Finally, the main significance of this study lies in the fact that no existing studies have explored this topic as it relates specifically to African American women.

To summarize, further research is needed to understand African American women and their experiences with substance use and generalized anxiety disorder.

OUTLINE OF DISSERTATION

This dissertation will be divided into six chapters and an appendix. The first chapter will provide a brief introduction about generalized anxiety disorder and substance abuse, the rationale for the study, statement of the problem, the research questions and

hypothesis. Chapter 2 will present a comprehensive review of the literature. The third chapter will describe the research methods including how the original dataset was created, the forms of data collection, how data will be analyzed, potential ethical issues, and the role and background of the issue. In Chapter 4 the results of the data analyses will be presented as well as general demographic information. Chapter 5 will provide a discussion of these results. The last chapter will discuss the results of the study, future research and treatment implications, the strengths and limitations of the study, a conclusion, and the references used in all the chapters of this dissertation. The last section will include an appendix with a copy of the internal review board approval from the University of Illinois at Urbana-Champaign.

CHAPTER 2

LITERATURE REVIEW

An overview is presented of research and other literature with attention to the experience of anxiety disorders, substance use disorder and the interaction between the two. A computerized search using PubMed was conducted using anxiety, generalized anxiety disorder, or GAD with various combinations of the words "addictive disorders" OR "SUD" OR "generalized anxiety disorder (GAD)" OR "obsessive compulsive disorder (OCD)," "social support system," and "treatment." The search was expanded to include the keywords "coping mechanism" and "mental illness." Articles cited within the articles identified by the initial PubMed search were also reviewed. The overall search was not limited by date of publication but to all relevant literature.

ANXIETY DISORDERS

Anxiety is a normal reaction to life's stressors and actually can be beneficial in some situations, such as when the feeling of being anxious makes us more alert or more aware of our surroundings and therefore better able to respond. Anxiety is an unpleasant but normal, functional affect that provides people with warning signs of perceived threats (Campbell, 2009; Kessler, Chiu, Demler, & Walters, 2005; Zvolensky, Lejuez, & Eifert, 2000). Some anxiety is considered a beneficial response in certain dangerous situations that trigger the fight-or-flight stress response, a physiological reaction that either prepares our bodies to stay and fight or flee the situation (Campbell, 2009). However, for some people anxiety can become excessive and debilitating. Anxiety becomes problematic

when it creates a sense of powerlessness, suggests an impending danger that is unrealistic, produces an exhausting state of vigilance, or creates doubt about the nature of reality (Campbell, 2009; Kessler, Chiu, Demler, & Walters, 2005). Anxiety disorders, which include panic disorder, obsessive-compulsive disorder, posttraumatic stress disorder, generalized anxiety disorder, and certain phobias, are collectively the most common psychiatric disorders in the U.S. (National Institutes of Mental Health, 2013; Campbell, 2009; Kessler, Chiu, Demler, & Walters, 2005). These disorders affect almost 40 million adults aged 18 or older, or about 18% of the current U.S. population (National Institutes of Mental Health, 2013; Campbell, 2009; Kessler, Chiu, Demler, & Walters, 2005). Anxiety disorders can develop from a variety of risk factors, including genetic factors, environmental factors, psychological factors, and developmental factors. It is important to note that the exact etiology of anxiety disorder is not fully understood. Several theories have been previously proposed in an effort to try to explain the causes of anxiety in general. These proposed models for anxiety disorders have generally included biological and psychological paradigms (Campbell, 2009; Kessler, Chiu, Demler, & Walters, 2005).

The first of these models includes the psychoanalytic theory (Campbell, 2009). This model suggests that anxiety is produced as a result of an unconscious and internal conflict, which is specifically said to be between one's sexual urges and the defenses one uses to deal with these urges (Campbell, 2009). This model is highly problematic, often scrutinized and considered to be outdated.

The second theory used to explain the etiology of anxiety disorders is the behavioral theory. This theory suggests that feelings of anxiety are a result of learned

behaviors through classical conditioning (Starcevic, 2005). John Watson and B. F. Skinner suggested the theory that behavior is determined by the environment (e.g., through conditioning). For example, once an individual experiences a negative or aversive experience, that individual will learn to associate a neutral stimulus with feelings of danger or fear. Because of this negative emotional association (even in situations that are not dangerous or based in reality), that stimulus will be enough to cause an anxiety response (Starcevic, 2005). The anxiety response can become more strongly reinforced if that individual avoids the stimulus, never confronting the issue (Starcevic, 2005). This avoidance then makes it unlikely that the individual will be able to relearn that the event is not threatening (Rapee & Barlow, 2004). It should also be noted that behavioral therapy, also known as cognitive behavioral therapy or CBT, is one of the most effective treatments for anxiety disorders (Starcevic, 2005).

The next model used is the cognitive model of anxiety disorders, which focuses on an individual's incorrect assessment of potential danger (Starcevic, 2005). For example, it has been demonstrated that anxious individuals are more likely than normal (control) subjects to interpret ambiguous situations or environmental stimuli as potentially threatening, which they believe could result in potential harm or even death (Rapee & Barlow, 2004).

Genetic and hereditary factors are also deemed to play a significant role in the development of anxiety disorders (Rapee & Barlow, 2004). Barlow (2004) summarized through family studies that patients with panic disorder and agoraphobia were much more likely to have relatives with the disorder than relatives of patients who did not have the disorder. Prevalence rates for family members of those with panic disorder or

agoraphobia ranged from 7.9% to 41%, while the prevalence rate for the control group did not exceed 8%. Additionally, high prevalence rates for family members of patients with GAD, OCD, or social and specific phobias have been reported as well (APA, 2000; Rapee & Barlow, 2004). Finally, several twin studies have revealed a genetic contribution to anxiety, but those results are thought to be confounded by shared environmental experiences (Starcevic, 2005).

Biological factors also may play a role in the development of anxiety disorders. Several neurotransmitter systems have been identified as possibly being associated with the development of anxiety disorders (Craske, 2003; Craske & Chodhury, 2005). These neurotransmitters include gammaaminobutyric acid (GABA), norepinephrine, and serotonin. The studies looking into neurotransmitter system changes and abnormalities have typically resulted from interest in the effects that certain medications, such as benzodiazepines, may have on these systems. Today, benzodiazepines are often prescribed to anxiety sufferers (Craske, 2003; Craske & Chodhury, 2005).

The final model used to explain the etiology of anxiety disorders is that these disorders develop as a result of sociocultural factors. A possible link between the development of anxiety disorders and sociocultural factors is the role of social reinforcement. Social reinforcement influences gender roles beginning in childhood. For example, parents typically reinforce male children to be assertive and active and often foster their independence. In contrast, female children are frequently encouraged to be cautious and less independent, resulting in behavior that is typically more controlled. As a result, boys are exposed to a broader range of experiences and tend to be more self-reliant. Males are also thought to develop more effective coping skills that help to reduce

the amount of negative reactivity they experience when exposed to stressful situations (Craske, 2003; Craske & Chodhury, 2005).

Anxiety disorders are highly treatable; however, only about one-third of those suffering from them will go on to receive treatment (Kessler et al., 1996). Generalized anxiety disorder is just one of the many anxiety disorders outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*; APA, 2000), the book used by qualified mental health professionals to make a diagnosis of generalized anxiety disorder. According to the *DSM-IV-TR*, generalized anxiety disorder is described as excessive anxiety and worry occurring more days than not for a period of at least 6 months. Also accompanying the primary anxiety and worry are feelings of restlessness, fatigue, difficulty concentrating, irritability, muscle tension, disturbed sleep, or a combination of these (APA, 2000). The worry must also be seen as pervasive and intrusive on daily functioning. A general definition of GAD is also known as "chronic anxiety neurosis" and is characterized by chronic anxiety, accompanied by such autonomic symptoms as tremors and tachycardia. Commonly, the individual is easily startled and jumpy. Often unable to relax, the GAD sufferer may spend restless hours at night trying to fall asleep. Those who suffer from GAD often worry about trivial issues or about real issues that have been exaggerated or blown of out proportion (Campbell, 2009). Because of the excessive nature of their worrying, it is not uncommon for individuals with GAD to have difficulty functioning across a wide variety of social situations. The onset of GAD is usually in adolescence or in the childhood years; however, it may also first appear in early adult years (APA, 2000). Symptoms tend to evolve gradually (APA, 2000; National Institutes of Mental Health, 2013). More than half of all individuals who suffer from

GAD have reported an onset that began in childhood or adolescence (Campbell, 2009).

The most common age range for the onset of this disorder is between 15 and 25 years old.

Onset is usually gradual, and GAD tends to be a chronic condition whose symptoms

fluctuate over time, with those symptoms typically intensifying during times when a

person's life becomes stressful (APA, 2000). For more than half of persons with GAD, or

almost 67%, there is a co-occurring mental disorder, most typically depressive disorder,

other anxiety disorders, or substance abuse (Roemer, Orsillo, & Barlow, 2004).

Currently, there are several models that attempt to explain GAD specifically.

These models include the avoidance model of worry and GAD (AMW), the intolerance

of uncertainty model (IUM), the metacognitive model (MCM), the emotion dysregulation

model (EDM), and finally, the acceptance-based model of generalized anxiety disorder

(ABM) (Behar, DiMarco, Hekler, Mohlman, & Staples, 2009). All of these current

models tend to highlight avoidance of internal experiences (Behar, DiMarco, Hekler,

Mohlman, & Staples, 2009). The model that seems to most fit GAD and current treatment

strategies is the avoidance model of worry and GAD (AMW). The AMW model suggests

that cognitive avoidance, ineffective problem-solving behaviors, interpersonal issues, and

previous trauma account for GAD in certain individuals (Behar, DiMarco, Hekler,

Mohlman, & Staples, 2009). This model attempts to explain GAD by stating that

ineffective cognitive attempts to problem-solve a perceived threat are the causes of the

subject's anxiety. Otherwise stated, the worry functions as a cognitive avoidance

response to perceived future threats (Borkovec, Lyonfields, Wiser, & Deihl, 1993). The

AMW is characterized by theories of cognitive avoidance, emotional avoidance, the

intolerance of uncertainty, and negative cognitive reactions to emotions. All of these

principles are then combined with positive beliefs about worry while the individual is also concerned about effects of worry (Behar, DiMarco, Hekler, Mohlman, & Staples, 2009).

The two central themes of the AMW are that worrying in itself is a cognitive attempt to generate ways to prevent bad events from happening or to prepare oneself for their occurrence (Borkovec & Costello, 1993). The second main idea is that worry occurring just prior to fear-inducing images mutes aspects of somatic response to the stimuli (Borkovec & Costello, 1993).

Additionally, the majority of investigations examining the five models have employed nonexperimental designs in tests of hypotheses. This fact stands in stark contrast to the various specific causal hypotheses presented by the models. Despite these limitations, the models collectively offer valuable insights into the basic nature of GAD and the necessary steps to its successful treatment. The five theoretical models share a common emphasis on the central importance of avoidance of internal experiences. Further, there are several common treatment components across the models, including psychoeducation about GAD, self-monitoring, and an emphasis on training clients to cope with internal experiences. Although significant advances have been made in the theoretical understanding of GAD, there remains a need for a greater amount of basic research examining the predictive components of the five models. Moreover, additional randomized clinical trials are warranted to further test the practical utility of each model and its impact on individuals suffering from GAD.

As stated previously, the lifetime prevalence of generalized anxiety disorder has been estimated as affecting 6.8 million adults, or about 3.1% of the U.S. population.

Women are twice as likely to be affected by GAD as men. Lifetime prevalence rates of anxiety are estimated to be higher than any other class of psychological disorder (Kessler, Chiu, Demler, & Walters, 2005), and women are estimated to be affected by anxiety disorders more than men, with some estimates as large as 2:1 (Craske, 2003). Despite clear evidence of gender differences in rates of anxiety disorders, gender has not been consistently assessed in the development and maintenance of anxiety disorders specifically in women.

ANXIETY DISORDERS IN WOMEN

Lifetime prevalence rates for anxiety disorders in women are estimated to be 30.5%, and 22.6% for any given 12-month period (Barlow, 2001). From the time a woman reaches puberty until about the age of 50, she is twice as likely to have an anxiety disorder as a man. Anxiety disorders also occur earlier in women than in men. Women are also more likely to have multiple psychiatric disorders during their lifetime than men. The most common to co-occur with anxiety is depression. While it has been clearly evidenced that women suffer from anxiety disorders more than men, the reasons for these research findings are not quite clear. Differences in brain chemistry may account for at least part of these differences (Craske, 2003; Craske & Chowdhury, 2005). The brain system involved in the fight-or-flight response is activated more readily in women and stays activated longer than in men, partly as a result of the action of estrogen and progesterone (Craske, 2003; Craske & Chowdhury, 2005). The neurotransmitter serotonin may also play a role in responsiveness to stress and anxiety. Some evidence suggests that the female brain does not process serotonin as quickly as the male brain

(Craske, 2003; Craske & Chowdhury, 2005). Recent research has found that women are more sensitive to low levels of corticotropin-releasing factor (CRF), a hormone that organizes stress responses in mammals, making them twice as vulnerable as men to stress-related disorders. Additional explanations that attempt to account for these gender differences have included the differences in parenting styles and gender roles, the tendency for females toward greater negative affectivity, and the interaction of physiology and behavior on the development of anxiety disorders (Craske, 2003). Another possible explanation, as previously stated above, is the fact that male children are typically reinforced to be assertive and independent while female children are encouraged to be cautious and less independent (Craske, 2003).

Women are more vulnerable to anxiety because of their tendency toward greater negative affectivity (Craske, 2003). Negative affectivity "is a broad and pervasive predisposition to experience negative emotions that has further influences on cognition, self-concept, and worldview" (Watson & Clark, 1984). It is also related to general life satisfaction. Those with high negative affectivity tend to experience states of anxiety, nervousness, guilt, and fear. Women often experience increased levels of negative affectivity as they get older, while males' levels are likely to remain constant and tend to have lower levels overall (Craske, 2003). Negative affectivity can often interfere with one's ability to effectively cope and thus leads to increased levels of anxiety (Craske, 2003).

Additionally, research studies conducted on anxiety and its relationship to physiology and behavior demonstrate that there are some differences between male and female responses to stress (Craske, 2003). As discussed earlier, one benefit of anxiety is

the fight-or-flight stress response. This response essentially prepares the body to either fight the perceived threat or flee from it. It should also be noted that the response can be triggered by both real and imaginary threats. Changes occurring in the body during this time include an increased heart rate, muscles becoming tense, perspiring, and eyes narrowing, and hearing may become more acute (Craske, 2003). Some research studies have found that in females, there is a dampening effect of the fight or flight response, which is theorized to be caused by oxytocin and endogenous opiates (Craske, 2003). Put more simply in behavioral terms, this dampening effect results in women showing a blunted response to the fight-or-flight reaction.

ANXIETY DISORDERS IN AFRICAN AMERICANS

According to the 2013 U.S. Census Data report, African Americans make up roughly 13.1% of the U.S. population. Almost 25%, or 7.5 million, of African Americans have been diagnosed with a mental illness (Ward, Clark, & Heidrich, 2009). African American women might be overrepresented in this population because they are at a higher risk for developing mental illness. This is often due to factors that include lower income, poor health, multiple-role strain, and the "double minority status" of both race and gender (Ward, Clark, & Heidrich, 2009; Neal-Barnett & Crowther, 2000). The term *double minority status* is defined as "the psychological state created when two devalued identities interact to influence the individual in a way that is greater than the sum of the independent effects of those identities" (Gonzales, Blanton, & Williams, 2002). An individual belonging to multiple disadvantaged groups may encounter a "double disadvantage" when he or she is compared to both privileged and singly disadvantaged

people. Adults who are members of more than one of the disadvantaged groups were more like to report experiencing everyday and lifetime major discrimination and view these experiences as stressful. They were also more likely to report poor health than singly disadvantaged or privileged adults (Gonzales, Blanton, & Williams, 2002).

The estimated lifetime prevalence of generalized anxiety disorder in African Americans is 5%. This is more than likely an underestimate. The National Alliance for Mental Illness (NAMI) estimates that only 1 in 3 African Americans will seek treatment for their mental illness. African Americans with co-occurring substance use and mental disorders are even less likely to use any professional services (Woodward et al., 2008). Most will tend to treat the physiological symptoms manifested from anxiety with their primary care physician (Ward, Clark, & Heidrich, 2009; Neal-Barnett & Crowther, 2000; Williams, Domanico, Marques, Leblanc, & Turkheimer, 2013). Shame or reluctance to be labeled mentally ill or experiences with racism often make it hard for African Americans to trust medical providers or institutions (Ward, Clark, & Heidrich, 2009; Neal-Barnett & Crowther, 2000; Williams, Domanico, Marques, Leblanc, & Turkheimer, 2013). With that being said, many African Americans may be less likely to report excessive worried thoughts and instead focus on the manifestation of the physical symptoms associated with the disorder such as a racing heart, nausea, sleeplessness, and others. In addition, researchers and clinical staff may miss diagnosing GAD because they may not be asking questions about the specific things African Americans are likely to worry about, such as racism (Ward, Clark, & Heidrich, 2009). Although African Americans have lower rates of anxiety disorders than Caucasians, their anxiety disorders are more likely to persist (Breslau, Kendler, Maxwell, Gaxiola-Aguilar, & Kessler,

2005). This may be attributable to the fact that African Americans tend to seek medical health instead of mental health treatment and may also complain about somatic rather than emotional symptoms (Gonzales, Blanton, & Williams, 2002).

The term "hard to reach" has emerged throughout health care and social service research in a context of the targeting of services to specific groups (Cortis, 2012). Simply put, it means that a hard-to-reach population is one that is difficult for researchers to access (Cortis, 2012). According to Faugier & Sargeant (1997), a hard to reach population is

> adults, young people and children from any ethnic background, regardless of Do you want to put quotes here?migration status. They are "hard-to-reach" if their social circumstances, language, culture or lifestyle (or those of their parents or caregivers) make it difficult to access diagnostic and treatment services; self-administer treatment; or attend regular appointments for clinical follow-up.

The terms "hidden population" and "hard-to-reach population" are often used interchangeably but mean very different things. A hidden population is a population with no defined limits, such that its exact size cannot be known. Hidden populations often prompt research into sensitive subjects. Intravenous steroid users, for example, are a hidden population whose members could be damaged by disclosure of the phenomenon. People in underserved communities such as African Americans might be harder to reach because of a variety of personal or sociodemographic characteristics. Many cultural groups are reluctant to volunteer personal information because of the risk of social, political, or other discriminatory repercussions (Sadler, Lee, Lim, & Fullerton, 2010).

There are several potential reasons why African Americans do not seek treatment for mental illness. A few of the common barriers include the cultural components involved with mental health treatment. Shame or reluctance to be labeled mentally ill or experiences with racism often make it hard for African Americans to trust medical providers or institutions. Belief systems that are linked to cultural norms about engagement in healthcare services or a history of prior abuses of minority groups during the research process (such as the Tuskegee Experiments) also could potentially interfere with research participation (Elmir, Schmied, Jackson, & Wilkes, 2011).

African Americans tend to seek comfort in other areas of their life, which includes clergy, colleagues, family, and members of their social network. In addition, there are often negative feelings toward mental health treatment, such as embarrassment and stigma in general, but especially in the African American community. There is the persistent notion of the idea of the "Strong Black Woman." This culture is taught to endure hardships in silence and not seek out treatment outside of their family network. Also, many do not want to seem "crazy" to their peers. Another barrier could simply be not being able to afford treatment. One final barrier that often still plays a large part in the African American community outlook is the idea of institutional mistrust. Many still remember the horrific Tuskegee Experiments conducted in this county as recently as the 1970s.

Several common themes persisted throughout this review of literature on African Americans and mental illness treatment. These themes included the lack of available information on this topic, self and group perceptions of mental health issues, treatment-seeking barriers, and finally, the low rates of African Americans in treatment studies and

clinical settings for anxiety. Williams, Domanico, Marques, Leblanc, & Turkheimer (2013) and Neal-Barnett & Crowther (2000) both outlined the common theme of the lack of relevant literature surrounding African Americans and anxiety disorders. African Americans' distrust of physicians and the health care system in general may also contribute to this lack of relevant literature. Historically, African Americans, other minority groups, and women have all been underrepresented in clinical trials (Harris et al, 2000). For African Americans, this could simply be attributable to a general lack of access to health care.

African Americans' negative race-related experiences have been associated with outcomes such as increased anxiety, depression, somatization, and substance use (Greer, 2011). The strong historical background of African Americans as research subjects, which dates back as far as the Civil War, can illustrate how their attitudes and fears manifest. For example, the Tuskegee Syphilis Study, initiated in the 1930s, used African American sharecroppers in the South (Greer, 2011). Penicillin was not in use as a standard treatment for syphilis when the study was initiated. However, it became widely available in the 1940s and later became the standard treatment protocol for syphilis. The participants in the program were not made aware of this nor given the treatment until a public outcry in the 1970s (Greer, 2011). The effect of this study and other events may have led to current mistrust of treatment settings by this population. Even though there are several modern-day safeguards in place to prevent this type of abuse from happening again, the effects of this study and similar studies have not gone away.

Another important facet of this issue outlined by Ward, Clark, and Heidrich (2009) is the fact that little research has been conducted to help determine how individual

beliefs and attitudes influence coping behaviors and treatment-seeking specific to African American women. Among African American populations, culture-specific efforts usually involve the use of spirituality and religion, support from friends and family, and the reliance on community and spiritual leaders to address perceived problems (Ward, Clark, & Heidrich, 2009)

Basically, the issue regarding the lack of African Americans in mental health treatment may not be addressed because this population has found other ways to cope with their anxiety through such things such as prayer, meditation, or even substance use and abuse.

More is needed in terms of specific cultural research on African American women and generalized anxiety disorder. In addition, since the majority of studies have been conducted on Caucasian women, it is hard to say whether the current treatment models can be generalizable to different races (Williams, Domanico, Marques, Leblanc, & Turkheimer, 2012). The lack of diversity of the participants that can be gathered for health promotion and intervention activities or research studies will limit the generalizability of the findings. This has a large impact on the clinical and treatment population. Since African Americans have different cultural beliefs when it comes to mental health services, this definitely must be taken into account in the future. The best mental health treatment approaches would have multiple components that are deemed culturally relevant and take into account the cultural identity shared by many African American women.

Substance abuse is defined as the overuse, misuse, or addiction to any chemical substance such as tobacco, alcohol, or drugs, including over-the-counter, prescription medications, and illicit drugs (APA, 2000). Almost 23 million Americans older than age 11 are diagnosed with substance abuse or dependence (SAMHSA, 2009). Substance abuse is one of the greatest causes of preventable death in the United States in the form of tobacco use. Adolescents and adults presenting for substance use disorder treatment often have co-occurring mental health disorders (Chan, Dennis, & Funk, 2008), which can further complicate diagnoses, assessment, treatment, and relapse prevention efforts (APA, 2000). As a result, substance use disorders contribute to significant social, financial, and disease burdens to those effected (Khalsa, Treisman, McCance-Katz, & Tedaldi, 2008).

Individuals take drugs for a variety of reasons. The most often-stated reason is that drugs are fun and they make you feel good. Television has always shown alcohol and drug use under the guise of recreational fun. Also, drugs can act as a stress reliever. Taking drugs will allow you to forget or tune out your problems while you are under the influence. Young people and adolescents often take drugs to fit in or to not be seen as a social outcast. Others take drugs because they are simply bored or to rebel against their parents or other authority figures. Finally, many individuals state that they experimented with drug use for the first time because they were simply curious about the drug (McNeece & DiNitto, 2012). Given the various reasons that people take drugs, it is important to determine what will make some of these people become addicted while others may never become addicted and are able quit their drug use without further

intervention. Understanding these reasons will have strong implications for treatment effectiveness and the type of help given to a drug-addicted individual.

The majority of people in most cultures will have at least some experience with substances (whether alcohol or other drugs) that can potentially develop into a problematic use pattern. However, most individuals who experiment with drugs will not become addicted. For example, many people throughout the world drink alcohol, but only a certain few will go on to become alcoholics. Environmental factors play an enormously powerful role in the development of an addicted individual in addition to their own genetic makeup (McNeece & DiNitto, 2012).

The biological or genetic theory is currently the most widely held view of addiction etiology in the scientific community and the addition community as a whole. To discuss the biological theory, we must first briefly explain the processes of what happens in the brain. The brain is made up of the limbic system, which is also known as the reward or pleasure center of our brain (McNeece & DiNitto, 2012). Whenever we do something that makes us happy or feel good, a chemical called dopamine is released into the brain. Alcohol and other drugs are not the only things that can cause dopamine to be released into our blood stream. Our brain releases these chemicals in response to other things that we enjoy. However, when someone takes a drug, the amount of dopamine released into their bloodstream is far greater than many other activities (McNeece & DiNitto, 2012). This sudden surge of dopamine is what gives the user a sense of a "high." Most drug addicts then spend the rest of their time trying to again achieve the same feeling with continued drug use.

The amount of dopamine released in response to drug use is substantially higher than in other everyday behaviors such as seeing a sunset or holding hands with a loved one (Drapela, 2006). Therefore, the brain will struggle to regain its normal chemical balance after the substance wears off. These negative and low feelings often lead a person to want to use drugs again to combat these low feelings. Over time, continued use of drugs can lead the brain to stop producing its own dopamine as it naturally does without the aid of a drug. This can lead to a physical dependency in which the drug-addicted individual needs to use more of the substance just to feel normal, creating a vicious cycle that can be difficult to break without further intervention (Drapela, 2006).

Proponents of the disease or medical model of drug addiction speculate that because of this learning process that takes places within the brain, an eventual physical dependence on that substance will occur (McNeece & DiNitto, 2012). The individual has now become addicted to that drug. Their body needs that drug to feel normal. Under the disease model of addiction, the brain's reward center becomes reorganized. The individual's priorities are rearranged so that finding and using the substance (or another substance that will produce similar effects) becomes top priority as far as their brain is concerned. In this instance the drug has taken over all of the brain's thought processes, and the addict is no longer in control of his or her own actions. An example used to illustrate this point noted by Buchman, Skinner, and Illes (2010) is that an alcoholic will not have trouble deciding whether to get in his car and drive to the store to get more alcohol because this urge to do so will be irresistible. The decision was already make for him when he became addicted to alcohol.

Many physicians, even the current director of the National Institute on Drug Abuse (NIDA), Nora D. Volkow, MD, believes that drug addiction is not a lifestyle choice but instead an abnormality of brain functioning. Many physicians feel that drug addiction should be placed in the same category as other serious psychiatric disorders that have a basis in the brain. This only reiterates the fact that there exists some type of interaction of genetic, psychological, and neurobiological predispositions to drug addiction. However, it is still important to explore whether other factors such as environmental influences can exacerbate this vulnerability (Feske et al., 2008).

The accumulating knowledge regarding vulnerability to drug use and substance use disorders needs to be more thoroughly explored. There are several models that exist that claim to explain the origins of substance abuse. More interdisciplinary research that involves geneticists, neuroscientists, social and behavioral scientists, and social workers have helped to improve our understanding of drug use and substance misuse; however, more work is still needed. Individuals may be predisposed to drug use and drug use disorders; however, their actual engagement in these behaviors largely depends on their own environmental experiences (McNeece & DiNitto, 2012). This could have great implications for addiction treatment research as well as prevention strategies. The best addiction-treatment approaches should have multiple components and should help to better several affected areas of the addict's life and not just look at achieving abstinence from drugs.

Not surprisingly, evidence has accumulated to demonstrate gender differences in the occurrence and course of drug use disorders (McNeece & DiNitto, 2012). Among these differences is a more rapid progression among women than men from drug use to addiction and oftentimes greater impairment than males from drug use (McNeece & DiNitto, 2012). Female drug users tend to experience greater impairment concerning their health (e.g., complications during pregnancy, violence, and greater vulnerability to HIV/AIDS infection) and greater social consequences (e.g., criminal justice involvement, sex differences in motivation for and initiation into drug use, and in the biological effect of certain drugs also have been reported) (Brecht, O'Brien, Von Mayrhauser, & Anglin, 2004).

It is well known that substance abuse problems are more common in men compared to women; however, substance abuse problems are still considered a significant public health concern in women (McNeece & DiNitto, 2012;). There are currently 9 million women who have used illegal drugs in the past year (McNeece & DiNitto, 2012), and 3.7 million women have taken prescription drugs nonmedically during the past year. More than 28,000 (70%) of the AIDS cases among women are drug-related. Research also demonstrates that women who drink face more health and social problems than men who drink (McNeece & DiNitto, 2012).

The characteristics of women substance abusers are quite different than what is typically seen in males. Women usually tend to initiate substance abuse later. Usually they are influenced by men in their lives, such as a spouse or boyfriend, to start substance abuse (McNeece & DiNitto, 2012). Women also are more likely to suffer from a

comorbid psychiatric problem such as depression, anxiety, or a mood disorder and

usually seek treatment earlier in the course of their addiction (Brady & Randall, 1999).

Finally, problems related to substance abuse interfere with functioning in more areas of

the lives of women as compared to their male counterparts (Fillmore et al., 1997). This is

also an important issue because substance abuse is harmful during pregnancy as the

growing fetus is adversely affected as well (Brady & Randall, 1999).

Women involved in the criminal justice system have even higher rates of

substance use compared to those with no involvement (Brady & Randall, 1999). Drug-

related offenses are one of the most common reasons women are incarcerated. According

to the Bureau of Justice Statistics, "approximately 59.3% of state and 47.6% of Federal

female prisoners surveyed in 2004 indicated that they had used drugs in the month prior

to their offense" (Brady & Randall, 1999). Additionally, it was found that almost 60.2%

of state and 42.8% of federal female prisoners surveyed in 2004 met drug dependence or

abuse criteria (Brady & Randall, 1999). Understanding women's addictions to substances

is essential to address the health care needs of women, especially women incarcerated for

illegal drug use.

Women potentially face several barriers when they try to access substance abuse

treatment. Women are more likely to seek care in mental health or primary care settings

rather than in specialized substance treatment programs, which elicits poorer outcomes in

regards to their substance use (Green, 2006). Women are more likely than men to

experience economic barriers to treatment and other barriers that prevent them from

seeking or following through with treatment (Brady & Ashley, 2005). These barriers

include the need for adequate childcare, transportation to appointments, and income. As a

result of being in substance abuse treatment, women are more likely to report feeling shame or embarrassment than males (Thom, 1987). It is important to address these barriers so that more women will attempt to access treatment. When the barriers of housing, transportation, education, and income were addressed, it was found that women were less likely to use after treatment ended (Green, 2006). Addressing these barriers to treatment seems to protect against potential relapse.

SUBSTANCE ABUSE AND MISUSE IN AFRICAN AMERICANS

Current research on variations in risk for drug use disorders associated with sex, ethnicity, and age is minimal. Research on the link between mental and drug use disorders often has failed to incorporate individuals of varying sexes, ethnicities, and ages, effectively limiting the generalizability of their findings. Ethnic and racial minorities experience a variety of adversities including higher poverty rates and decreased opportunities for employment, education, housing, and medical treatment (SAMHSA, 2009; U.S. Census Bureau, 1999), which have been hypothesized to increase risk for mental and drug use disorders. Despite these adversities, African Americans have been found to have a lower prevalence and later onset of substance use. Once drug use has begun, studies have been inconsistent on the course of drug use among African Americans (SAMHSA, 2009).

According to the 2012 National Survey on Drug Use and Health, an estimated 23 million Americans age 12 and older use illegal drugs. The survey also reported that an estimated 22.2 million (age 12 or older) were classified with substance dependence or abuse in the past year. It has generally been shown that compared to their European

American counterparts, African Americans report a later initiation of alcohol during adolescence and generally lower rates and levels of use across adulthood. However, despite these findings, African Americans often experience more negative social consequences from drinking, experience more alcohol-related illnesses and injuries, and to some extent are more likely to report alcohol dependence symptoms or diagnosis (Barlow, 2001). Similarly, studies of racial and ethnic differences have found that Caucasians have higher prevalence rates of substance abuse disorders than other racial and ethnic groups, but the racial and ethnic minorities have been shown to have substance abuse disorders that persist for longer periods of time.

Rates for substance abuse treatment admissions for African Americans have steadily declined 15% between 1994 and 1999, while rates for admissions for the total population have increased 3% (SAMHSA, 1999). Issues of race and gender that impact the target population may further impact treatment access and utilization. The outcomes of substance use disorders tend to be more negative, long-term, and pervasive for African Americans as compared to outcomes of other racial and ethnic groups (SAMHSA, 1999). Despite the availability of treatment options, research pertaining to best practices for substance abuse treatment specifically for African Americans is very limited because many of the previous studies have been conducted on Caucasian males. In general, African Americans are slightly less likely to receive substance abuse treatment, and that treatment received may be of poor quality (Clark et al., 2013).

Even though the lifetime and current prevalence rates of illegal drug use are lower for African Americans than Caucasians, African Americans are still overrepresented in the health and criminal justice systems. The 2000 National Survey on Drug Use and

Health also showed higher drug abuse rates for Whites than for racial or ethnic minorities, except in regards to the abuse of crack cocaine and heroin. African Americans are overrepresented among incarcerated drug abusers in the United States when compared to European Americans and have lower rates of recovery from drug addiction after treatment. There has been no comprehensive research to date to specifically explain either this overrepresentation or lower rates of recovery among African Americans. The necessity to address cultural as well as personal issues is shown to be intrinsic to successful recovery among African Americans.

PSYCHIATRIC COMORBIDITY

Psychiatric comorbidity is defined as the presence, either simultaneously or in succession, of two or more specific disorders in an individual within a specified period (Wittchen, Perkonigg, & Reed, 1996). Comorbidity has major consequences. According to Graaf, Bijl, Smit, Vollebergh, and Spijker (2002), subjects with comorbid disorders often have higher service utilization rates than those with simply one disorder. Comorbidity has also been linked to more severe symptoms, greater functional disability, and longer illness course (Wittchen, Perkonigg, & Reed, 1996). In primary health care settings, comorbidity increases the chances that mental disorders will be recognized and increases the likelihood of receiving treatment. In the National Comorbidity Study, more than half (59%) of all 12-month disorders occurred in the 14% of the population with a history of three or more disorders (2000). These subjects were more likely to be female, 15 to 24 years old, and residents of major metropolitan areas and to have lower income

and educational attainment levels compared with subjects without a history of three or more disorders.

Anxiety disorders are typically comorbid with each other as well as with the depressive disorders (APA, 2000). According to Kushner, Sher, & Erickson (1999), substance use disorders and anxiety disorders are highly correlated. Substance use disorders may also occur with anxiety in adults, with both substance use and anxiety serving as risk factors for each other. The presence of an anxiety or substance use disorder is also a risk factor for the presence of the other disorder, as shown in both epidemiological and clinical samples. For example, one 7-year study demonstrated that the presence of an anxiety disorder quadrupled the risk for the onset of alcohol dependence (Kushner, Sher, & Erickson, 1999). It was also found that alcohol dependence increased the risk for an anxiety disorder by 3 to 5 times. Lastly, a couple of longitudinal studies conducted on samples outside of the U.S. have indicated that anxiety disorders may lead to substance use disorders (Goodwin, Ferguson, & Horwood, 2004).

Typically, when the pattern of onset for mental and drug use disorders has been examined, the anxiety disorders have tended to precede drug use disorders (Lopez, Turner, & Saavedra, 2005). However, when examining the literature on the link between mental and drug use disorders, comorbid patterns are often described but comorbidity has not been fully been controlled for in the analyses (Chilcoat & Breslau, 1998a, 1998b).

The diagnosis of current mood or anxiety disorders among active substance abusers is complicated by the fact that many symptoms of intoxication and withdrawal from alcohol and other substances often resemble the symptoms of mood and anxiety disorders (tremors, nausea, irritability). The association between most substance use

disorders and mood and anxiety disorders show a positive and significant correlation, which suggests that treatment for a comorbid mood or anxiety disorder should also be administered to those individuals with substance use disorders (Miller & Carroll, 2006). However, the nature of current co-occurrence of substance and mood or anxiety disorders remains largely unexamined and poorly understood. As previously stated, the relationship between co-occurring substance use and other psychiatric disorders may be particularly relevant for women, who have both higher overall rates of mood and anxiety disorders as well as higher rates of co-occurring substance use and psychiatric disorders relative to men (Kessler, Chiu, Demler, & Walters, 2005).

Previous studies have shown that longer periods of abstinence (percent of days, whether consecutive or not) and longer durations of sustained abstinence (consecutive days only) yield benefits in a wide array of physical, psychological, and social functioning domains, including social network improvements, increased vocational involvement, and better mental health (Kessler, Chiu, Demler, & Walters, 2005). All of this information strongly indicates that becoming free from substance abuse will greatly increase one's quality of life.

Generalized anxiety disorder and substance abuse disorder commonly co-occur; however, there is little data for how to treat these types of cases (Kushner, Sher, & Beitman, 1990). It is estimated that 50 to 60% of women entering substance abuse treatment have a co-occurring mental disorder (Newmann & Sallmann, 2004). Another study that examined the link between mental and drug use disorders was Goodwin and colleagues (2002), who used a clinical sample comprising mostly females (66%) currently in treatment. This study controlled for demographic characteristics and

psychotic disorders, which included schizophrenia and schizoaffective disorder. They found that anxiety disorders increased the risk for drug use disorders, including cocaine, sedative, stimulant, and opioid disorders, among patients with affective (or mood) disorders. Results from this study also suggest that comorbid depression and anxiety disorders do not increase risk for drug use disorders among females receiving outpatient treatment. It is hard to determine whether these findings generalize to individuals of varied age and ethnicities.

INTERSECTIONALITY

Intersectionality, which is defined as the theory of how different types of discrimination interact (Crenshaw, 1989) gathered its roots from Black feminist thought. Crenshaw originally coined the term when discussing anti-discrimination law and argued that Black women were discriminated against in ways that often do not fit neatly within the legal categories of either "racism" or "sexism" but as a combination of both racism *and* sexism. This theory recognizes the fact that gender, race and class are interconnected as "intersecting oppressions" (Crenshaw, 1989). There are many health disparities that can be attributed to social inequalities; however, previous attempts to explain these inequalities tend to solely focus on a single demographic factor, such as sex, race, or socioeconomic status. This approach is inadequate in thoroughly explaining these disparities.

It is important to look at all of these when studying African American women as their position falls within groups including that of disadvantaged gender, racial, and class statuses. The key aspect of intersectionality is the fact that multiple oppressions are not

each experienced separately but rather as a single, combined experience. Proponents of the intersectionality theory argue that the oppressions associated with each of these disadvantaged statuses are inextricably linked with each other and these issues are not currently discussed in research (Collins, 2000).

TREATMENT FOR ANXIETY AND SUBSTANCE USE DISORDERS

DSM-IV-TR criteria are used to make a diagnosis of GAD. Generalized anxiety disorder frequently co-occurs with physical illness or drug conditions; therefore, a complete medical examination is recommended. Treatment for GAD typically consists of psychological or pharmacological interventions. The psychological treatment for GAD usually takes the form of cognitive, behavioral, or supportive therapy (Starcevic, 2005).

There are many appropriate mental health treatment programs for both anxiety disorders and substance abuse disorders but very few outlined to combat both disorders simultaneously. Clinicians must decide which disorder to treat first, whether it makes sense to treat one disorder in isolation from another, which treatment or treatment approach to use, and how to evaluate treatment progress (Kessler, Chiu, Demler, Walters, 2005). There are several theoretical health framework models that can describe both generalized anxiety disorder and substance abuse separately.

The high rate of comorbidity between drug use disorders and other mental illnesses calls for a comprehensive approach that identifies and evaluates both disorders (Kessler, Chiu, Demler, & Walters, 2005). It is important that once an anxiety disorder has been diagnosed, the specific type of disorder (social anxiety, generalized anxiety, etc.) or the combination of disorders that are present must be identified as well as any

coexisting conditions, such as depression or substance abuse. Additionally, anyone seeking help for either drug abuse or addiction or generalized anxiety disorder should be checked for both and treated accordingly since they commonly co-occur (Kessler, Chiu, Demler & Walters, 2005). Also, substance abuse can have such a strong effect on the individual that treating the anxiety disorder must often wait until the substance abuse or dependence conditions are first managed. It is also important to note that no single treatment will be deemed appropriate for everyone.

Depending on the substances used, detoxification is often the first step in treating addition. Cognitive-behavioral therapy (CBT) has been shown to be very useful in treating individuals with anxiety disorders as well as substance abuse disorder. The cognitive part helps people change the thinking patterns that support their fears and anxieties, while the behavioral component helps people change the way that they react in anxiety-provoking situations. CBT has also been shown to reduce anxiety in cognitively intact older adults with generalized anxiety disorder (Padwa, Larkins, Crevecoeur-Macphail, & Grella, 2013). Thus, beginning the CBT treatment would help with the reasons individuals use drugs and may also help the patient recognize anxiety-provoking situations and how to deal with them. The goal of CBT is basically to change thoughts and behaviors as related to anxiety and substance abuse. In addition to the CBT, most effective treatment programs use individual, family, and group counseling as a form of treatment.

Behavioral therapies are the most commonly used forms of drug abuse treatment (SAMHSA, 1999). Behavioral therapies can vary but may involve addressing a patient's motivation to change, providing incentives for abstinence, looking at the patient's

reinforcers for staying abstinent, teaching drink and drug refusal skills, and trying to replace the time spent on drug-using activities with more constructive and rewarding activities. Behavioral techniques also involve improving the patient's problem-solving skills and communication skills in hopes of facilitating better relationships with friends and family. Also, participation in group therapy and other peer-support programs during and following treatment can help maintain abstinence.

Finally, it is also important to implement a systematic follow-up program for the clients after treatment has ended in order to determine instances of drug-free behavior and employment versus situations where relapse has occurred. Once the patient has dealt with their drug addiction, then strategies for maintaining their levels of anxieties can be addressed.

Strategies for addressing generalized anxiety would include additional CBT training on managing anxiety-provoking situations and ways to decrease anxiety. Cognitive-behavioral therapy aims to recognize and change the patient's thinking patterns associated with the anxiety and troublesome feelings. This type of therapy has two main parts: a cognitive part designed to limit distorted thinking and a behavioral part designed to change the way people react to the objects or situations that may trigger anxiety. CBT training specifically for anxiety often incorporates a variety of relaxation techniques or physical relaxation methods as well as meditation techniques (Wittchen, 2002). Many anxiety sufferers also benefit from group therapy sessions where they can discuss their feelings of anxiety with others having similar issues. Through group therapy, those with anxiety are taught to replace the negative thoughts or worries they have with coping self-talk (Wittchen, 2002). They might be encouraged to make a list of the negative thoughts

they have and are invited to write a list of positive thoughts to replace them. Finally, medical treatments for anxiety utilize several types of drug classes. If the cause of the anxiety is a physical ailment, treatment will be designed to eliminate the particular ailment. Medications typically used to treat anxiety include antidepressants, benzodiazepines, tricyclics, and beta-blockers to control some of the physical and mental symptoms (Wittchen, 2002).

It is also important to gauge the patient's overall treatment satisfaction throughout treatment. This can be done with a short survey called the Treatment Satisfaction Index (TxSI), which gauges the client's satisfaction with their therapist and with treatment overall. The index is usually done early on in treatment, after at least the second session has occurred, and again at the completion of the treatment program.

Treatment should vary depending on the type of drug and the characteristics of the patients. Matching treatment settings, interventions, and services to an individual's particular problems and needs is critical to their success in returning to productive functioning in the family, workplace, and society as a whole (Padwa, Larkins, Crevecoeur-Macphail, & Grella, 2013).

Comorbid mental health problems such as depression or anxiety are common in individuals with alcohol and other drug problems. In studying the link between anxiety and substance use and abuse, potential moderating factors that have merited consideration based on past research include demographic variables of gender, age, and ethnicity. However, little is known about the occurrence of this association specifically in African American female substance abusers. The results of this literature review confirm and strengthen the findings that there is not a lot of research that specifically focuses on

African American women and their experiences with comorbid diagnoses of generalized

anxiety disorder and substance abuse disorder.

CHAPTER 3

RESEARCH METHODS

RESEARCH DESIGN

In compliance with the regulations of the University of Illinois Institutional Review Board (IRB), the permission for conducting the research must be obtained from the IRB (Institutional Review Board, 2014). The IRB Application for Review of Research Involving Human Subjects Form was filed, providing information about the principal investigator, the project title and type, source of funding, type of review requested, and number and type of subjects. Application for research permission contained the description of the project and its significance, methods and procedures, participants, and research status. It has been determined that this project as described does not meet the definition of human subjects research as defined in 45CFR46(d)(f) or at 21CFR56.102(c)(e) and is considered exempt.

This dissertation used secondary analysis of longitudinal study data previously collected. Secondary data analysis is theoretically the analysis of data collected by someone else (Boslaugh, 2007). This typically consists of the analysis of the data in order to answer a research question other than the original questions for which the data were initially collected. This is in contrast to primary data collection and analysis, in which the same individual or team of researchers designs, collects, and analyzes the data. A key strength of a longitudinal study is the ability to measure change in outcomes or exposure at the individual level (Rogosa, 1979). Longitudinal studies provide the opportunity to

observe individual patterns of change and also use those changes to analyze group data (Cook & Campbell, 1979). In repeat-measures designs the variability between subjects can be isolated, and analysis can focus more precisely on treatment effects (Cook & Campbell, 1979). Another important practical implication of a longitudinal study is that a one-time treatment assessment that assesses for a behavior at a single point cannot sufficiently link the correlation between two different variables.

PARTICIPANTS

Data are from the Pathways to Recovery study (e.g., Dennis, Foss, & Scott, 2007; Dennis, Scott, Funk, & Foss, 2005; Scott, Foss, & Dennis, 2005; Scott, Dennis, Laudet, Funk, & Simeone, 2011), a longitudinal study that began in 1996. As part of the original Chicago Target Cities study (Scott, Muck, & Foss, 2000; Scott, Foss, & Sherman, 2003a, 2003b), a sample of 1,326 participants was recruited between 1996 and 1998 from sequential admissions (participation rate: 85%) of patients admitted to a network of 22 addiction treatment programs operating on the west side of Chicago (10 outpatient drug-free programs, five intensive outpatient drug-free programs, three methadone maintenance clinics, two short-term inpatient clinics, one long-term inpatient program, and one halfway house). Participants were re-interviewed at 6 months, 2 years, and annually thereafter for 9 years (follow-up rates per wave were 92% to 96%). In order to be eligible, participants had to a) reside in the city of Chicago or declare themselves homeless, b) report alcohol or drug use in the preceding 6 months (or the 6 months before being in a controlled environment), c) present for treatment at one of the publicly funded treatment programs in the study, and d) be 18 years of age or older. Individuals seeking treatment as a result of a DUI Level 2 or higher conviction were excluded because their

treatment-placement decisions were typically made outside the treatment system being studied (i.e., by a court officer). Informed and voluntary consent to participate was sought under the supervision of both the state's and Chestnut Health Systems' institutional review boards.

High rates of attrition often challenge the validity of longitudinal studies. There are many reasons why individuals do not continue with longitudinal studies. These reasons include participant death, moving out of the area, refusing to participate, homelessness, and some adverse occurrence from a previous wave of research (Scott, Sonis, Creamer, & Dennis, 2006). Christy K Scott of Chestnut Health Systems has developed a method (2004) that seeks to attrition in longitudinal studies in the substance abuse field, based on a theoretical model of the ways that substance users are often lost to follow-up. This method has consistently yielded low attrition rates of less than 10% in her studies (Scott, Sonis, Creamer, & Dennis, 2006). She has been able to do this by specifically examining the reasons that drug users might be lost to follow-up as well as identifying opportunities for intervention in order to minimize that loss. The four dominant behavior patterns that she noticed among drug users that were thought to impact attrition were 1) mobility; 2) the cyclic pattern of addiction involving relapse, recovery and treatment; 3) social withdrawal, and 4) involvement with institutional settings (Scott, Sonis, Creamer, & Dennis, 2006). Scott has identified six areas of importance in terms of minimizing attrition in longitudinal studies. These areas include 1) delineation of staff roles and responsibilities; 2) engagement of institutions and organizations that interact with the research participants; 3) development and use of appropriate written materials for education, consent, and tracking participants over time

("locator" forms); 4) development and implementation of the engagement, verification, maintenance, and confirmation (EVMC) protocol; 5) monitoring of staff compliance with the EVMC protocol; and 6) facilitation of regular case review meetings (Scott, Sonis, Creamer, & Dennis, 2006). This model has shown to be effective in producing longitudinal study follow-up rates over 90% with individuals who have substance use disorders.

In terms of attrition, to adequately address the current study's research questions (centering on multivariate relationships between baseline, Years 2–9, and Years 15 and 16 variables) this study focused on only a subset of the sample to include participants for whom all data was available from baseline to Year 16. In order to get an accurate picture of substance users with generalized anxiety disorder, only participants available for all waves of data analyzed were included. If a participant was not available for Years 9, 15, and 16, then their information was not included in the study. The one downside to utilizing this method is the fact that there is the risk of bias because of incomplete follow-up, or "drop-out" of study participants. If subjects who are followed to the planned end of study differ from subjects who discontinued follow-up, then the analysis may provide summaries that are not representative of the original target population as a whole. However, looking at the changes over time using all waves of data would allow for the opportunity to measure change more accurately by looking at more time points than just two and looking at a larger sample to make those inferences.

The main study instrument was an augmented version of the Addiction Severity Index (ASI), which includes questions on age, lifetime and past-month problem severity, employment, family situation, and psychiatric functioning (Keller & Craske, 2008). This

instrument measures fear of physical signs of anxiety and has an internal consistency of 0.84. to 0.90 (Keller & Craske, 2008). The instrument was modified to collect more detailed data on treatment and incarceration histories, service use, high-risk behaviors, mental distress, pregnancy, illegal activity, criminal justice involvement, recovery environment, drug use practices (or lack thereof) of friends, impact of substance use on relationships, type of disability or chronic condition, body mass index, motivation, and coping.

The Scott method of participant retention as outlined above was used for this study. The participants were interviewed at 6 months, 18 months, 2 years, 3 years, 4 years, 5 years, 6 years, 7 years, 8 years, 9 years, 15 years, and 16 years post-intake, with Year 17 and Year 18 currently scheduled to be completed. The follow-up protocol involved routine contact with each participant between interviews. If the participant could not be contacted, the researchers attempted to reach collaterals and service agencies with which the participant had dealings to reestablish contact. If they learned from these sources or public records that a client had died, they then recorded the period of death (i.e., at what point in the study the death occurred); however, they did not record the date of death or information on the cause of death (Garner, Scott, Dennis, & Funk, 2014). Participants received $50 for completing the interview, $10 for completing it on time, $15 for a urine sample, and $5 for confirming their appointment. Participants received $100 for completion of the Year 15 interview and $110 for completion of the Year 16 interview. For both interviews, participants received an additional $10 if they completed their interview within 7 days of the targeted follow-up date. On average, each interview lasted 128 minutes.

In this analysis, data from over 750 women enrolled in the treatment study were examined to determine whether their symptoms of anxiety would improve with treatment for their substance abuse. Age, insurance, religion, homelessness, dependent children, dually diagnosed, criminal-justice charged, receiving public aid, age first used drugs, employment status, and education were included in the models as control variables.

All African American female participants were included in the intake analysis, regardless of psychiatric diagnoses at baseline, in order to examine the range of their clinical symptoms and their progression over time. For all research questions the analysis was limited to the baseline assessment completed at the initial intake, assessments from Years 2–9, and the most recent years of data collected, Years 15 and 16. The many benefits to using this dataset are the fact that there is an oversampling of the intended research population (African American women), which allows for an increased statistical precision.

VARIABLES IN THE QUANTITATIVE ANALYSIS

A copy of the assessment administered can be found in Appendix I. Variables used in the assessment have been summarized in the table below. The requested dataset includes the following variable topics:

Domain variables, scales, and subscales

Background (demographics)	Entire B section
Substance Use (alcohol, marijuana, and other drugs)	Entire S section
Physical Health	Entire P section
Risk Behaviors and Disease Prevention	R6
Mental and Emotional Health	Entire M section

Vocational (School, Work, Financial)	V7, V7a
SW. Satisfaction with Life Scale	SW1, SW2, SW3, SW4, SW5
EQ. Quality of Life	EQ1, EQ2, EQ3, EQ4, EQ5, EQ6
E. Environment and Living Situation	E1
SE. Stressful Events	Entire SE section
LS. Loneliness Scale	Entire LS section
PS. Perceived Social Support Scale	Entire PS section
PF. Perceived Family Support Scale	Entire PF section
RC. Recovery/Coping Supplement	Entire RC section

DATA ANALYSIS

The statistical software program Stata was used for in-depth data analyses. To begin the data analysis process, descriptive statistics were calculated on the variables to summarize and describe the data collected. The approach to data analysis involved two levels of examination: 1) bivariate analysis for descriptive purposes (depending on the variable type), correlations, and survival analysis to document the association between the independent variables and outcome variables, and 2) multivariate regression analysis for correlation between all waves of data analyzed.

A survival analysis and a Cox regression analysis were used to analyze the data from the Pathways to Recovery study (e.g., Dennis, Foss, & Scott, 2007; Dennis, Scott, Funk, & Foss, 2005; Scott, Foss, & Dennis, 2005; Scott, Dennis, Laudet, Funk, & Simeone, 2011). Survival analysis (also known as failure-time analysis or event-time analysis) is defined as a set of methods for analyzing data where the outcome variable is the time until the occurrence of a specific event of interest (Cox & Oakes 1984; Hosmer, Lemeshow, & May, 2008). The event can be death, occurrence of a disease or illness, marriage, divorce, or even the time it takes to complete a doctoral dissertation. The time until the event occurs, or survival time, can be measured in any unit such as days, weeks, or years (Cox & Oakes, 1984). Using a medical example, if the event one is interested in

studying is a stroke, then the survival time would be the time in years until a person has a stroke (Hosmer, Lemeshow, & May, 2008). The survival-time model would need to include the origin date, a time scale, and the definition of the event (Cox & Oakes, 1984). In terms of the Pathways study data that involved examining the occurrence of GAD in the sample, the origin would be the beginning of the study (1996), with the time scale being measured in years. The definition of the event would be the time until the person develops GAD as diagnosed through the assessment. The event of developing GAD is determined and diagnosed using questions embedded throughout the assessment. It is important to note that in order to calculate a survival analysis, one must exclude participants who had already had been diagnosed with GAD at baseline, thus reducing the overall sample size. An important feature of survival data is the possibility of right-censoring. This would occur if the event of GAD never happened or if GAD diagnoses occurred outside of the measured window (Year 16). When the study data ends at Year 16, there may still be some individuals who never had the event occur, or the event could potentially occur after Year 16, but this information would not be captured.

The dependent variable in survival analysis comprises two different items. The first is the time until the event occurs and the second is the event status, which records whether the event of interest has occurred (Cox & Oakes, 1984). A survival analysis would be beneficial to calculate in terms of the Pathways dataset because there are also many other covariates available to help explain the distribution.

The one downside to looking at the data in this manner is that it will not provide detailed information on the possible interaction of GAD and SUD because it looks only at one specific event, and that is the event of developing GAD. Additionally, since

individuals who present with GAD at baseline have to be excluded, the sample size will be greatly reduced. A smaller sample size will decrease the external validity of the findings and the generalizability of the study and increase the probability of a Type I error (Cook & Campbell, 1979).

The second method that was used to analyze the data, in addition to the survival analysis, was an individual mixed-effects logistic regression. The Cox regression analysis was one model used to analyze this dataset. A Cox proportional-hazards model estimates both the probability that an event will occur and the probable time to failure (Cox & Oakes, 1984). Cox regression aims to estimate the hazard ratio. The Cox model allows for an easy method to incorporate time-dependent covariates, or variables that may change in value over the course of the observation period (Cox & Oakes, 1984). This type of model can account for the correlation of observations and allow estimation of the effect of predictor variables on repeated outcomes (Blood, Cabral, Heeren, & Cheng, 2010). This model would be appropriate since the dependent variable is dichotomous (does the individual have GAD or not?). Also, this type of model is robust to missing data, which is beneficial because Years 10–14 were not collected after funding ran out during this period. A mixed-effects model focuses on the introduction of random effects, which are the items of the model that can vary across individuals (education and coping strategies), while the fixed effects are the relationships that are assumed identical for every subject (Blood, Cabral, Heeren, & Cheng, 2010). In the current study the fixed effects would be race and gender, since those remain the same for all the participants throughout each collection wave. Using a mixed-effects approach will attempt to

indirectly describe and interpret the covariance structure for the longitudinal observations.

Education might be a moderating variable in that the relationship between GAD and substance abuse or dependence could be stronger for those with more education and less strong or nonexistent for those with less education. Moderation helps one to understand how an individual variable can strengthen or change the direction of the relationship between the independent variable and dependent variable (Baron and Kenny, 1986). Also stated in terms of this study, the level of education achieved might change the relationship between GAD and SUD. We would determine this if the third variable of education was shown to modify the relationship of anxiety (X) and substance abuse or dependence (Y) such that the X to Y relationship differs at different values of the education variable (measured by highest level of education completed). This would indicate that the education variable is a moderator. The only assumption necessary of moderation is the fact that the relationship between the independent variable and dependent variable is different at different levels of the moderating variable (Baron & Kenny, 1986). It is possible to access moderating effects indirectly through subgroup analysis (Baron & Kenny, 1986). If the moderator is level of education, then using a subgroup approach, multiple regressions would be run while using each of the categories for education. Similarly, coping skills could be shown to modify the relationship between anxiety (X) and substance abuse or dependence (Y) such that the X to Y relationship differs at different values of the types of coping skills utilized (high, moderate, or low).

All waves of the data available were used in the analysis. This includes baseline through Year 9 and Years 15 and 16. In order to see change over time it was important to

look at more than two points in the dataset. At each time point, observations of several

variables were obtained. It is also important to note that the study was completed

annually from baseline to Year 9, and then there was a break until Year 15 because of the

lapse in funding. Limiting the analysis to intake and the last wave of data would not tell

as complete a story in comparison to looking at all waves of data.

Ideally, a true experiment is used to establish cause and effect by manipulating an

independent variable, the treatment or experimental variable, in order to see its effect on a

dependent variable, or the criterion or outcome variable. This could be accomplished by

randomly drawing participants from a population, measuring baseline covariates, or

assigning and measuring treatments using a control group that received no treatment, then

analyzing the outcomes. Given the nature of this study, that approach would not be

feasible or ethical to conduct. These participants were assessed for generalized anxiety

disorder and substance abuse or dependence (will be abbreviated as SUD for simplicity)

criteria upon intake, but they were originally treated for problems related to their

substance abuse, since it was the reason behind their intake at the 22 different addiction

programs. Thus, from the Pathways dataset there is no way to determine whether the

women were first suffering from generalized anxiety disorder or a substance use disorder.

Both outcomes are possible and unable to be determined given the data's current form. At

the initial assessment as well as on subsequent follow-up assessments the women were

asked about symptoms as they related to both disorders only in terms of the preceding 12

months. Diagnoses for generalized anxiety disorder and substance use disorder can be

made from the initial assessment as well as from follow-up assessment waves. The intake

data also included severity ratings for primary, secondary, and tertiary substances rated as

either 1) no abuse or no dependence, 2) abuse, and 3) mild, moderate, or severe dependence. A causal effect of anxiety on substance use disorder is also limited by the lack of randomization of the research participants, since randomized experiments are considered the core design for causal inference.

The Pathways assessment is made up of several biopsychosocial constructs, including detailed data on treatment and incarceration histories, service utilization, high-risk behaviors, mental distress, pregnancy, illegal activity, criminal justice involvement, recovery environment, drug use practices (or lack thereof) of friends, impact of substance use on relationships, type of disability or chronic condition, body mass index, motivation, and coping (Scott, Dennis, Laudet, Funk, & Simeone, 2011). Therefore, since multiple variables were measured over time, the relationship of these variables should help in understanding the sequence of events in regards to generalized anxiety disorder and substance abuse.

It would be worthwhile to determine what made someone with generalized anxiety disorder in this group successful in their substance abuse treatment versus someone who was not successful in overcoming drug addiction. This would be possible because of the simple fact that since this sample spans 15 years, 36% are reporting to be in recovery. Looking at past-year abuse or dependence for African American women at Year 15, 25% report any disorder (abuse or dependence), 5% for alcohol, 13% for cocaine, 12% for opiates, and < 1% for marijuana. So there is a good portion of the sample in recovery to compare to those who are still active in drug use.

There are many other variables collected in the study that could help determine potential reasons some women were successful and others were not. First, there is a

supplemental section called Coping Strategies, which lists potential strategies in addition to drug treatment that these women have utilized. It would be important to see whether those who are reporting to be in recovery used several of the same coping strategies, such as friend or family supports, church supports, meditation, or prescription medication, among others. This would have potential implications for future interventions with this population. For example, if the majority of women currently abstinent from alcohol and other drugs also utilized church supports, then it would make sense to incorporate such strategies into future treatment plans for this population.

Using the Pathways dataset to answer the current research questions consists of completing a nonexperimental design or passive-observational design (Cook & Campbell, 1979). This is a nonexperimental design because there is no manipulation of the independent variable (Cook & Campbell, 1979). The independent variables in the current study are generalized anxiety disorder and anxiety and fear symptoms from the Anxiety Fear Symptom Scale (AFSS).

The conceptual framework for the current study is included below:

Conceptual Framework

Independent Variable

Dependent Variables

Substance Use Disorder (SUD):

ASI Alcohol Composite Score

ASI Drug Composite Score

Generalized Anxiety Disorder (GAD) Acquired (Y/N)

Severity of Anxiety/Fear Symptoms

Moderating Variables

Education

Coping Skills
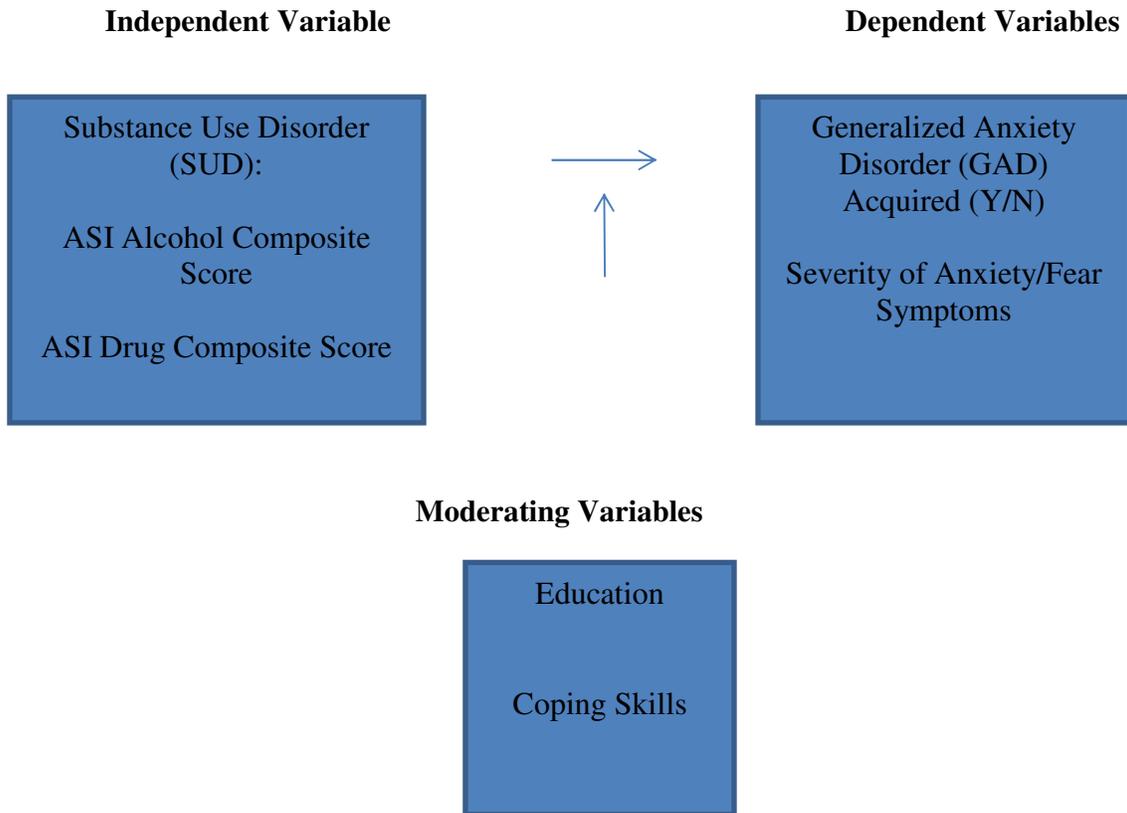
CHAPTER 4

RESULTS

DESCRIPTION OF SAMPLE

In this chapter the results of the survival analyses and Cox regression analyses will be described. Characteristics of the sample are described at the beginning. The control variables were measured at intake only. Symptoms of anxiety from the AFSS were not measured until Year 6 and from there until the end of the study (Years 6–9 and Years 15 and 16). Therefore, it was not possible to use information from all waves when predicting GAD and anxiety-fear severity symptoms. Data from Years 6–9 and Years 15 and 16 will be used when predicting anxiety-fear symptoms, while data from Years 0 (intake), 6–9, and 15–16 will be used when predicting GAD.

First, demographics were examined and statistical tests were run to analyze the quantitative data (see Table 1). The individual characteristics at intake included a total N = 697. At intake, participants ranged in age from 19 through 56 years old (M = 33.62; SD = 6.62). The sample was 100% African American and female as reported at intake. Participants were asked about the highest level of education completed: 36.7% reported having a high school diploma with an additional 4.7% reporting having a GED and 5.2% reported having an associate's degree or higher. The majority of the sample, 53.4% (n = 372), reported no degree at all.

A full 32.7% (n = 228) of the sample reported being homeless at intake with 71.5% (n = 484) also reporting having dependent children. The majority of the sample was receiving public aid at intake (64.6%; n = 450). For employment, 73% of participants

described their current employment status as not employed, 14.4% reported full-time employment, 8.3% reported part-time employment, and 4.3% reported "else," which includes being in a controlled environment such as treatment or incarcerated. In terms of health insurance, the majority of respondents 53.1% (n = 357) reported being uninsured, 33.43% (n = 225) were on Medicaid, and 13.52% (n = 91) had some type of private insurance. For religion, 89% of the sample reported having some type of religious affiliation, with the majority of those (75.4%, n = 524) indicating that they were Protestant.

Only 12.9% (n = 80) of the sample was dually diagnosed as of the intake assessment. Over half of the sample (54.4%, n = 357) had some criminal justice charges in their lifetime.

The participants were also asked the age of their first drug use at intake: 10.1% of respondents reported being 12 or younger when they first used drugs, 52% reported being 13–17 years, 26.3% were 18–24 years, and 11.7% were 25 years or older. Finally, the dependent variable GAD was measured at intake only, and then starting from Years 6–9 and Years 15 and 16. Over a third, or 37.2% (n = 258), presented with generalized anxiety disorder at intake, which is right in line with current estimates of those suffering from both anxiety disorders and substance use disorders.

Table 1. Individual characteristics at intake

Variable	N	Percentage	Mean/ Standard deviation
Age (mean)	697		M = 33.62 SD = 6.62

Table 1 (cont.)

Insurance

Uninsured	357	53.05
Medicaid 04	225	33.43
Else	91	13.52

Religion

None	75	10.79
Protestant	524	75.40
All else	96	13.81

Homeless

No	469	67.29
Yes	228	32.71

Dependent children

No	193	28.51
Yes	484	71.49

Dually diagnosed

No	542	87.14
Yes	80	12.86

Criminal justice charged

No	299	45.58
Yes	357	54.42

Receiving public aid

No	247	35.44
Yes	450	64.56

Age first used drugs

≤ 12	70	10.07
13–17	361	51.94
18–24	183	26.33
≥ 25	81	11.65

Employment status

Not employed	508	72.99
Full-time	100	14.37
Part-time	58	8.33
Else	30	4.31

Table 1 (cont.)

Highest degree received

None	372	53.37
High school	256	36.73
GED	33	4.73
AA and above	36	5.16

GAD at intake

No	435	62.77
Yes	258	37.23

The first independent variable for the study is divided into two composite scores, ASI alcohol composite score (items acs_0 to acs_16 of the assessment) and ASI drug composite score (items dcs_asi_0 to dcs_asi_16 of the assessment). Both of these items are scores from 0 to 1. The ASI alcohol composite score is derived from questions embedded within the assessment that ask days of alcohol use, days of alcohol use to intoxication, days bothered by alcohol problems, how troubled the participant is by alcohol problems, the importance of treating these problems, and amount of money spent on alcohol. The ASI drug composite score is derived from questions regarding days of heroin, methadone, other opiate, barbiturate, other sedative, cocaine, amphetamine, cannabis, and hallucinogen use; days of using more than one substance in a day; days of problems from drug use; how troubled by these problems; and how important to get treatment for these problems (Scott, Dennis, Laudet, & Simeone, 2011). There is not a cutoff score above which is high severity and below which is low severity; however, the closer the score is to the value 1, the higher the severity score.

The alcohol and drug composite scores were measured repeatedly throughout, and the mean values were calculated at intake, Year 6, and during the final wave at Year 16 (see Table 2). At intake the alcohol composite score had a mean of 0.21 with a standard

deviation of 0.28 and the drug composite score had a mean of 0.26 with a standard

deviation of 0.13. At Year 6 the alcohol score had a new lower mean of 0.08 with a

standard deviation of 0.14, indicating some improvement, and the drug abuse score had a

lower mean of 0.08 with a standard deviation of 0.11, also indicating improvement in the

drug abuse composite score. At Year 6, generalized anxiety disorder was now present in

only 18.3% (n = 106) of the sample as opposed to the 24% at intake, thus indicating that

as the rates of GAD decreased over time, so did the alcohol and drug composite scores.

Table 2. Alcohol and drug composite scores

Variable	N	Mean/ Standard deviation
Intake		
Alcohol Abuse Score (mean)	697	M = 0.21, SD = 0.28
Drug Abuse Score (mean)	697	M = 0.21, SD = 0.28
Year 6		
Alcohol Abuse Score (mean)	644	M = 0.08, SD = 0.14
Drug Abuse Score (mean)	644	M = 0.08, SD = 0.11
Year 16		
Alcohol Abuse Score (mean)	577	M = 0.05, SD = 0.11
Drug Abuse Score (mean)	577	M = 0.06, SD = 0.11

The severity of the anxiety scores, derived from the Anxiety Fear Symptom Scale

(AFSS), was also calculated for the first time during the Year 6 wave: 84.6% of the

sample had mid anxiety-fear symptom scores (rating 0–3), 13.3% had moderate (rating

4–7) scores, and only 2% had severe (rating 8–10) scores.

Table 3. Severity of anxiety/fear symptoms and GAD

Variable	N	Percentage	Mean/ Standard deviation
Individual characteristics at Year 6			
Severity of anxiety/fear symptoms			
Mid (0–3)	489	84.6	
Moderate (4–7)	77	13.32	
Severe (8–10)	12	2.08	
Table 3 (cont.)			
GAD			
No	471	81.6	
Yes	106	18.34	
Individual characteristics at Year 16			
Severity of anxiety/fear symptoms			
Mid (0–3)	472	81.66	
Moderate (4–7)	74	12.80	
Severe (8–10)	32	5.54	
GAD			
No	487	84.4	
Yes	90	15.6	

SURVIVAL ANALYSIS AND COX REGRESSION ANALYSIS

Research Question #1: How prevalent is generalized anxiety disorder among African American women aged 18+?

At intake, 697 women were analyzed, and 37% (n = 258) of this sample reported having GAD. This is significantly higher than what is reported in the general population; however, this is right in line with the percent of those with both substance use and anxiety disorders. GAD is present in 3.1% of the population in any given year, though

women are twice as likely to be affected as men and it affects 30% of people with substance use disorders.

Research Question #2: What is the relationship between anxiety and drug use in this population?

Within this study population, GAD and the alcohol and drug composite scores had a direct relationship. As the incidence of GAD decreased over time, so did the severity of the ASI alcohol and drug composite scores.

Research Question #3: Are there any differences in the level of education and the relationship between substance use and abuse to GAD?

There were no significant differences in the level of education and rates of GAD and the severity of anxiety-fear symptoms. Almost half of the sample had no degree while the other half had a high school diploma or higher. None of the variables proved to be significant when education was predicted to moderate this relationship.

Research Question #4: Is one possible motive for the drug use and abuse to alleviate anxiety symptoms?

This question does seem to be supported. As the rates of alcohol and drug use decreased, as evidenced by the decreasing alcohol and drug composite scores, the rates of GAD also decreased. One possible reason for this is that drugs were used to alleviate the

symptoms from anxiety, but without a causal relationship determination, it is hard to say with certainty that this is the case. It is also plausible that the inverse is true and the anxiety disorder was a product of the substance abuse and as the substance abuse issues decreased, so did the anxiety surrounding the disorder.

Hypothesis #1: As a participant becomes free of substance use disorder (SUD) their rates of GAD will increase.

It was hypothesized that as the alcohol and drug composite scores decreased, the incidence of GAD would increase. This hypothesis was not supported. As the study went on, the alcohol and drug composite scores decreased as did the incidence of GAD. First, at intake, 258 (37.23%) participants had GAD; at Year 6, 106 (18.34%) were still diagnosed with GAD, while at Year 16 only 90 (15.60%) still reported symptoms that allowed for a diagnosis of GAD. Similarly, both the alcohol and drug composite scores decreased in this same time period. At intake the alcohol and drug composite score means were 0.21 (+/- 0.28) and 0.26 (+/- 0.13), respectively. At Year 6 the alcohol composite scores had decreased to a mean of 0.08 (+/- 0.14) and the drug composite scores were also 0.08 (+/- 0.11). Finally, at the last wave of data analyzed, Year 16, the alcohol and drug composite scores were 0.05 and 0.06, respectively. As time progressed the incidence of GAD decreased and the alcohol and drug composite scores also decreased, indicating less severe issues in these two areas.

Hypothesis #2: A study participant's rates of GAD will be inversely related to rates of SUD.

It was hypothesized that the relationship between GAD and SUD was inversely related (as one increased, the other would decrease), but this was incorrect. As the study went on, the alcohol and drug composite scores decreased as did the incidence of GAD, thus instead indicating a direct relationship between the variables.

Hypothesis #3: Coping skills are also moderating factors on the relationship between GAD and SUD.

As originally hypothesized, coping skills did not act as a moderating factor. The results of the analysis did not support the hypothesis that coping skills were a moderating factor on GAD, the severity of anxiety symptoms, and SUD, since none of the terms proved significant.

High perceived family support acted as a protective factor for both GAD and the severity of anxiety symptoms. This was not the case with moderate to high perceived social support or even moderate perceived family support. Although family support protected against GAD, none of the interaction terms between substance use and family and social support were significant, indicating absence of moderating effect.

Hazard ratios for the onset of GAD in survival analysis are presented in Table 4. Cox proportional hazard models with time-dependent covariates were used to calculate hazard ratios (HR). Severe alcohol composite scores and severe drug composite scores

increased the likelihood of GAD sooner as well as having higher scores on the Anxiety

Fear Symptom Scale (HR = 1.75; CI = 1.34–2.28 p < 0.001 and HR = 2.15; CI = 1.49–

3.12 p < 0.001, respectively). Being dually diagnosed and having some criminal justice

charges or involvement were both associated with an increased risk for generalized

anxiety disorders over time (HR = 1.46; CI = 1.04–2.05 p = 0.028 and HR = 1.27; CI =

1.02–1.60 p = 0.034, respectively). There were no significant findings in terms of

perceived social or family support regardless of the level of perception (low, moderate, or

high). Age, insurance type, religion, homelessness, dependent children, public aid, age of

first drug use, employment status, and highest level of education received provided no

level of significance in determining whether these control variables have an effect on

GAD prevalence.

Table 4. Estimated hazard ratios for onset of GAD in survival analysis

Variable	Hazard ratio	95% confidence interval	P-value
Alcohol score			
0	Reference	Reference	Reference
Moderate	1.18	0.88–1.58	0.263
Severe	1.75	1.34–2.28	< 0.001
Drug score			
0	Reference	Reference	Reference
Moderate	1.27	0.89–1.81	0.194
Severe	2.15	1.49–3.12	< 0.001
Perceived social support			
Low	Reference	Reference	Reference
Moderate	0.98	0.75–1.27	0.877
High	0.97	0.72–1.31	0.850
Perceived family support			
Low	Reference	Reference	Reference
Moderate	1.01	0.77–1.33	0.924

Table 4 (cont.)

High	0.801	0.60–1.07	0.132
Age	1.02	0.99–1.04	0.083
Insurance			
Uninsured	Reference	Reference	Reference
Medicaid 04	0.94	0.70–1.26	0.678
Else	1.04	0.74–1.45	0.836
Religion			
None	Reference	Reference	Reference
Protestant	1.21	0.85–1.73	0.283
All else	1.21	0.75–1.96	0.444
Homeless			
No	Reference	Reference	Reference
Yes	0.95	0.75–1.21	0.680
Dependent children			
No	Reference	Reference	Reference
Yes	0.88	0.68–1.14	0.324
Dually diagnosed			
No	Reference	Reference	Reference
Yes	1.46	1.04–2.05	0.028
Criminal justice charged			
No	Reference	Reference	Reference
Yes	1.27	1.02–1.60	0.034
Receiving public aid			
No	Reference	Reference	Reference
Yes	0.85	0.66–1.09	0.196
Age first used drugs			
≤ 12	0.863	0.59–1.27	0.457
13–17	Reference	Reference	Reference
18–24	1.00	0.78–1.29	0.986
≥ 25	0.724	0.50–1.05	0.088
Employment status			
Not employed	Reference	Reference	Reference
Full-time	1.23	0.89–1.69	0.217
Part-time	0.991	0.59–1.67	0.975

Table 4 (cont.)

Else	0.736	0.43–1.26	0.267

Highest degree received

None	Reference	Reference	Reference
High school	0.81	0.63–1.05	0.105
GED	1.23	0.68–2.18	0.512
AA and above	0.726	0.44–1.21	0.222

Model specifics
Number of person: 537
Number of person-years observation: 2117

For computing odds ratios and for regression analyses, the comparison group for the alcohol and drug composite scores is composed of those who had a composite alcohol or drug score of 0. Low social support and low family support were used as a reference group for those categories. Being uninsured, having no religious affiliation, not being homeless, having no dependent children, having no dual diagnosis, and having no criminal charges were also used as reference models for the respective categories. Additionally, not being on public aid, being unemployed, and not having some type of degree were also used. Finally, the age group of 13–17 years was used as a reference when calculating age odds and hazard ratios.

Risk for GAD among African American women was not significant by age. The odds ratios (OR) for individual mixed-effects regressions on incidence of GAD in relation to alcohol and drug use are presented in Table 5. Factors that increase the likelihood of GAD prevalence over time are severe alcohol composite scores (OR = 2.00; CI = 1.52-2.66 p = 0.001), both moderate (OR = 1.53; CI = 1.14-2.06 p = 0.004) and severe (OR = 3.94; CI = 2.90-5.35 p < 0.001) drug composite scores, and being dually diagnosed (OR = 2.27; CI = 1.49-3.45 p < 0.001). It was also demonstrated that high

perceived family support acts as a protective factor for GAD with an odds ratio of 0.61

(CI = 0.43-0.87) and a significance level of p = 0.007. No statistically significant

association was found between GAD prevalence and any level of perceived social

support, age, any type of insurance, religious affiliation, homelessness, dependent

children, criminal justice charges, receiving public aid, age of first use of drugs,

employment status, or level of education received.

Table 5. Results from individual mixed-effects regressions on incidence of GAD

Variable	Odds ratio	95% confidence interval	P-value
Alcohol score			
0	Reference	Reference	Reference
Moderate	1.24	0.95–1.62	0.120
Severe	2.00	1.52–2.66	0.001
Drug score			
0	Reference	Reference	Reference
Moderate	1.53	1.14–2.06	0.004
Severe	3.94	2.90–5.35	< 0.001
Perceived social support			
Low	Reference	Reference	Reference
Moderate	1.01	0.72–1.19	0.95
High	0.97	0.67–1.40	0.87
Perceived family support			
Low	Reference	Reference	Reference
Moderate	0.81	0.57–1.15	0.24
High	0.61	0.43–0.87	0.007
Age	1.01	0.99–1.04	0.332
Insurance			
Uninsured	Reference	Reference	Reference
Medicaid 04	0.98	0.70–1.26	0.911
Else	1.32	0.74–1.45	0.229

Table 5 (cont.)

Religion			
None	Reference	Reference	Reference
Protestant	1.00	0.85–1.73	0.985
All else	1.20	0.75–1.96	0.524
Homeless			
No	Reference	Reference	Reference
Yes	1.04	0.770–1.40	0.816
Dependent children			
No	Reference	Reference	Reference
Yes	0.83	0.59–1.16	0.266
Dually diagnosed			
No	Reference	Reference	Reference
Yes	2.27	1.49–3.45	< 0.001
Criminal justice charged			
No	Reference	Reference	Reference
Yes	1.19	0.90–1.58	0.222
Receiving public aid			
No	Reference	Reference	Reference
Yes	1.02	0.74–1.42	0.884
Age first used drugs			
≤ 12	0.76	0.47–1.23	0.267
13–17	Reference	Reference	Reference
18–24	0.93	0.67–1.29	0.658
≥ 25	0.64	0.40–1.04	0.069
Employment status			
Not employed	Reference	Reference	Reference
Full-time	1.33	0.90–1.97	0.152
Part-time	0.88	0.50–1.55	0.655
Else	0.63	0.32–1.26	0.191
Highest degree received			
None	Reference	Reference	Reference
High school	0.92	0.68–1.25	0.61
GED	1.19	0.61–2.33	0.62
AA and above	0.87	0.47–1.60	0.66

Table 5 (cont.)

Model specifics
Number of person: 537
Number of person-years observation: 3556
LR test vs. single-level logistic regression (χ_1^2)   119.70   < 0.001

Hazard ratios for anxiety-fear symptoms in survival analysis are presented in

Table 6. Using the Anxiety Fear Symptom Scale (10 items), a cutoff score of 4 was used

to indicate individuals who needed some level of treatment for their anxiety. Moderate

alcohol (HR = 1.48; CI = 1.06-2.06 p = 0.02) composite scores and both moderate (HR =

1.59; 1.10-2.28 p = 0.013) and severe (HR = 3.73; CI = 2.59-5.37 p < 0.001) drug

composite scores increased the likelihood of having higher scores on the Anxiety Fear

Symptom Scale. Moderate alcohol use proved significant only in terms of increasing the

likelihood of having higher anxiety scores requiring treatment. Having some type of

insurance other than Medicaid (HR = 1.86; CI = 1.27-2.75 p 0.002) also increased the

likelihood of high anxiety-fear symptom scores sooner. This may be attributed to the fact

that those with some type of private health insurance were more likely to go to the doctor

to have their anxiety symptoms assessed and thus receive a diagnosis. Being dually

diagnosed increased the likelihood of having more severe anxiety-fear symptom scores

with an earlier onset and a hazard ratio of 1.57 (CI = 1.05-2.34 p 0.029).

Table 6. Estimated hazard ratios for onset of the severity of anxiety symptoms in survival analysis

Variable	Hazard ratio	95% confidence interval	P-value
Alcohol score			
0	Reference	Reference	Reference
Moderate	1.48	1.06–2.06	0.020
Severe	1.32	0.92–1.92	0.136

Table 6 (cont.)

Drug score			
0	Reference	Reference	Reference
Moderate	1.59	1.10–2.28	0.013
Severe	3.73	2.59–5.37	< 0.001
Perceived social support			
Low	Reference	Reference	Reference
Moderate	0.97	0.70–1.34	0.841
High	0.86	0.61–1.21	0.386
Perceived family support			
Low	Reference	Reference	Reference
Moderate	1.06	0.75–1.50	0.752
High	0.80	0.57–1.14	0.214
Age	0.99	0.97–1.02	0.617
Insurance			
Uninsured	Reference	Reference	Reference
Medicaid 04	1.04	0.73–1.49	0.815
Else	1.86	1.27–2.75	0.002
Religion			
None	Reference	Reference	Reference
Protestant	0.95	0.61–1.50	0.839
All else	0.84	0.46–1.54	0.578
Homeless			
No	Reference	Reference	Reference
Yes	1.12	0.84–1.51	0.445
Dependent children			
No	Reference	Reference	Reference
Yes	0.89	0.64–1.23	0.469
Dually diagnosed			
No	Reference	Reference	Reference
Yes	1.57	1.05–2.34	0.029
Criminal justice charged			
No	Reference	Reference	Reference
Yes	1.12	0.85–1.47	0.437

Table 6 (cont.)

Receiving public aid

No	Reference	Reference	Reference
Yes	0.95	0.69–1.31	0.742

Age first used drugs

≤ 12	0.69	0.41–1.15	0.151
13–17	Reference	Reference	Reference
18–24	0.905	0.66–1.25	0.542
≥ 25	0.89	0.58–1.35	0.573

Employment status

Not employed	Reference	Reference	Reference
Full-time	0.808	0.54–1.21	0.306
Part-time	0.79	0.40–1.56	0.489
Else	0.86	0.44–1.67	0.651

Highest degree received

None	Reference	Reference	Reference
High school	0.83	0.61–1.14	0.250
GED	0.96	0.51–1.81	0.892
AA and above	1.20	0.69–2.08	0.520

Model specifics
Number of person: 537
Number of person-years observation: 2401

Odds ratios for individual mixed-effects regressions on the severity of anxiety symptoms in relation to alcohol and drug use are presented in Table 7. Having both moderate and severe alcohol composite scores, severe and moderate drug composite scores, some type of private insurance (not including Medicaid), and being dually diagnosed increased the risk for having higher anxiety-fear symptom scores, indicating that some level of treatment is needed. Again, here it was demonstrated that high perceived family support acted as a protective factor and decreased the risk for more severe anxiety-fear symptoms.

Table 7. Results from individual mixed-effects regressions on severity of anxiety symptoms

Variable	Odds ratio	95% confidence interval	P-value
Alcohol score			
0	Reference	Reference	Reference
Moderate	1.59	1.06–2.06	0.008
Severe	1.75	0.92–1.92	0.004
Drug score			
0	Reference	Reference	Reference
	2.10	1.10–2.28	< 0.001
Moderate			
Severe	5.47	2.59–5.37	< 0.001
Perceived social support			
Low	Reference	Reference	Reference
Moderate	1.07	0.70–1.34	0.766
High	0.89	0.70–1.25	0.643
Perceived family support			
Low	Reference	Reference	Reference
Moderate	0.75	0.75–1.50	0.228
High	0.56	0.57–1.14	0.018
Age	0.99	0.97–1.02	0.741
Insurance			
Uninsured	Reference	Reference	Reference
Medicaid 04	1.03	0.63–1.69	0.910
Else	2.29	0.63–1.69	0.006
Religion			
None	Reference	Reference	Reference
Protestant	0.93	0.51–1.68	0.807
All else	0.91	0.42–1.97	0.813
Homeless			
No	Reference	Reference	Reference
Yes	1.10	0.73–1.65	0.645
Dependent children			
No	Reference	Reference	Reference
Yes	0.83	0.53–1.32	0.436

Table 7 (cont.)

Dually diagnosed

No	Reference	Reference	Reference
Yes	2.49	0.42–4.35	0.001

Criminal justice charged

No	Reference	Reference	Reference
Yes	1.24	0.85–1.81	0.274

Receiving public aid

No	Reference	Reference	Reference
Yes	1.06	0.69–1.65	0.789

Age first used drugs

≤ 12	0.71	0.36–1.38	0.308
13–17	Reference	Reference	Reference
18–24	1.01	0.65–1.56	0.981
≥ 25	0.74	0.38–1.42	0.363

Employment status

Not employed	Reference	Reference	Reference
Full-time	0.79	0.45–1.39	0.406
Part-time	0.73	0.32–1.65	0.446
Else	0.71	0.29–1.72	0.442

Highest degree received

None	Reference	Reference	Reference
High school	0.74	0.49–1.13	0.160
GED	0.73	0.28–1.91	0.517
AA and above	0.96	0.43–2.16	0.919

Model specifics

Number of persons: 537

Number of person-years observation: 3201

LR test vs. single-level logistic regression (χ^2_1)	148.71		< 0.001

SIGNIFICANT PROTECTIVE FACTORS

Only *high* (and not low or moderate) perceived family support was shown to be a

protective factor in terms of the mixed-effects regression analysis of GAD as well as the

severity of anxiety-fear symptoms.

SIGNIFICANT FACTORS THAT INCREASE THE LIKELIHOOD OF GAD

The following factors proved to be significant in increasing the likelihood of GAD incidence or having more severe anxiety-fear symptoms: being dually diagnosed across all models, some level of moderate to severe drug and alcohol composite scores, criminal justice charges, and having some type of insurance that did not include Medicaid.

CHAPTER 5

DISCUSSION

This study examined the link between generalized anxiety disorder, severity of anxiety-fear symptoms, and drug use disorders as well as the moderating effects of coping skills by focusing on issues that were frequently unaddressed in previous studies. Among the issues addressed in this study were the influence of comorbidity and gender and demographic correlates on this proposed link.

The present analyses suggest that 1) *high* perceived family support is a protective factor against GAD over a 10-year period; 2) *high* perceived family support is a protective factor against severe anxiety symptoms (that indicate treatment is necessary) over a 10-year period; 3) factors that increase the likelihood of GAD incidence are severe alcohol composite scores, severe and moderate drug composite scores, and being dually diagnosed; 4) factors that increase the likelihood of earlier onset of GAD are severe alcohol composite scores, severe drug composite scores, criminal justice charges or involvement, and being dually diagnosed; 5) factors that increase the likelihood of more severe anxiety symptoms (that indicate treatment is necessary) are both moderate and severe alcohol composite scores, severe and moderate drug composite scores, having some type of private insurance that is not Medicaid, and being dually diagnosed; 6) factors that increase the likelihood of developing severe anxiety symptoms requiring treatment sooner are moderate alcohol composite scores, severe and moderate drug composite scores, having some type of private insurance that is not Medicaid, and being dually diagnosed.

Individuals have biological and psychological characteristics that can make them either more vulnerable or more resilient to potential behavioral health problems (Nasim, Fernander, Townsend, Corona, & Belgrave, 2011). Protective factors are "events, conditions, or experiences that reduce, inhibit, or attenuate the likelihood of substance use or deviant behaviors to occur" (Hawkins, Catalano, & Miller, 1992). Protective factors occur over many levels, including community, cultural, familial, and individual (Nasim, Fernander, Townsend, Corona, & Belgrave, 2011).

Below is a chart created by the National Institute on Drug Abuse (Robertson, David, & Rao, 2003) that looks at five dimensions that affect African American youth and how those dimensions are affected by either risk factors or protective factors:

Risk Factors	Domain	Protective Factors
Early Aggressive Behavior	Individual	Self-Control
Lack of Parental Supervision	Family	Parental Monitoring
Substance Abuse	Peer	Academic Competence
Drug Availability	School	Anti–Drug Use Policies
Poverty	Community	Strong Neighborhood Attachment

As outlined above, some examples of community-level protective factors for African Americans include strong neighborhood attachment, intergenerational networks, and available community resources (Nasim, Fernander, Townsend, Corona, & Belgrave, 2011). One possible cultural protective factor is religious beliefs and practices shared by many African Americans.

Individual-level protective factors might include a positive self-image, self-confidence, or perceived social competence (Nasim, Fernander, Townsend, Corona, & Belgrave, 2011). Having high self-esteem has been found to act as a protective factor

against depression and anxiety in African American youth (Dumont & Provost, 1999). Individual factors also include social and problem-solving skills, a positive attitude, a positive temperament, and high intelligence or academic achievement (Jenson & Fraser, 2005). There were no major differences found in the current study data with regards to level of education. The majority of this sample, 53% (n = 372), reported having no degree at all, while only 5% (n = 36) had some type of degree above a high school diploma or GED.

Familial protective factors include parental and family members' support and a high family cohesion (Nasim, Fernander, Townsend, Corona, & Belgrave, 2011). Family member support has been shown to produce a reduction in negative outcomes, particularly externalizing problems. The results of the present study also reflect current literature on family support as a protective factor in the African American community.

Perceived social support has been shown to play a buffering role between stress and psychological well-being (Cohen & Wills, 1985). Social support can be described as "the frequency of contact with others; the resources that people perceive as available or that are actually provided; and the perceived adequacy of that support from both formal and informal sources" (Cohen, Underwood, & Gottlieb, 2000). Social networks represent the links between individuals and includes the emotional assistance one receives from friends, family, and significant others (Thoits, 1995). Previous literature on perceived social support has documented that familial and peer social support are differentially related to outcomes and therefore should be evaluated independently (Lyons, Perrotta, & Hancher-Kvam, 1988), as can also be demonstrated with the results of the current study. Perceived social support had no effect as a significant factor, while perceived family

support displayed a tremendous effect. The results also demonstrate the importance of discriminating between family and friends support, which is consistent with previous findings. Antonucci and Israel (1986) reported that the social support between an individual was higher for family members than it was for friends, and social support also varied by what was deemed the "closeness" of the relationship.

Having high perceived family support provided protective factors for both GAD and the severity of anxiety-fear symptoms. Family therapy as a treatment for substance abuse has grown in popularity and acceptance over the past two decades (Thoits, 1995). Researchers have reported that addiction often develops within a family context and can be maintained or worsened by family interaction (Thoits, 1995). The family thus has a central role to play in the treatment of any health problem, including substance abuse and mental health issues (Thoits, 1995). A primary challenge in incorporating a family component into treatment remains the idea that the substance abuse treatment focus is on the individual and not the family structure as a whole (Thoits, 1995). Family can play a large and complex role in substance abuse treatment. They can be a source of help to the treatment process. The results of this study indicate a need to engage and provide services to the whole family in order to improve treatment effectiveness and outcomes of the substance user as well as those suffering from anxiety disorders.

The results of this study also go on to strengthen the body of literature that already exists surrounding the importance of family functioning and parental support as protective factors against substance use and misuse (Thoits, 1995). This research also expands on these previous findings by examining this influence over a period of 16 years. Additional research also suggests that families play a central role in the well-being of

relatives with co-occurring mental and substance-use disorders through direct care, financial assistance, and emotional support (Clark, 2001; Clark & Drake, 1994). Individuals in this study fared well even if they merely perceived that they had high family support. It is important to note that low to moderate family support did not prove significant in protecting against GAD or severe anxiety-fear symptoms. All of this seems to makes sense, since the alcohol and drug problems of individuals also affect their families and the afflicted may feel responsible (Thoits, 1995).

Moderate to severe alcohol and drug use composite scores were shown to increase the likelihood of GAD incidence as well as the severity of anxiety-fear symptom scores. These results fall right in line with the current literature. These scores were calculated using the Addiction Severity Index (ASI; McLellan, Luborsky, O'Brien, & Woody, 1980; McLellan et al., 1992), or ASI. The ASI is one of the most widely used assessment instruments in the substance abuse field. The ASI has demonstrated high inter-rater reliability (McLellan, Luborsky, Cacciola, & Griffith, 1985). It is often used by researchers in studies of treatment outcome and as a clinical assessment tool in numerous treatment facilities throughout the country (McLellan et al., 1992). One of the summary indices used in the ASI is the composite scores. The composite scores (CSs) are summary indices used by clinical staff in substance use at intake and at follow-up evaluations to determine past 30-day severity in all seven of the problem areas: medical status, employment and support, drug use, alcohol use, legal status, family and social status, and psychiatric status (McLellan et al., 1992). Composite scores are mathematically sound measures of change in regards to the problem status. The composite scores can be used to compare the individual's results at the beginning of treatment and at subsequent follow-

up sessions to monitor improvement or lack of improvement since the last evaluation (McLellan et al., 1992).

The ASI composite scores are weighted summary scores determined on a defined set of items in each of the problem areas. The composite scores range in severity from 0 (no problem) to 1 (most severe). Since the CSs include only items that are subject to change (occurrence in past 30 days or during the follow-up period), they have been recommended for use in treatment outcome studies whose focus is on change (McLellan Luborsky, Cacciola, & Griffith, 1985). The results here decreased over time. As can be seen from Table I, both the alcohol and drug composite scores decreased significantly from the intake to 6-month evaluations and then again even lower at Year 16.

It is important to note that there is a bit of controversy surrounding the ASI scores. The primary issue is that the composite scores are not standardized, so equivalent scores in different problem areas cannot be assumed to be indicative of equivalent problem severity; however, this issue does not pose a problem to this data. The overall analysis looks at the change in scores over time (Keller & Craske, 2008).

As previously stated above, it has been estimated that 50–60% of women entering substance abuse treatment have a co-occurring mental disorder (Newmann & Sallmann, 2004). The results of this study indicate that being dually diagnosed has negative effects on both GAD and severity of anxiety-fear symptoms. This variable was deemed significant across all models.

Women with co-occurring disorders report higher levels of physical, sexual, and emotional victimization than women in general as well as men. Women with co-occurring disorders also have a greater likelihood of adverse health (Brady & Randall,

1999; Chander & McCaul, 2003) and social outcomes (DiNitto, Webb, & Rubin, 2002). When neither illness is treated, one illness can make the other worse. When only one illness is treated, treatment is less likely to be effective. When both illnesses are treated, the chances for a full and lasting recovery are greatly improved, and it is easier to return to a full and productive life. This would indicate a serious need to incorporate multiple levels of treatment that would work on issues and not just simply address the substance use. It also outlines the importance of developing gender-specific interventions. Currently, there are three prominent views concerning the link between mental disorders such as depression and anxiety disorders and drug use disorders (Kushner, Abrams, & Borchardt, 2000). The first two views, the self-medication hypothesis and the onset and worsening of mental disorder symptoms resulting from drug use, are considered causal explanations involving direct and indirect reasons for the link between mental disorders and drug use disorders (Kessler & Price, 1993). The third view, shared etiology, posits that mental and drug use disorders are not causally linked. Instead, there is a third variable that is causally linked to both.

The self-medication hypothesis states that individuals with psychiatric disorders will use substances to relieve psychiatric symptoms and that this pattern of usage predisposes them to addiction (Khantzian, 1985). The preferred substance is not random but instead is based on the unique properties of the substance. For example, someone suffering from anxiety would prefer alcohol use to amphetamines because of the alcohol's anxiolytic (antianxiety) characteristics (Khantzian, 1985). A key implication of this model is that treating the underlying psychiatric disorder will resolve the addictive disorder (Khantzian, 1985).

It is hypothesized that oftentimes people may use alcohol or drugs to help cover up, mask, or alleviate the symptoms of a mood disorder (Thoits, 1995). This is deemed "self-medication" and it may appear to help, but it tends to make the problems worse. After the temporary effects of the alcohol or drugs wear off, a person's symptoms are often worse than ever. Self-medication also can cause a person's mood disorder to stay undiagnosed for a long time because the effects are masked by the use of the substances. Therefore, there is an endless cycle of negative emotions followed by alcohol or drug use, which only alleviates the symptoms for a short while. Once the symptoms return, the individual again wants to use to fight or help suppress those emotions. Since the alcohol and drug composite scores and the rates of GAD also decreased during the same time period, the idea of self-medication might not be too far off the mark. However, this study still does not provide a causal link between substance abuse and GAD or the severity of anxiety symptoms; therefore, more research is necessary to determine which disorder occurred first and then treat as necessary. This study evidence does strongly reinforce the idea that substance use and GAD are linked.

The current results do not support a causal relation between the initial onset of an anxiety disorder and drug use disorders. Anxiety disorders and drug use disorders may have a mutually reinforcing relationship (Drake, Mueser, & Brunette, 2007). A greater risk for drug abuse or dependence associated with comorbid disorders may indicate a tendency for individuals with multiple disorders to have a drug use disorder among their disorders. Either substance abuse or mental illness can develop first (Drake, Mueser, & Brunette, 2007). The results of this study do not explain whether one disease causes the other. A person experiencing a mental health condition may turn to drugs and alcohol as a

form of self-medication to improve the troubling mental health symptoms they experience. Additionally, the use of drugs and alcohol may make the symptoms of mental health conditions worse. Abusing substances can also lead to mental health problems because of the effects drugs have on a person's moods, thoughts, brain chemistry, and behavior (Substance Abuse and Mental Health Services Administration [SAMHSA], 2004). Therefore, further research is needed to determine the causal pathway of these two disorders.

Having some type of insurance (not including Medicaid) increased the onset of more severe anxiety symptoms. One possible explanation for this could be the fact that individuals with some type of insurance are more likely to receive medical treatment and thus be diagnosed with severe anxiety symptoms that may require treatment. This is right in line with the current thought on health insurance. Current research literature has associated both continuous and comprehensive insurance coverage with better health outcomes for both children and adults when it makes health care affordable (Baker, Sudano, Albert, Borawski, & Dor, 2002; Hsia et al., 2000). Adults with continuous insurance coverage are healthier and at lower risk for premature death than those who are uninsured or whose coverage is intermittent, while children with continuous coverage are more likely to visit a doctor, receive preventive care, and have prescriptions filled (Baker, Sudano, Albert, Borawski, & Dor, 2002; Hsia et al., 2000). Specifically, looking at the coverage of mental health services, adults with health insurance that includes mental health services are more likely to receive mental health treatment that is consistent with proposed medical guidelines. When people are uninsured or underinsured while also suffering from a mental illness, they tend to rely heavily on emergency room services, with significant costs to the community (Hsia et al., 2000).

As can be expected, uninsured people generally receive much less care, either preventive or for acute and chronic conditions, than insured people. In particular, uninsured adults report lower levels of self-perceived wellness and functioning. The negative aspects of this are the simple fact that undiagnosed and untreated illnesses and conditions can result in costs to both individuals and society (Hsia et al., 2000). The lack of adequate health insurance, especially in terms of mental health benefits, can create financial barriers that jeopardize the utilization of appropriate care.

Finally, as previously stated, coping skills did not act as a moderating variable between GAD and the severity of the anxiety symptoms. None of the variable terms proved to be significant. Several recent studies have begun to look at individuals' coping skills in order to determine the relationship between coping ability and health behaviors. These types of coping behaviors are typically divided into two categories: healthy (active), or adaptive coping, and unhealthy, or avoidant or maladaptive coping. The coping strategies included in the Pathways assessment include both healthy and active coping strategies and maladaptive coping strategies. For example, several questions ask whether the participant has "sought help from persons or groups with the same type of problems" or "thought about how you were much better off than other people with similar problems." The few avoidant strategies listed included such items as "tried not to think about the problem" and "tried to forget about the whole thing." It would be interesting to further research the specific types of coping strategies that are used with individuals suffering from GAD and substance use–related issues.

CHAPTER 6

CONCLUSION

IMPLICATIONS

      Findings from this study have several potential implications for prevention and treatment of mental and drug use disorders. Given the limited funds often available for substance use treatment and mental health intervention efforts, targeting populations that are specifically at risk would be of the most importance.

      Very little research exists that specifically relates to the effectiveness of treatment interventions designed for women who abuse substances (Fillmore et al., 1997). However, some research shows that gender-specific interventions seem to be more effective than traditional mixed-gender interventions (Koos, Brand, Rojas, & Li, 2014). Gender-specific treatment includes but is not limited to gender-matching with counselors, gender-specific treatment groups, and mixed-gender treatment groups led by male and female co-leaders that have gender-specific treatment content (Fillmore et al., 1997).

      The prevalence of comorbidity between anxiety disorders and drug use disorders is higher among females than males (Compton, Cottler, Phelps, Ben Abdallah, & Spitznagel, 2000). Taken together, findings concerning gender differences in the prevalence of mental and drug use disorders suggest that sex variations may be found in the risk significance of psychiatric disorders for drug use disorders. This has greater implications in terms of indicating a need for more targeted treatment programs geared toward these issues in women.

Women substance-abusers have unique characteristics, such as having a later initiation, typically also having a comorbid problem, and substance abuse problems interfering with functioning in more areas of life than men. There is a further need for research studies to incorporate these differences when designing and implementing treatment programs specifically designed for women. The barriers that women face in seeking treatment include availability, accessibility, affordability, and acceptability. More research is needed in this area as well so that these barriers can be overcome and treatment can be more effective.

Effective substance abuse prevention and treatment for girls and women requires creating programs that will address the specific risks and consequences of substance use that are more frequently associated with females. As demonstrated by this study, over half of the African American women surveyed (52%) reported being 13–17 years old when they first used drugs. This is important because it shows a potential age range that would seem to benefit most from preventative drug education. Screening and brief interventions have been found to be effective in reducing alcohol consumption and potentially reducing the risk of alcohol abuse and dependence in adolescents (Babor & Kadden, 2005). The prevention programs that have proven most effective have included school-based educational programs, family-based programs, and mass media programming. Using this information, it might be effective to utilize both school counselors and family doctors to screen and deliver these brief interventions.

Many traditional treatment programs do not allow for the inclusion of children, leaving a woman to decide between the need to care for her children and the need for substance abuse treatment. Potential involvement with the child welfare system also

complicates a woman's decision to seek care because admitting to a substance abuse problem may lead to involvement with the criminal justice system or the loss of custody of children (Fillmore et al., 1997). Currently, there are several family-based treatment programs that demonstrate that families do not need to be separated for them to achieve success in treatment and recovery.

The demonstrated link between the co-occurrence of anxiety disorders and drug use disorders underscores the importance of tailoring treatment efforts to address multilevel factors in treatment. Designing culturally sensitive interventions are particularly important for interventions aimed at minorities. Interventions that have proven successful in targeting minority women are typically culturally specific, recruit staff who are bilingual and ethnically compatible with the target group, and form close relationships with the community that these women reside in (Clark, 2001; Clark & Drake, 1994). The findings from this study suggest that individuals with multiple disorders are clearly at the greatest risk for having drug use problems. These findings also indicate that having a dual diagnosis suggests a more severe problem than does either a substance use or mental health disorder alone.

These results also underscore the importance of treating female African American substance users with programs that are tailored to their female needs in addition to consideration of their race. Interventions and prevention efforts should be tailored to the target population and address contextual issues such as culture.

LIMITATIONS

The results of this study should be interpreted with caution because of its limitations. As previously outlined, the participants from this study were all African American females and confined to the Chicago, Illinois area. The uniqueness of the study within a specific geographical context makes it difficult to replicate fully in another setting and to say with confidence that the sample chosen will be representative of the population as a whole. Because of potential limitations in the generalizability of the findings obtained with this study, the present results should be replicated in samples drawn from the general population.

Second, all the assessment waves were administered using an interviewer and thus required the participants to self-report. With self- report comes a couple potential pitfalls. Individuals may exaggerate symptoms in order to make their situation seem worse, or, in contrast, they may underreport the severity or frequency of symptoms in order to minimize their problems and to please the interviewer. The participants might also simply be mistaken or misremember the information requested. Patients might also simply be mistaken or misremember the information requested.

One additional ethical issue and potential limitation that is important to discuss is the idea of paying the participants to participate. Paying incentives often facilitates recruitment, helps make participation a revenue-neutral experience, and allows for compensation for time and contribution (Scott, Foss, & Dennis, 2005). It is reasonable to pay someone for their work. However, since many of these women were still using drugs throughout the study, the incentive money might actually be used to further their drug use. In turn, the act of providing cash to drug users as part of this longitudinal study

might influence the outcomes being measured. Another issue with paying for participation is the fact that it may result in a skewed sample. Money may be more attractive to lower-income individuals and thus skew the sample to those of a lower socioeconomic status.

Additionally, the main variables of the anxiety-fear symptoms began to be assessed only within the Year 6 wave of this study. One problem often encountered with longitudinal data is missing or incomplete data. Measuring participants repeatedly over time may lead to repeated opportunities for missing data, either through failure to answer certain items, missed assessments, or permanent withdrawal from the study; however, in this case the issue was with the addition of new items later in the study. It would provide a better picture if the severity of anxiety-fear symptoms were also taken at intake and then again each year the study was conducted. There is also a gap from Year 10 until Year 15 when funding for the study lapsed. It would be interesting to have data from those years to provide a clearer picture of the trajectory of GAD and anxiety-fear symptoms.

A final limitation of previous studies as well as this current study is the lack of attention to temporal order (Chilcoat & Breslau, 1998a, 1998b). There was no information collected about the order of the onset of substance use or GAD; it is possible that one disorder preceded the other, which would prove highly advantageous in implementing methods to combat these comorbid disorders. By not specifically looking at the order of the onset of mental and drug use disorders, it is impossible to determine the direction of risk, which is necessary to assess causality (Chilcoat & Breslau, 1998a,

1998b). Therefore, the question still remains whether anxiety disorders place individuals at increased risk for drug use disorders or whether the reverse is true.

CONCLUSION

This study used a longitudinal secondary analysis design, which can be useful in examining lifetime prevalence, including cohort differences, but is problematic for the definitive identification of causal links (Rogosa, 1979). Longitudinal designs are best suited for examining such causal links and making recommendations for future studies (Boslaugh, 2007). Despite findings suggesting that differences across ethnicity may be involved in the link between mental and drug use disorders, this was not the focus of the present study, since only African American female participants were analyzed. Future studies examining contextual variables such as the influence of culture on risk for drug use disorder initiation are suggested as well as research on mental health stigma by this population. Since African Americans in general do not present in mental health care settings (National Institutes of Mental Health, 2013), care should be taken to familiarize them with the services available in order to increase service utilizations. For example, to help overcome the negative stereotypes and stigmas associated with mental health, an outreach campaign might help to present accurate images of those who can benefit from such services (Williams, Domanico, Marques, Leblanc, & Turkheimer, 2013). Furthermore, this study demonstrated the importance of family support within the context of mental health and substance abuse disorders. By acknowledging the importance of supportive relationships with families, professional providers of mental health interventions should join forces with these sources of informal support in order to provide a better and potentially more effective program.

As discussed above, African American women experience double minority status where their identity of being both African American and a woman affects them in a way that is greater than the sum of the independent effects of those identities (Crenshaw, 1989; Crenshaw, 1991). This idea is often interchangeably used with the term, intersectionality even though the terms do not carry quite the same meaning. Intersectionality is used to describe the intersecting effects of race, class, gender, sexual orientation and other marginalizing characteristics that contribute to social identity and affect one's health (Crenshaw, 1989; Crenshaw, 1991; Seng, Lopez, Sperlich, Hamama, & Reed Meldrum, 2012). Kimberlé Crenshaw perfectly described this phenomenon as it relates to the current population, African American women, in 1989:

> "[Black women] sometimes experience discrimination in ways similar to White women's experiences; sometimes they share very similar experiences with Black men. Yet often they experience double discrimination-- the combined effects of practices which discriminate on the basis of race, and on the basis of sex. And sometimes, they experience discrimination as Black women-- not the sum of race and sex discrimination, but as Black women (p. 149)."

Typically, studies focus on explaining inequalities by examining only a single demographic factor, such as sex, race, or socioeconomic status, and these attempts fall short of adequately explaining health disparities (Carbado & Gulati, 2013).

Considering intersectionality in studying African American women with substance use and anxiety disorders will help to combat the limitations of research that focus on pre-determined classifications such as gender or one single category (race, class, etc.) within a contextual analysis.

FUTURE RESEARCH

Anxiety is one of the most commonly occurring psychiatric disorders. It occurs more frequently in females than in males and is often associated with difficulty in social, academic, or vocational functioning. For many individuals the onset of anxiety occurs early in life and takes a chronic course. This presents a significant problem because anxiety disorders may cause considerable distress for individuals, including impairment in social and vocational functioning. If left untreated, anxiety disorders may play a significant role in the development or exacerbation of other psychiatric disorders, including depression and substance abuse, and they are often associated with a variety of medical illnesses (Starcevic, 2005). At this time most of the current research concerning the onset, etiology, and treatment for anxiety disorders has focused on populations with no regard to race, ethnicity, or gender. Relatively little is known about the course of anxiety and its treatment in African American females. More research is needed regarding the prevalence rates, onset, and etiology of anxiety disorders specifically within this population. Advancing the knowledge on this topic would lead to more public education and possibly more effective treatments methods designed for African American women. Current psychiatric literature clearly indicates that early intervention often leads to a better treatment prognosis in terms of anxiety disorders.

Finally, current research indicates that there is a rise in anxiety disorders attributable to a range of factors. Anxiety rates have risen steadily over the past seven decades, during both good economic times and bad. "There is a sense that the world is not as safe as it used to be, and that creates a lot of anxiety" (Dreisbach, 2010).

It is also notable that while these disorders are commonly found in a comorbid state and have generated a great deal of focused research attention independently, further studies are necessary in order to determine how to adequately treat comorbid anxiety and substance use disorders.

Additionally, intersectionality has been well-defined, often through Black feminist teachings (Crenshaw, 1989; Crenshaw, 1991); however, approaches to modeling the construct in quantitative studies of health outcomes are still lacking (Seng, et al., 2012; Carbado & Gulati, 2013). Most studies interested in exploring intersectionality have attempted to do so by simply noting demographic characteristics as representation of structural inequalities (Seng, et al., 2012). In order to combat this, Seng et al (2012) attempted to look at intersectionality across four levels: structural, contextual, and interpersonal and intrapersonal. Future research could utilize this method attempted by Seng & colleagues (2012), and examine these four levels. Analyses that focus solely on gender, race, or class independently are insufficient in adequately describing health care inequalities as these social positions are experienced simultaneously by African American women. While intersectionality has become more prevalent in the sociological study of gender, it is rarely applied to other areas of research. By incorporating use of intersectionality into health outcomes for African American women, this could potentially provide a framework for moving from individual-level conceptualizations of these women, to structural examinations that take into account dimensions of race, class, and gender, as well as how these dimensions shape health inequities. These studies will prove to enhance the understanding of the etiological and maintaining factors in these

comorbid conditions as well as improve the ability to treat individuals suffering from these conditions.

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APPENDIX A: IRB APPROVAL LETTER

The approval letter from the University of Illinois Institutional Review Board may be found in a supplemental file named **IRB Letter-12-15-2014**.

APPENDIX B: PATHWAYS ASSESSMENT

The questionnaire used to gather all of the data that has been presented in this dissertation

may be found in a supplemental file named **pathways_ 1 04**.