**ABSTRACT**

Min Kim. THE EFFECT OF CONCURRENT ALCOHOL, DRUG, PSYCHIATRIC AND VOCATIONAL TREATMENT ON CONSUMER ISSUES, TREATMENT PARTICIPATION, AND EMPLOYMENT (Under the direction of Dr. Stephen Leierer). Department of Addictions and Rehabilitation Studies, December 2013.

Despite high rates of unemployment among individuals with substance use disorders (SUDs) with psychiatric issues, little is known about a substance abuse intensive outpatient program (SAIOP) based on vocational counseling services. Further, limited research exists on relationships between five critical variables (baseline alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment status at 210 days). The purpose of this study was two-fold: (1) to assess the effectiveness of SAIOP based on vocational counseling services for unemployed or underemployed individuals with SUDs by comparing baseline and 210-day post-baseline rates of employment and levels of alcohol use, drug use, and psychiatric issue severity as measured by the addiction severity index 5 (ASI-5); and (2) to determine the direct and indirect effects between five critical variables, and specifically whether treatment participation rate mediates the relationship between baseline levels of consumers' issues and employment at 210 days. For the first research question, *t*-test and two-by three tables were conducted. For the second research question, structural equation modeling was used to examine two theoretical models (initial and revised models). This study used archival data from Project Working Recovery (PWR) with 106 participants who completed both the baseline and 210-day post-baseline PWR evaluation survey.

Based on the outcomes of consumers attending an SAIOP based on vocational counseling services tended to have less severe alcohol, drug, psychiatric issues, and improved percentages of

employment at 210 days. Additionally, this study found that treatment participation rate mediated the relationship between alcohol use, drug use, and psychiatric issue severity and 210-day employment status. Findings highlight the effectiveness of SAIOP based on vocational counseling services in order to reduce consumers' alcohol, drug, and psychiatric issue severities and improve percentages of employment. Moreover, the mediating effect of treatment participation rate is powerful in order to improve treatment outcomes although consumers have severe issues, which influence their treatment participation rates negatively.

# THE EFFECT OF CONCURRENT ALCOHOL, DRUG, PSYCHIATRIC AND VOCATIONAL TREATMENT ON CONSUMER ISSUES, TREATMENT PARTICIPATION, AND EMPLOYMENT

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THE EFFECT OF CONCURRENT ALCOHOL, DRUG, PSYCHIATRIC AND VOCATIONAL TREATMENT ON CONSUMER ISSUES, TREATMENT PARTICIPATION, AND EMPLOYMENT

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"Gloria Patri, et Filio, et Spiritui Sancto. Sicut erat in principio, et nunc, et semper, et in sæcula sæculorum. Amen (Glory to the Father, and to the Son, and to the Holy Spirit, both now and always, and unto the ages of ages. Amen)."

Finally, I am done. I can say my first plan of my life is completed. I am sitting down to acknowledge those who helped me to earn and complete my degree. It reminds me of when I came to the United States. At that time, I was young and passionate. I think it is best time to write down acknowledgements with reminding of who I was in 2009. Thank you to all the persons who have helped and supported me to see complete the first plan of my life.

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TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

# CHAPTER 1: INTRODUCTION

This chapter outlines a study to explore the effectiveness of a substance abuse intensive outpatient program (SAIOP) based on vocational counseling services on treatment outcomes (consumer issue severities and employment), and to examine some of the relationships between critical variables (i.e., alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment), specifically whether treatment participation rate mediates the relationship between baseline levels of consumers' issues and post-treatment employment. This chapter provides the background of the study, including basic information related to current prevalence and treatment of substance use disorders (SUDs) in the United States. The statement of the problem provides the rationale for this study, followed by a review of its theoretical foundation. The study justification and significance of the study support the rationale for the study.

## Background of the Study

Before the mid-1990s, although there was a need to develop comprehensive treatment services and strategies related to SUDs, little research had been done (Metsch & Pollack, 2005). With the enactment of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, the U.S. government began actively to develop substance abuse services to meet diverse stakeholders' needs (Stryker & Wald, 2009). Based on this legislation, many states expanded treatment services and provided substantial support in order to help individuals with SUDs (DeAlba, Samet, & Saitz, 2004; Richardson, Wood, Montaner, & Kerr, 2012). Although the federal and state governments devoted significant resources to improve alcohol and drug treatment programs, the number of people addicted to alcohol or other drugs increased both nationally and statewide (SAMHSA, 2011). For example, the last 20 years saw a rapid increase

in the number of illicit drug users: the World Drug Report (2010) put the number of Americans aged 12 years and older using illicit drugs in 1996 at 11 million; SAMHSA (2011) estimated that by 2010 there were 22.6 million such users.

The Center for Substance Abuse Treatment (2010) has reported that more than 22 million Americans meet eligibility requirements to use public welfare services to address substance use issues and increase employability. The number who actually access outpatient, residential, or hospital inpatient services each year is approximately 2 million, or 10%, because of limited resources due to insufficient facilities, service providers, and funding (SAMHSA, 2010). To reach this underserved consumer group, the U.S. government is exploring various drug treatment programs that are both outcome-effective and cost-efficient (Lundahl & Burke, 2009). To facilitate this exploration, researchers and clinicians are striving to develop effective and efficient treatment services for this population.

**Research on Substance Abuse and Psychiatric Disorders**

Public service funds from the federal and state governments provide opportunities for researchers to study outcome-effective and cost-efficient treatment services (Lundahl & Burke, 2009). In seeking to develop more effective treatment services, researchers and clinicians have considered the medical, psychiatric, social, psychosocial, and cultural forces influencing individuals with SUDs (Ghodse, Herrman, Maj, & Sartorius, 2011). Altice and colleagues (2010) have found that such individuals are more likely than non-users to be involved in crime, be unemployed, and have problems with family members, friends, and neighbors. However, perhaps the most striking of the research findings is the strong link between SUDs and psychiatric issues, both in terms of prevalence of shared disorders and in terms of effective treatment approaches.

Individuals who are diagnosed with both SUDs and psychiatric disorders are said to have co-occurring disorders (Funn & Woodruff, 2011). Co-occurring disorders are common among consumers with substance abuse (Connor, Pinquart, & Gamble, 2009) and psychiatric issues (Sheidow, McCart, Zajax, & Davis, 2012). Addington and Addington (2007) observed a strong positive relationship between SUDs and psychiatric disorders, and other authors have found that substance abuse issues are common among individuals diagnosed with psychiatric disorders (Degenhardt, Hall, & Lynskey, 2001; Johns, Cannon, Singleton, et al., 2004). Connor and colleagues (2009) reported that individuals with SUDs experience high rates of psychiatric disorders (e.g., depression, anxiety, and cognitive impairment), and others have found a high incidence of alcohol use disorders (e.g., alcohol abuse and dependence) in people diagnosed with psychiatric disorders (Johns et al., 2004).

While researchers have found a strong relationship between the two disorders for over 30 years, they have not found clear cause and effect between them (Helzer & Pryzbeck, 1988; Schmidt, Hesse, & Lykke, 2011; Schuckit, 2006). However, individuals diagnosed with SUDs or a psychiatric disorder, or with co-occurring disorders, regardless of which diagnoses is first frequently demonstrate similar behavioral issues and symptoms (Crebbin, Mitford, Paxton, & Turkington, 2008). Sherba and Singer (2010) found that people diagnosed with SUDs as defined by the *Diagnostic and Statistical Manual of Mental Disorders IV* (*DSM-IV-TR, 2000),* that is, with "recurrent substance use resulting in a failure to fulfill major role obligation at work, school, or home" (p.199). Additionally, people diagnosed with a mental, behavioral, or emotional disorder that meets DSM-IV criteria have common issues and problems, such as violence, low employment, drug addiction, and mental problems.

Because of this strong relationship between SUDs and psychiatric disorders, researchers have studied the effects of various treatments on individuals with both disorders (Addington & Addington, 2007; Baker, et al., 2006; Brook, Brook, Zhang, Koppel, 2010; Drake, O'Neal, & Wallach, 2008; Goldstein, Dawson, Chou, & Grant, 2012; Schuckit, 2009). Interestingly, the treatments for SUDs are frequently effective and efficient in managing psychiatric issues (Funn & Woodruff, 2011). Likewise, the treatments for psychiatric disorders are frequently effective and efficient in managing substance abuse issues (Drake et al., 2008; Goldstein et al., 2012; Schuckit, 2009). For example, in individuals diagnosed with psychiatric disorders and substance use issues, motivational interviewing (MI) therapy and cognitive-behavioral therapy (CBT) significantly reduced both psychiatric issues and substance use issues (Baker, Bucci, Lewin, Kay-Lambkin, & Constable, 2006). Therefore, services for individuals with substance abuse and psychiatric issues must be examined from an integrated perspective.

**Services for Individuals with Substance Abuse and Psychiatric Issues**

According to the 2009 National Survey on Substance Abuse Treatment Services (N-SSATS), over 13,000 facilities in the United States provide various treatment services to help people with SUDs. In these facilities, the five most frequently used treatment services offered in what is considered standard treatment were comprehensive substance abuse counseling (96%), relapse prevention (87%), CBT (66%), 12-step facilitation (56%), and MI (55%). These percentages add up to more than 100% because these facilities use multiple treatment approaches to increase the probability of positive treatment outcomes (Becker, Drake, & Naughton, 2005; Calsyn, Yonker, Lemming, Morse, & Klinkenberg, 2005; Staring, Blaauw, & Mulder, 2012). For example, Defife and colleagues (2010) found that a comprehensive approach consisting of

treatments for medical, social, vocational, and family issues was effective in reducing consumers' problems.

In order to recover from serious psychiatric health conditions, researchers have recommended standard treatment approaches like those described above (Baker, Hiles, Thornton, Hides, & Lubman, 2012; Grella, Needell, Shi, & Hser, 2009; Highhouse, Zickar, & Yankelevich, 2010; Staines, Blankertz, Magura, Cleland, &Bali, 2005). Since the early 1990s, some researchers have maintained that standard treatment is effective in reducing not only severe issues of consumers' alcohol use (Schuckit, 2009;Drake et al., 2008) and drug abuse (Arndt, Black, Schmucker, & Zwick, 2004; Baker et al., 2012; Messina, Wish, & Nemes, 2000), but also psychiatric issues (Hanlon, O'Grady, & Bateman, 2000).

Based on the strong relationship between substance abuse and psychiatric issues, researchers using multiple regression methods have found numerous common variables that influence treatment outcomes of individuals with SUDs and psychiatric disorders (Bellack, Bennett, Gearon, Brown, & Yang, 2006; Craig et al., 2008; Funn & Woodruff, 2011; MeKellar, Kelly, Harris, & Moos, 2006; Montgomery, Vaughn, Thompson, & Howard, 2013; Woodford, Krentzman, & Gattis, 2012). Several researchers have found that variables such as ethnicity, age, gender, socioeconomic status, education level, employment status, psychiatric issue level, and substance abuse level are significant predictors of treatment outcomes (Greenfield, Back, Lawson, & Brady, 2010; Hawkins, 2009; Montgomery et al., 2013; Petry, 2007). To develop effective treatment services for substance abuse and psychiatric issues, researchers have worked to determine the most important predictors of successful outcomes (Choi & Ryan, 2006; Clark, 2008; Funn, & Woodruff, 2011; Herrenkohl, Lee, Kosterman, & Hawkins, 2012; Savidge& Stein, 2012). Specifically, after reviewing several articles, Craig and colleagues (2008) suggested five

critical variables to consider when developing treatment goals or evaluating outcomes: levels of alcohol use, drug use, and psychiatric issue severity; treatment participation; and employment.

Standard treatment has shown to be effective in reducing the severity level of consumers' issues. Specific treatments offered as part of standard care (e.g., CBT, MI) have shown to increase treatment participation. Therefore, it is time for researchers to turn their attention to the fifth critical variable, employment, and to address the following question: Should vocational services, which have been shown to increase treatment participation as well as employability (Baldwin & Marcus, 2007; Baldwin, Marcus, & Simone, 2010; Highhouse et al., 2010), become a concurrent part of what we consider standard care, so that all five variables can be optimally addressed?

**Issues in substance Abuse Disorders and Psychiatric Treatment**

**Low treatment participation rates.** Despite the evidence that standard treatment helps to reduce consumers' problematic symptoms and issues, consumers' participation rate in treatment is often low. Therefore, even after consumers obtain access to specialty treatment for substance abuse or psychiatric disorders, clinicians would not expect positive treatment outcomes (Fung, Tsang, & Corrigan, 2008). Typically, the average participation rate for consumers in substance use treatment is 40% (Tuten, Fitzsimons, Chisolm, Nuzzo, & Jones, 2012).This low treatment participation rate leads both consumers and service providers to have low expectations for positive outcomes in treatment (Chisolm et al., 2013). Indeed, low treatment participation rate is closely associated with negative outcomes, e.g., lower self-esteem level and worse alcohol use level after treatment (Rohde, Stice, & Gau, 2012). Specifically, Richardson and Abraham (2012) found a negative relationship between treatment participation rate and degree of alcohol dependence after treatment. Conversely, consumers' high treatment participation rate is highly

related to successful treatment completion and reduction in the amount of alcohol consumption (Drapalski, Bennett, & Bellack, 2011).

Because of this strong relationship between treatment participation rate and treatment effect, Defife and colleagues (2010) indicated that exploring strategies to increase consumers' participation rate in treatment is required. As mentioned above, researchers have found that both CBT and MI increase consumers' treatment participation rate (Silverman, Wong, Needham, et al., 2007; Tonigan, Book, Pagano, et al., 2010). Specifically, Westra and colleagues (2009) found that with CBT and MI treatment, individuals with anxiety disorders showed higher participation rates and lower anxiety levels than those who did not receive such treatment; in addition, CBT and MI helped consumers to expect positive treatment effects (Westra et al., 2009). Other researchers have also suggested that comprehensive treatment services need to include modalities shown to elevate participation rates (Drapalski et al., 2011; Horsfall, Cleary, Hunt, & Walter, 2009; Vong, Cheing, Chan, So, & Chan, 2011).

**Lack of vocational services.** Although consumers may be successful at reducing their substance abuse and psychiatric issues through standard treatment approaches, many are unable to capitalize on post-treatment employment opportunities and secure jobs because they have not received vocational training (Hogue, Dauber, Dasaro, & Morgenstern, 2010). Hubbard and colleagues (2003) reported that the employment rate of individuals without SUDs is about twice as high as that of those with SUDs. Later, Sigurdsson and colleagues (2011) expanded this research and reported that while the U.S. employment rate is about 90%, the employment rate of individuals with SUDs and psychiatric disorders is 35% and 15%, respectively. Thus, many studies from national reports have shown that unemployment and underemployment are chronic problems of these consumers (Hogue et al., 2010; SAMHSA, 2009).

In order to increase these consumers' employment rate, researchers have developed, evaluated, and revised interventions and strategies (Cash & Wilke, 2003; Dauber et al., 2010; Hogue et al., 2010; Hubbard, Craddock, & Anderson, 2003). Specifically, Xie and colleagues (2010) found that being vocationally underprepared is the primary reason for the high unemployment and underemployment rates of these consumers. Because of consumers' insufficient job readiness and lack of vocational skills, researchers strongly recommend that they receive vocational services before they attempt to re-enter the workforce (Baldwin & Marcus, 2007; Baldwin et al., 2010). In addition, Sigurdsson and colleagues (2011) report vocational services are useful to increase consumers' employability and improve their opportunity to participate in the workforce. In addition to elevating employability, providing vocational services as part of standard treatment for SUDs and psychiatric disorders maximizes treatment effects by reducing disorder symptoms and increasing treatment participation rates (Biegel, Stevenson, Beimers, Ronis, & Boyle, 2010). Therefore, comprehensive treatment that includes vocational services as part of standard treatment is the most effective treatment for individuals with SUDS and psychiatric disorders (Highhouse et al., 2010; Staines et al., 2005; Xie, Drake, McHugo, Xie, & Mohandas, 2010).

## Statement of the Problem

Beginning in the mid-1990s, researchers recognized the need to develop, refine, and evaluate a comprehensive treatment approach that included standard treatment and vocational services for consumers (Drake & Wallach, 2000; Grella, Greenwell, Mays, & Cochran, 2009). Specifically, although standard treatment is effective in reducing the level of consumers' substance abuse and psychiatric issues (Connor et al., 2009; Johns et al., 2004; Sheidow et al., 2012), vocational services are also recommended in order to increase consumers' employability

and improve their chances of participating in the workforce (Baldwin et al., 2010; Sigurdsson et al., 2011; Xie et al., 2010). Although the positive outcomes related to receiving such services are clear, relatively few researchers have explored the relative effectiveness of different vocational services (Atherton, 2011; Baker et al., 2012; Highhouse et al., 2010; Staines et al., 2005; Xie et al., 2010). To address this research deficit, there is a need to develop a body of knowledge describing evidence-based practices related to vocational services for consumers with SUDs and psychiatric disorders (Baker et al., 2012). In their evaluation of the field, Atherton and colleagues (2010) demanded that investigations be conducted to verify the effectiveness of vocational services for these consumers.

Furthermore, as the number of treatment services for people with SUDS and psychiatric disorders increases, it becomes critical that the U.S. government conduct outcome measurements in order to use limited funds effectively (Humphreys & McLellan, 2011). Across numerous studies, researchers have found five variables critical to developing appropriate treatment goals and designing treatment services to reduce consumers' problems: levels of alcohol use, drug use, and psychiatric issue severity; treatment participation; and employment (Craig et al., 2008; Highhouse et al., 2010; Ketter, Moroney, & Martin, 2008; Montgomery et al., 2013; Xie et al., 2010).

Greenfield and colleagues (2010) emphasized the paucity of studies that have examined relationships between these critical variables. Moreover, although researchers have examined the direct effects of the critical variables on outcomes (Richardson et al., 2012; Staines et al., 2005; Turan & Yargic, 2012), they have not examined the mediating effect of treatment participation on employment status. By examining the relationships between baseline levels of alcohol use, drug use, and psychiatric issue severity and employment outcomes, researchers could refine their

understanding of the effect of treatment participation rate on employment (Kwon, Kahng, & Kim, 2010). A better understanding of these relationships would help clinicians to develop appropriate strategies and treatment plans to provide effective services to consumers (Hulse & Tait, 2002). Specifically, counselors could apply appropriate strategies to increase consumers' treatment participation rate and employment (Brecht, Greenwell, & Anglin, 2005; Defife et al., 2010). Therefore, to develop effective treatment services and optimize outcomes, studies that examine further the complex relationships between these critical variables are required (Kemp, Harris, Vurel, & Sitharthan, 2007; Martino, Carroll, Nich, & Rounsaville, 2006).

## Purpose of the Study

The purpose of this study was two-fold: (1) to assess the effectiveness of an SAIOP based on vocational counseling services for unemployed or underemployed individuals with SUDs, many with co-occurring psychiatric disorders, by comparing baseline and 210-day post-baseline rates of employment and levels of alcohol use, drug use, and psychiatric issue severity as measured by the ASI-5; and (2) to determine the direct and indirect effects between five critical variables (baseline alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment status at 210 days), and specifically whether treatment participation rate mediates the relationship between baseline levels of consumers' issues and employment at 210 days.

## Theoretical Rationale

In the early 1990s, researchers began using an ecological approach based on Bronfenbrenner's ecological systems theory (Tang, Conyne, Heppner, et al., 2012) to understand consumers' issues and develop treatment strategies (He, Hu, Yu, Gu, & Liang, 2010; Sampson & Laub, 1993). This approach was effective in developing plans for various mental health and

vocational issues, such as career development plans (Beveridge, Craddock, Liesener, Stapleton, & Hershenson, 2002), health recovery plans (Cash & Wilke, 2003), return-to-work plans for workers after right hemisphere stroke (Koch, Egbert, Coeling, & Ayers, 2005), and employment plans (Koch, Rumrill, Hennessey, Vierstra, & Roessler, 2007; Lee & Park, 2007). Because ecological theory emphasizes the relationship between the individual and the environment, applying this theory to SUDs and psychiatric treatment plans would increase our understanding of consumers' issues and related environmental issues (He et al., 2010). Specifically, Szymanski and Hershenson (2005) argued that individuals with chronic disorders need to recognize how the environment influences their lives and to understand how their individual characteristics influence the environments around them (e.g., family, community, society). In addition, by focusing on the interaction between individuals and their environments, ecological theory can provide a conceptual framework to guide counselors in developing effective treatment plans (Koch et al., 2005; Randolph & Andresen, 2004). Applying this general theory to a specific population is crucial to understanding and describing how the environment mediates consumers' personal issues (Szymanski & Hershenson, 2005).

Koch and colleagues (2005) indicated that ecological theory, which focuses on consumers' vocational interests and career development, is useful in maximizing employability and expanding consumers' occupational options. Because ecological theory includes an evaluation of life or treatment satisfaction level and provides feedback from consumers to clinicians, many have suggested that ecological theory could provide information and insights to clinicians for designing and evaluating long-term treatment plans (Franche & Krause, 2002; Stauffer, Capuzzi, & Olsheski, 2012). Therefore, ecological theory is useful not only in understanding consumers' issues, but also in developing vocational services plans and the comprehensive long-term

treatment services now favored for those with chronic disorders (Smelson et al., 2012). Based on this premise, one can argue that ecological theory could be usefully applied to the development and delivery of long-term, comprehensive treatment services for consumers with substance abuse, psychiatric, and employment issues.

## Research Questions and Hypotheses

Although some studies have used ecological theory to design vocational services and recovery treatment plans for people with chronic disorders (Beveridge et al., 2002; Koch et al., 2005; Koch et al., 2007; Lee & Park, 2007), these designs have not been applied to consumers with SUDs and psychiatric disorders. To address SUDs and psychiatric disorders across consumers' lifespan, ecological theory may prove useful to develop treatment plans that will facilitate consumers' movement from unemployment with an unhealthy lifestyle to employment with a healthier lifestyle (He et al., 2010). Using ecological theory, theorists and counselors should be able to design plans that incorporate effective vocational services into SUD and psychiatric treatment plans for those who need long-term treatment. Based on the theory, one might expect that effective vocational services would increase consumers' employment rate and decrease their substance use and psychiatric symptoms. Moreover, from an ecological perspective, an increased treatment participation rate should increase consumers' employment as well as decrease their substance and psychiatric issues.

***Research question 1***: Will there be significant changes from baseline in alcohol use, drug use, and psychiatric issue severity, as measured by the ASI-5, and in the employment rate for unemployed or underemployed consumers at 210 days at an SAIOP based on vocational counseling services?

***Hypothesis 1***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' alcohol issues will decrease.

***Hypothesis 2***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' drug issues will decrease.

***Hypothesis 3***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' psychiatric issues will decrease.

***Hypothesis 4***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the percentage of consumers who are employed will increase.

***Research Question 2****:* In an SAIOP based on vocational counseling services, is the influence of participants' baseline ASI-5 severity of alcohol use, drug use, and psychiatric issues on 210-day employment status mediated by their treatment participation rate?

***Hypothesis 1***: The treatment participation rate will mediate the relationship between baseline alcohol use severity and employment status at 210 days.

***Hypothesis 2***: The treatment participation rate will mediate the relationship between baseline drug use severity and employment status at 210 days.

***Hypothesis 3***: The treatment participation rate will mediate the relationship between baseline psychiatric issue severity and employment status at 210 days.

## Study Justification

Critical variables (i.e., level of alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment) are those frequently judged to be important criteria to evaluate the efficacy of treatment programs for consumers with SUDs and psychiatric disorders (Hawkins, 2009). Reducing the influence of the negative variables through treatment services will increase consumers' quality of life (Evans, Li, & Hser, 2009) and facilitate

transition from unemployment with an unhealthy lifestyle to stable employment with a healthier lifestyle (Cash & Wilke, 2003). Thus, Magura and colleagues (2004) stated that goals in treatment should be to increase consumers' employment rate and reduce their level of alcohol use, drug use, and psychiatric issue severity. Providing both vocational services and standard treatment to consumers will influence treatment outcomes positively (Biegel et al., 2010). Specifically, researchers strongly recommend that vocational services should be provided to consumers in order to increase employability and expand their occupational choices (Atherton, 2011; Hogue et al., 2010; Sligar & Toriello, 2007).

Although researchers have found vocational services to be effective in substance abuse and psychiatric treatment, there are only a few studies that recommend vocational services be given concurrently with such treatment (Atherton, 2011; Drake & Wallach, 2000; Grella et al., 2009; Highhouse et al., 2010). Because the findings of these investigations were not interpreted through the lens of ecological theory, researchers and clinicians may have overlooked valuable information to develop practical strategies for interventions. Having been shown useful in the development of treatment plans for individuals with chronic disorders (Koch et al., 2005; Randolph & Andresen, 2004; Szymanski & Hershenson, 2005), ecological theory could also be useful in the design of comprehensive substance abuse and psychiatric treatment that includes concurrent vocational services. In summary, applying ecological theory to SUDs and psychiatric populations in treatment could provide valuable insight into understanding how their personal issues interact with environmental forces.

When evaluating treatment effectiveness, researchers have examined the relationships between the critical variables discussed above (i.e., alcohol, drug, and psychiatric issues; treatment participation rate; and employment) and produced useful findings (Cacciola, Alterman,

Habing, & McLellan, 2011; Highhouse et al., 2010; Ketter et al., 2008; Montgomery et al., 2013; Xie et al., 2010). Specifically, treatment participation rate has a negative relationship to substance abuse issues (Hser, Evans, Huang, & Anglin, 2004) and psychiatric issues (Connor et al., 2009), as well as a positive relationship to likelihood of entering the workforce (Cash &Wilke, 2003; Dauber et al., 2010). By finding effective treatments and exploring these relationships, treatment services can be evaluated, revised, and reapplied (Hawkins, 2009).

While researchers have examined the influence of various predictors on treatment outcomes, little has been done to examine the mediating effects of treatment participation rates on alcohol use, drug use, and psychiatric issue severity and employment issues (Greenfield et al., 2010). By examining these effects, various stakeholders (e.g., researchers, administrators, policy makers, and counselors) can begin to understand the relationships that exist while consumers are receiving treatment services (Kwon et al., 2010). Hence, counselors would be able to develop strategies and plans to facilitate more effective treatment outcomes (Defife et al., 2010). Specifically, researchers should examine the direct effects of consumers' SUD and psychiatric issue levels at baseline on treatment participation rate, and the mediating effect of treatment participation rate on post-treatment employment. Discovering these relationships could provide improved clinical guidelines when developing treatment plans (Conduit, Byrne, Court, & Stefanovic, 2004; Defife et al., 2010). By increasing treatment participation rate, we may observe positive changes in consumers' employment rate (Lacy, Paulan, Reuter, & Lovejoy, 2004). In conclusion, this study proposed to examine how consumers' treatment participation rate mediates the effects of baseline alcohol use, drug use, and psychiatric issues on employment while consumers are receiving long-term treatment services, as measured at 210 days post-baseline.

## Significance of the Study

This study assessed the effectiveness of an SAIOP based on vocational counseling services for unemployed or underemployed individuals with SUDs, many with co-occurring psychiatric disorders, by comparing baseline and 210-day post-baseline rates of employment and ASI-5-measuredlevels of alcohol use, drug use, and psychiatric issue severity, and determined the direct and indirect effects between five critical variables (baseline alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment status at 210 days), and specifically whether treatment participation rate mediates the relationship between baseline levels of consumers' issues and the outcome of employment.

First, despite the positive study results of vocational services given concurrently with SUD and psychiatric treatment (Atherton, 2011; Grella et al., 2009; Highhouse et al., 2010), few studies have been done to inform clinicians' efforts to design effective vocational services. By using ecological theory, researchers and clinicians can consider the issues of individuals and their environments to develop long-term treatment plans. Using this strategy, counselors can increase their level of understanding about how the environment and the individual interact during treatment (He et al., 2010; Szymanski & Hershenson, 2005). As Szymanski and Hershenson (2005) note, ecological theory can be a useful tool with which to help individuals with chronic disorders increase their work skills and quality of life. Specific to this study, it is hoped that counselors could use the findings to develop treatment strategies that would enlarge the scope of standard SUD and psychiatric treatment to include vocational counseling services, thereby helping consumers to reduce their negative symptoms and increase positive outcomes including employment. By examining this study's results, researchers and clinicians could gain

insights into the best practices to reduce levels of substance abuse and psychiatric issue severity that block rehabilitation and recovery.

Second, researchers and clinicians recognize that consumers' unique challenges (e.g., alcohol use, drug use, and psychiatric issues) influence treatment participation rate and employment. These relationships must be specified to understand the direct and indirect effects of critical variables. The second finding of this study specifically addressed the mediating effect of treatment participation rate on consumers' baseline issues and their post-treatment employment. Applying this finding to the development of treatment plans, counselors could refine their strategies to increase treatment participation in order to facilitate improved treatment outcomes.

## Chapter Summary

This chapter introduced the purpose of this study, which was to explore the effectiveness of a long-term SAIOP based on vocational services and examine some of the relationships between critical variables (baseline alcohol use, drug use, and psychiatric issue severities; treatment participation rate; and 210-day post-baseline employment). Basic information on prevalence, economic impact, and treatment related to SUDs and psychiatric disorders was provided. A statement of the problem and a review of ecological theory and the rationale for using it as the framework for this study were also provided. In addition, the study justification and significance of the study were developed to establish the rationale for the study. The following chapter will provide a literature review with an in-depth discussion of the critical variables. Finally, the gaps in the literature and practice will be clarified in order to establish further the rationale for conducting this study.

# CHAPTER 2: LITERATURE REVIEW

This section outlines the literature on the development of long-term comprehensive treatment programs for individuals with substance use disorders (SUDs) and psychiatric disorders. In addition, this section gives a rationale for using ecological theory as a theoretical foundation for the design and provision of vocational counseling services by such treatment programs. Next, the chapter continues with a description of how treatment outcomes are influenced by five critical variables: alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment. The importance of examining the relationships and mediating effects of critical variables will be described. Finally, this chapter concludes with a summary of this study.

## The Shift toward Long-term Comprehensive Treatment

Historically, researchers believed that short-term or acute-care services would suffice to reduce consumers' substance abuse and psychiatric symptoms (Minkoff, 2001) and increase their ability to integrate into society (McKay, 2009). Current studies related to the diagnosis, screening, and treatment of SUDs and psychiatric disorders have shown that long-term comprehensive services provide better outcomes than short-term services (Baker et al., 2006; Humphrey, Wing, McCarty, et al., 2004; McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006; Xie et al., 2010). Because of the comprehensive needs of consumers, clinicians need to provide long-term treatment in order to reduce significantly consumers' physical and psychological symptoms (McLellan et al., 2006).

Apart from its limited efficacy in terms of treatment outcomes, the traditional acute-care model of substance abuse and psychiatric treatment also affected the organization of service provision. Because many did not see a treatment relationship between SUDs and psychiatric

disorders (Scott & Dennis, 2009), practitioners designed piecemeal, non-integrated programs for these disorders (D'Aunno, Sutton, & Price, 1991). Simply stated, a fragmented healthcare system with different types of funding mechanisms was created (Mufavero, Norton, & Saag, 2011). This system drove academicians and professional counseling organizations to develop separate educational and treatment training systems for the disorders (Sterling, Weisner, Hinman, & Parthasarathy, 2010). D'Aunno and colleagues (1991) point to the different groups that are organized around substance abuse treatment (e.g., the National Institute on Drug Abuse, the National Association of State Alcohol and Drug Abuse Directors) and those organized around psychiatric treatment services (e.g., the National Institute of Psychiatry, state departments of psychiatry, county mental health boards).

However, researchers and clinicians are currently questioning this lack of integration. Smelson and colleagues (2012) reported that consumers diagnosed with SUDs or psychiatric disorders need comprehensive treatments to reduce their symptoms. Unlike researchers who focus on the acute-care model, those using a chronic-disease paradigm have developed a comprehensive care model to address the relationship between SUDs and psychiatric disorders (Kemp et al., 2007; White, 2008). This paradigm's perspective suggests that no matter what their primary diagnosis is, consumers need comprehensive approaches to reduce effectively wide-ranging problems related to family, employment, and health (Barrowclough et al., 2010). Moreover, because of the high prevalence of co-occurring SUDs and psychiatric disorders, there is strong consumer demand for comprehensive programs that address both substance abuse and psychiatric issues (Costello, Erkanli, Copeland, & Angold, 2010). When consumers are able to receive such integrated treatment services, they show higher life satisfaction and better treatment outcomes (Morgenstern, Neighbor, Kuerbis, et al., 2009).

According to Finello and Poulsen (2012), individuals with SUDs and psychiatric disorders need these ongoing comprehensive services to be reintegrated into society, a concept validated by research on long-term treatment plans for such consumers (French & Drummond, 2005; Halkitis, 2009; Walker, Brady, Dalvie, et al., 2009; Xie et al., 2010). Specifically, Xie and colleagues (2010) found that long-term treatment programs helped consumers to understand their disorders and various issues so they could recognize the importance of treatment. Smelson and colleagues (2010) also emphasized that long-term treatment programs are needed for consumers to identify their intra- and interpersonal issues.

Furthermore, Kemp and colleagues (2007) found that when treatment plans are both comprehensive and long-term, clinicians are more likely to understand consumers' various individual issues (e.g., health and family problems) and their environmental issues (e.g., lack of job training or weak employability and bias from the public) and to provide appropriate services. By understanding what consumers are experiencing internally and externally, clinicians can develop better treatment plans. By exploring the relationship between consumers' internal and external problems (e.g., disorder symptoms, family issues, vocational problems), clinicians can understand the barriers and forces that prevent consumers from integrating into society (Grella et al., 2009; Silverman et al., 2007). Tonigan and colleagues (2010) reported that it is critical to consider both consumers' individual and environmental issues. To develop the most effective comprehensive long-term treatment plans, several researchers have recommended that clinicians consider consumers' relationships with people, work history, and type of disorder and its severity (Baker et al., 2006; McLellan et al., 2006; Xie et al., 2010; Szymanski & Hershenson, 2005). The next section describes ecological theory and its relevance to the development of comprehensive long-term treatment.

## Ecological Theory

Exploring the internal and external forces influencing consumers can help clinicians to understand consumers' treatment needs and select appropriate services. In order to understand how an individual's disability and environments interact with one another, in 2005 Szymanski and Hershenson developed a five-construct version of what they termed ecological theory based on Bronfenbrenner's ecological systems theory (Tang et al., 2012), which was used by them and others to describe and develop effective comprehensive long-term treatment plans in various areas (He et al., 2010; Sampson & Laub, 1993; Szymanski & Hershenson, 2005). This theory has already been applied in the design of treatment plans in career development (Beveridge et al., 2002); health recovery (Cash & Wilke, 2003); and post-injury return to work (Koch et al., 2005; Lee & Park, 2007).

In sum, ecological theory can provide a valuable conceptual framework to guide clinicians in developing long-term treatment plans in multiple areas (Koch et al., 2005; Randolph & Andresen, 2004; Szymanski & Hershenson, 2005). Several studies in rehabilitation counseling have used ecological systems theory, as an effective framework with which to conceptualize consumers' physical and psychiatric symptoms. For example, Koch and colleagues (2005) found that consumers' internal issues influence their physical and psychiatric symptoms, and Szymanski and Hershenson (2005) found that external issues like public bias influence workplace discrimination. Indeed, Szymanski and Hershenson (2005) first proposed their model of ecological theory to explore internal and external forces and their interactions in order to develop appropriate interventions for consumers. Their model uses five constructs: individual, contextual, mediating, environmental, and outcome. The following are brief descriptions of these constructs:

(1) *Individual constructs* are defined as physical and psychological characteristics that are internal to a person and relate to that individual's abilities to face problems and find solutions to them (Szymanski & Hershenson, 2005). Examples of individual constructs are consumers' alcohol, drug, and psychiatric issues among other consumer disorders. By considering disorder type and severity, clinicians can more clearly recognize what physical and psychological problems consumers undergo and have undergone. For example, because the use of addictive substances (e.g., alcohol, cocaine, and other drugs) and the existence of psychiatric issues interfere with brain development and increase the risk of physical and psychiatric problems, many consumers demonstrate physical and psychiatric health conditions that may reduce their chances for integration into society (Feinstein, Richter, & Foster, 2012).

(2) *Contextual constructs* refer to external characteristics that influence consumers (Szymanski & Hershenson, 2005). Examples of contextual constructs include clinical environment, education level, marital status, living area, important life events, and natural disasters. By considering these environmental factors, clinicians can more clearly understand consumers' life experience and the external influences. The clinical environment is an example of contextual constructs. Different types of clinical environments can influence consumers differently. For example, an authoritarian environment may be effective for some consumers, but not for others. Likewise, some consumers may find a 12-step program the most effective approach to address their problems, while others benefit more from a motivational interviewing approach. Therefore, it is important to understand contextual constructs in order to serve consumers.

(3) *Mediating constructs*, such as culture and societal beliefs, describe the interactions between individual and contextual constructs (Szymanski, Hershenson, Enright, & Ettinger,

1996). Because the individual influences the environment and vice versa, Szymanski and Hershenson (2005) argued that a significant relationship exists between individuals and their environment, and various problems can be more clearly understood by examining the interaction between the two. The interaction of the consumer's SUDs (internal) and clinical environment (external) must be considered. For example, a highly motivated consumer may do well in a clinic that has high expectations for its participants, yet the same consumer may not perform as well in an environment with low expectations. Likewise, a consumer who needs a job may perform well in a therapeutic environment that is based on vocational counseling, yet the same individual may not be motivated in a program that only addresses substance use issues.

In looking at consumers with SUDs (internal) who must face the stigma around SUDs (external), Baldwin and colleagues (2010) noted that they often experience underemployment because shame inhibits them from applying for jobs and because they face employment discrimination. Employers are afraid to hire workers with a history of treatment for SUDs and psychiatric disorders. Even when these consumers are hired, employers are likely to treat them differently from other workers. Ultimately, this discrimination from employers, rooted in social stigma, significantly influences the rate of job loss (Baldwin et al., 2010). Therefore, clinicians need to examine the effect of consumers' individual constructs and contextual constructs on their issues in order to develop effective strategies (Beardwood & Clark, 2005).

(4) *Environmental constructs* are characteristics related to the work setting. These characteristics affect interactions with people and situations at the workplace (Szymanski & Hershenson, 2005). Assessing these characteristics (e.g., employment status, type of job, job tenure, vocational training, clinical support, and company policy) is important to developing effective vocational counseling treatment for individuals with SUDs and psychiatric disorders.

For example, a national study done by the Substance Abuse and Mental Health Services Administration Office (2008) found that only 31% of individuals with SUDs were employed. According to Xie and colleagues (2010), the primary reason for the high unemployment and underemployment rates of these consumers is being vocationally underprepared because of insufficient job readiness and lack of vocational skills. By examining consumers' vocational interests and employability, clinicians can develop more effective vocational plans.

(5) *Outcome constructs* are the results of the interactions between the other four, i.e., the individual, contextual, mediating, and environmental constructs (Szymanski & Hershenson, 2005). The outcome constructs represent "what is achieved through treatment" and "how much consumers have changed through treatment" (Ketter et al., 2008, p. 102). These constructs are evaluated by examining consumers' levels of change or measuring differences between before- and after-treatment assessments (Szymanski & Hershenson, 2005). For example, researchers may measure treatment outcomes by examining variables such as consumers' baseline and post-treatment levels of drug and alcohol use (Connor, Pinquart, & Gamble, 2009); treatment participation rate (Fung et al., 2008); employment status (Dauber et al., 2010); and level of life satisfaction (Szymanski & Hershenson, 2005).

Assessing the changes in variables such as these is critical to determining treatment effectiveness (Barrowclough, Haddock, Tarrier, et al., 2001; Cash &Wilke, 2003; Laudet & White, 2010). By developing treatment plans based on these assessments, clinicians can more effectively organize these plans to complete treatment goals (Franche & Krause, 2002). For example, in traditional programs, treatment goals often focused on increasing consumers' life satisfaction **(**Scott & Dennis, 2009). However, using ecological theory, clinicians can synthesize information from various constructs to evaluate a variety of treatment outcomes, such as

consumers' drug use level, employment rate, and treatment participation rate, as well as life satisfaction. When consumers do not achieve their treatment goals, clinicians must obtain information from each construct to revise plans and provide more appropriate services at the most appropriate time. Therefore, outcome constructs are useful in managing, analyzing, and synthesizing information from the other constructs in order to develop, evaluate, and modify treatment plans appropriate to the specific needs of consumers (Stauffer et al., 2012), comprehensive long-term plans that can better pinpoint consumers' issues and enhance treatment outcomes (e.g., reducing SUDs and psychiatric issues, improving health, and facilitating employability) (Lee & Park, 2007).

In the field of rehabilitation counseling, this approach has already been applied to individuals with severe physical disabilities (Conyers, Koch, & Szymanski, 1998; Hong, Huang, Sabri, & Kim, 2011); learning disabilities (Szymanski, Dunn, & Parker, 1989); and chemical sensitivity (Koch et al., 2005). Ecological theory has thus been validated when applied to individuals who have severe and chronic disorders, who have complex issues and need long-term treatment services (Lee & Park, 2007), but so far no study has applied this theory to individuals with SUDs and psychiatric disorders.

In applying ecological theory to consumers and their environment, clinicians would synthesize information by considering the following: (1) internal substance and psychiatric issues by using individual constructs, (2) external issues such as clinical settings by using contextual constructs, (3) consumers' treatment participation by using mediating constructs, (4) work-related issues by using environmental constructs, and (5) differences in consumer issue severities before and after treatment by using outcome constructs. Together, these five constructs would then provide a multifaceted paradigm through which to examine issues such as

employability as well as substance abuse and psychiatric issues (Hong et al., 2011; Szymanski & Hershenson, 2005).

## Critical Variables in SUD and Psychiatric Treatment Evaluation

Because of a number of studies demonstrating the positive outcomes of long-term treatment for individuals with SUDs and psychiatric disorders (Finello & Poulsen, 2012; Halkitis, 2009; Walker et al., 2009), policymakers are currently requiring that programs treating these individuals shift from a short-term, acute-care approach to a long-term, comprehensive-care approach (McLellan et al., 2006; Xie et al., 2010**)**. From 2005 to 2009, the number of long-term treatment facilities providing a comprehensive mix of both SUD and psychiatric treatment services increased 114%, while the number of short-term facilities providing either SUD or psychiatric treatment services alone decreased approximately 5% and 15%, respectively (N-SSATS, 2009). With this increase in the number of facilities combining long-term SUD and psychiatric treatment, researchers have been able to focus more attention on studying and developing effective treatments for reducing the symptoms of the complex issues facing consumers (Choi & Ryan, 2006; Clark, 2008; Dennis, Chan, & Funk, 2006; Funn, & Woodruff, 2011; Herrenkohl et al., 2012; Kemp et al., 2007; Myers, Brown, Tate, Abrantes, & Tomlinson, 2001; Savidge & Stein, 2012).

One area of study has been the development and design of SUD and psychiatric assessment tools (Buckley & Meyer, 2009; Swendsen, Conway, Degenhardt, et al., 2010). Cacciola and colleagues (2011) recommend using a variety of them to diagnose complex issues and develop treatment plans. However, there has been little agreement among researchers about which of consumers' critical issues should be prioritized in treatment (Feinstein et al., 2012; Greenberg & Rosenheck, 2005; Grella et al., 2009; Harris, Humphreys, & Finney, 2007). Recently, using

needs assessments from consumers and clinicians, Craig and colleagues (2008) and French and Drummond (2005) concluded that the three most important areas to explore are level of alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment status. Several other researchers have also demonstrated the treatment importance of these five critical variables (Choi & Ryan, 2006; Harris, Humphreys, Bowe, Tiet, & Finney, 2010; Savidge& Stein, 2012). The following sections describe these variables.

**Level of Alcohol Use, Drug Use, and Psychiatric Issues**

Many treatments are focused on reducing consumers' levels of the first three critical variables, alcohol use, drug use, and psychiatric symptoms (Connor et al., 2009; Curran, Sullivan, Williams, et al., 2008). While clinicians may simplify diagnosis by focusing on one disorder, consumers often exhibit multiple symptoms that create complex challenges (Funn & Woodruff, 2011). The use of addictive substances can interfere with individuals' brain development, increase their physical and psychiatric risks, and negatively influence their physical and psychiatric health (Feinstein et al., 2012). Johns and colleagues (2004) found that alcohol use disorders (e.g., alcohol abuse and dependence) are common among individuals with psychiatric disorders. Likewise, Pentz and Riggs (2013) reported that drug use is associated with physical, psychosocial, and cognitive-functioning effects and predicts alcohol use issues, SUDs, and depressive and other psychiatric disorders.

Moreover, individuals with psychiatric disorders (e.g., depression, anxiety, post-traumatic stress disorder) have a tendency to use addictive substances (Connor et al., 2009), thereby increasing the risk that consumers with psychiatric disorders are also abusing alcohol and drugs (Addington & Addington, 2007; Sheidow et al., 2012). Studies have identified this pattern in consumers who have psychiatric disorders and alcohol use problems (Schuckit, 2009), drug use

problems (McCutcheon, Heath, Edenberg, et al., 2009), and substance use problems (Brook et al., 2010).

A common finding in these studies is that individuals who are first diagnosed with SUDs or a psychiatric disorder will eventually be diagnosed as having co-occurring disorders (Sheidow et al., 2012). For example, Drake and colleagues (2007) found that over 50% of those with SUDs are also diagnosed with psychiatric disorders. Similarly, Addington and Addington (2007) found that over 40% of those with psychiatric disorders are also diagnosed with alcohol use disorders. Clearly, co-occurring disorders are common among consumers diagnosed with either SUDs (Connor et al., 2009) or psychiatric issues (Sheidow et al., 2012). Therefore, many studies have found comorbidity based on the co-existence of substance use and psychiatric disorders (Addington & Addington, 2007; Corso, Finkelstein, Miller, Fiebelkorn, & Zaloshnja, 2006; Curran et al., 2008).

In order to reduce the symptoms of consumers' co-occurring disorders, clinicians and researchers have developed various treatments (Drake, Mueser, Clark, & Wallach, 1996; Martino et al., 2006; SAMHSA, 2010). According to the U.S. Department of Health and Human Services (2006), the most common treatment processes for consumers consist of (1) screening for substance abuse and psychiatric issues; (2) assessing for symptoms or issues related to SUD and psychiatric issues, including functional assessment; and (3) treatment planning for reducing consumers' symptoms. Using these three processes, the probability of successfully reaching treatment goals (e.g., reducing severity of consumers' alcohol use, drug use, and psychiatric issues) will be maximized (Hawkins, 2009). When evaluating the effectiveness of treatment plans, researchers should examine the difference in these issues before and after treatment (Baker et al., 2012; Barrowclough, Haddock, Wykes, et al., 2010). Thus, consumers' levels of alcohol

use, drug use, and psychiatric issues are not only treatment concerns, but also key criteria by which to evaluate treatment effectiveness (Hawkins, 2009).

**Treatment Participation Rate**

The fourth critical variable is treatment participation rate (Fung et al., 2008). Consumers who have poor attendance or who drop out of treatment are more likely to have poor treatment outcomes (Hatzenbuehler, Corbin, & Fromme, 2011). For over three decades, clinicians have observed that a low treatment participation rate is related to a high treatment dropout rate (Hser et al., 2004; Klesges, Brown, Pascale, Murphy, Williams, & Cigrang, 1988; Maes & Schlosser, 1988; Neumann & Hare, 2008; Stanton & Shadish, 1997). A high rate of treatment participation is almost a prerequisite for completing treatment and directly influences treatment outcomes (Garnick, Lee, Horgan, et al., 2009). Chisolm and colleagues (2013) confirmed this finding, noting that when attendance in treatment is below 40%, consumers are less likely to recover from SUDs and psychiatric disorders in treatment. Higher attendance rates are associated with better treatment outcomes (Simpson, Joe, & Rawan-Szal, 1997; Slesnick, Erdem, Collins, Bantchevska, & Katafizsz, 2011). When there is a low participation rate, clinicians do not expect positive treatment outcomes (Ferguson & Xie, 2012; Tuten et al., 2012).

Treatment participation rate significantly predicts treatment outcome (Evans et al., 2009; Myers et al., 2001; Neighbors, Barnett, Rohsenow, Colby, & Monti, 2010). For example, Richardson and Abraham (2012) found a significant negative relationship between consumers' participation rate during treatment and alcohol-dependence level after treatment. Consumers with higher treatment participation rates tend to show lower levels of alcohol consumption and other drug use after being discharged (Atherton, 2011; Grella et al., 2009; Reif, Horgan, Ritter, & Tompkins, 2004; Turan & Yargic, 2012). Likewise, Defife and colleagues (2010) found a

negative relationship between consumers' treatment participation rate and their level of psychiatric symptoms after treatment.

In addition, many researchers have suggested that increasing treatment participation is an effective strategy to increase positive treatment outcomes: reducing drug use issues (Vong et al., 2011); reducing cognitive impairment (Aharonovich, Hasin, Brooks, Lui, Bisaga, &Nunes, 2006); and increasing the treatment completion rate (Drapalski et al., 2011). Likewise, Hubbard and colleagues (2003) found that superior treatment outcomes (such as improved abstinence) are preceded by high treatment participation rates. From another perspective, Rohde and colleagues (2012) found that low treatment participation is closely associated with negative treatment outcomes, e.g., low self-esteem level and high alcohol use level after treatment. In summary, it would appear that developing strategies to increase participation rate is critical for improving treatment effects.

**Employment Status**

Although often ignored by conventional treatment evaluation criteria (e.g., level of alcohol use, drug use, and psychiatric issues), the fifth critical variable, consumers' post-treatment employment status, is an important outcome by which to evaluate treatment effectiveness (Hogue et al., 2010). When consumers are employed, they (1) become economically independent, (2) reintegrate into society, (3) gain self-esteem and form a positive self-image, and (4) are healthier (Mcintosh, Bloor, & Robertson, 2008). Despite these obvious benefits to consumers and society at large, recent national studies have shown that unemployment or underemployment is a chronic problem for individuals with SUDs and psychiatric issues (Erickson et al., 2008; Hogue et al, 2010; Hubbard et al., 2003; SAMHSA, 2009). Specifically, Hubbard and colleagues (2003) reported that the average employment rate of those with SUDs is approximately half that

of those without SUDs. Some researchers find even worse results. For example, a national study done by the Substance Abuse and Mental Health Services Administration Office (2008) found that only 31% of individuals with SUDs were employed versus 80% of those with no such disorder. Therefore, the U.S. government has developed assistance programs to encourage consumers' employment and increase job opportunities for them (Bond, Drake, & Becker, 2012; Burns, Catty, White, et al., 2009; Drake & Bond, 2008; Hefferman & Pilkington, 2011).

While U.S. government welfare reforms and other interventions have shown some benefits, consumers' unemployment and underemployment remain serious issues (Baldwin et al., 2010). Employers are afraid to hire these types of workers because of the stigma of SUDs and psychiatric disorders, but even when they do, their innate bias against consumers makes them likely to treat these workers differently from others in the workplace, and this discrimination from employers significantly influences the rate of consumers' job loss (Hogue et al., 2010). Indeed, Baldwin and colleagues (2010) found that the job loss rate of consumers is 15% higher than that of those without disorders.

In order to explore the influences of consumers' issues on employment, researchers have attempted to find relationships that describe the association between consumers' problematic personal issues and work failure (Biegel et al., 2010; Bush, Drake, Xie, McHugo, Haslett, 2009; Frounfelker, Wilkniss, Bond, Devitt, & Drake, 2011; Sampson & Laub, 1993). For example, there is a significant relationship between consumers' severity level of substance abuse (Arndt et al., 2004; Atherton, 2011) and psychiatric symptoms (Highhouse et al., 2010; Xie et al., 2010) and their employment status. Because issue severity influences employment status, consumers with less overwhelming issues are more employable than those struggling with a multitude of severe problems (Baker et al., 2006). Likewise, compared with unemployed consumers,

employed consumers have lower levels of substance abuse issues (Arndt et al., 2004) and psychiatric issues (Hanlon et al., 2000; Messina, Wish, & Nemes, 2000).

After reviewing study results from the mid-1990s, McHugo and colleagues (2012) concluded that having a job after completing treatment is a critical variable with which to predict treatment success and social integration into the workplace. SAMHSA (2009) reported that employed consumers have a more positive attitude toward work and greater life satisfaction level compared with unemployed consumers. Clearly, employment status is a key predictor of treatment success, and improving employability should be a primary goal of treatment (Luchansky, Brown, Longhi, Stark, & Krupski, 2000).

In conclusion, based on the literature, the five variables discussed in this section (i.e., levels of alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment status) are central to the complex set of issues consumers face (Craig et al., 2008; Montgomery et al., 2013). These critical variables also influence the design and assessment of comprehensive long-term treatment services (Baker et al., 2006; Xie et al., 2010), and are key criteria with which to evaluate treatment effects—the 'outcome constructs' of ecological theory (French & Drummond, 2005; Highhouse et al., 2010; Ketter et al., 2008).

Using ecological theory to integrate these variables, researchers can develop strategies and interventions that aim to (1) increase alcohol and drug abstinence and reduce psychiatric symptoms; (2) improve treatment participation; and (3) help consumers secure employment (Atherton, 2011; Highhouse et al., 2010; Xie et al., 2010). In various treatment settings, vocational counseling services have been shown not only to increase employability, but also to increase consumers' treatment participation rate (Kang, Magura, Blankerts, Madison, & Spinelli, 2006; Xie et al., 2010; Silverman et al., 2007).

## Vocational Counseling Services for Those with SUDs and Psychiatric Disorders

Historically, a wide variety of treatment services for consumers with SUDs and psychiatric disorders have been utilized. Standard treatment comprises a variety of interventions designed to improve physical and mental health (Baker et al., 2012; Magura et al., 2004). The five most frequently used treatment services offered in what is considered standard treatment are comprehensive substance abuse counseling (96%), relapse prevention (87%), cognitive-behavioral therapy (CBT; 66%), 12-step facilitation (56%), and motivational interviewing (MI; 55%) (SAMHSA, 2009). These percentages add up to more than 100% because many facilities currently use multiple treatment approaches to increase the probability of positive outcomes (Becker et al., 2005; Calsyn et al., 2005; Staring et al., 2010).

In the mid-1990s, researchers working in the treatment of SUDs and psychiatric disorders began to study strategies to reduce the complex web of issues consumers face and increase their employment rate (Drake & Wallach, 2000; Erickson et al., 2008; Hogue et al., 2010; Hubbard et al., 2003; Sampson & Laub, 1993), and many of these studies emphasized the use of long-term and holistic perspectives like ecological theory and life course theory to design more effective comprehensive services for them.

In a recent longitudinal study, Rogers and colleagues (2011) found that consumers' lack of job readiness and vocational skills are critical barriers to participation in the workforce. To address these deficits, other researchers advised that prior to entering the labor market, consumers should receive vocational counseling services, such as vocational assessment, employment interest and work aptitudes, job searching, resume development, and job interview preparation (Baldwin & Marcus, 2007; Baldwin et al., 2010; French & Drummond, 2005; Highhouse et al., 2010). Vocational counseling services have been shown to produce significant

benefits. For example, these services increase consumers' motivation level to seek treatment (Biegel et al., 2010), facilitate employability (Rosenheck, Leslie, Keefe, et al., 2006), and improve quality of life (Xie et al., 2010). Many researchers have argued for providing vocational counseling services along with standard care because the benefits of increasing consumers' level of job readiness and employability are clear (Baker et al., 2006; French & Drummond, 2005; Grella et al., 2009; Kemp et al., 2007; Richardson et al., 2012; Sligar & Toriello, 2007).

Continuing this line of research, Biegel and colleagues (2010) showed that when consumers received simultaneous standard treatment and vocational counseling services, they experienced decreased alcohol use, drug use, and psychiatric symptoms; increased work skills; and improved life satisfaction. Likewise, Magura and colleagues (2004) reported that providing vocational counseling services encouraged consumers' recovery and participation in standard treatment. That is, requiring vocational counseling services along with standard treatment facilitated consumers' recovery outcomes (e.g., abstinence from drug use and decrease in violent behaviors) and social integration in the workplace.

When they successfully complete vocational training, consumers gain high self-esteem and form a positive self-image. As they build these positive attitudes, consumers put more effort into the standard treatment they are receiving, thereby experiencing reductions in their substance abuse and psychiatric symptoms (Mcintosh et al., 2008). When consumers recover from substance abuse and psychiatric problems, they are more equipped to find a job and perform work (Magura et al., 2004). Moreover, during vocational training, consumers can visualize earning money and increasing self-esteem, which facilitates thoughts about being economically independent and increases the level of life satisfaction (Arndt et al., 2004).

Thus, many researchers have recommended vocational counseling services as beneficial to consumers (Biegel et al., 2010; Highhouse et al., 2010; Mcintosh et al., 2008; Sigurdsson et al., 2011). Although combining standard treatment with vocational counseling services has been shown to be effective, however, there remain barriers to this line of research (Atherton, 2011; Baker et al., 2012; Highhouse et al., 2010; Xie et al., 2010).

**Barriers to Concurrent SUD/Psychiatric and Vocational Counseling Services**

Although there is a strong case to be made for integrating vocational counseling services into standard treatment, this change has not occurred. One reason is that researchers have focused their energies on trying to optimize standard treatment to reduce consumers' substance abuse and psychiatric issues and neglected to study alternatives that include vocational counseling services (Baker et al., 2012; Staines et al., 2005). A second reason is that substance abuse theorists are unfamiliar with vocational counseling theory and its influences on treatment strategy.

To understand the first reason for the lack of integration, the focus on SUD research within the parameters of standard care that excludes concurrent vocational counseling services, some history is helpful. To begin, outcome measurement of SUDs and psychiatric disorder treatments has become an important research and policy issue (Arndt et al., 2004). Since the mid-1980s, evidence-based practices have focused on improving treatment outcomes by emphasizing substance abuse and psychiatric issues (Arndt et al., 2004; Carey, 1996; Drake et al., 2008; Schuckit, 2009). Most clinicians and researchers believe that standard treatment offers the most effective methods to facilitate consumers' recovery and social integration (Staines et al., 2005). Likewise, researchers studying the effects of standard treatment have targeted abstinence from substance abuse and reduction of psychiatric issues as treatment goals (Silverman, Svikis, Wong,

et al., 2002). Employment as a targeted outcome has rarely been integrated into research on standard treatment (Magura et al., 2004).

When examining treatment outcomes, many researchers have found that standard treatment does indeed improve physical and mental health (Baker et al., 2012; Barrowclough et al., 2010; Drake et al., 2008; Hanlon et al., 2000; Messina, Wish, & Nemes, 2000; Moggi, Ouimette, Finney, & Moos, 1999; Arndt et al., 2004; Schuckit, 2009). Some studies have also found that standard treatment increases consumers' employability and employment rate after discharge (Arndt et al., 2004; Messina, Wish, & Nemes, 2000). In their survey of consumers who had completed standard treatment, Arndt and colleagues (2004) found that people who had achieved abstinence or significantly reduced their substance use showed higher employment rates than people who had not. Based on these studies, the efficacy of standard treatment alone in reducing consumers' substance abuse and psychiatric issues could thereby improve employment rates.

According to McHugo and colleagues (2012), however, standard treatment alone has yielded inconsistent employment outcomes. Although some studies have found improved employment outcomes after completion of standard treatments, others found no significant effects (Butler, Chiauzzi, Thum, & Budman, 2004; Grella et al., 2009; Magura et al., 2004). These accumulating inconsistent research outcomes have led researchers to believe that standard treatments are effective at influencing consumers' substance abuse and psychiatric issues, but not employment outcomes (Magura et al., 2004), leading researchers to exclude employment as a study outcome when examining standard treatment. Moreover, Morgenstern and colleagues (2009) have shown that researchers consider vocational counseling services not as primary, but as complementary treatments. That is, vocational counseling services are optional treatment to be offered after standard treatment has been completed; it is only after consumers have significantly

addressed their SUDs and psychiatric issues that they can profitably decide to enroll in vocational counseling services or employment programs.

Moreover, Baldwin and colleagues (2010) indicated that because consumers' substance abuse and psychiatric issues significantly influence physical, psychosocial, and cognitive functioning related to work attitude and productivity, employers are reluctant to hire consumers. Based on employers' perspective, Jacob and colleagues (2012) pointed out that consumers' level of substance abuse and psychiatric issues are critical variables that block new employment and return-to-work. Therefore, clinicians have focused on abstinence and reduction of psychiatric issues to address employers' concerns (Hefferman & Pilkington, 2011), and most researchers and clinicians have designed, provided, and evaluated standard treatments preferentially for over four decades (Hubbard, Craddock, Flynn, Andersen, & Etheridge, 1997; Platt, 1995; Arndt, 2004; Schuckit, 2009).

In addressing the second reason behind the lack of integration of vocational services into standard care, that substance abuse theorists are unfamiliar with vocational counseling theory and its influences on treatment strategy, it must be admitted that strategies based on vocational counseling theory have not been used with standard treatment. Although descriptions of various vocational interventions have been published, there have been few longitudinal studies investigating empirically driven vocational counseling services for populations with SUDs and psychiatric disorders (Atherton, 2011). Because of this lack of information, researchers have had difficulty identifying successful vocational interventions for these consumers (Rogers & MacDonald-Wilson, 2011). To complicate matters, the criteria by which successful treatment outcomes have been measured are very diverse and difficult to compare (Magura et al., 2004). Some of these criteria for evaluating treatment outcomes include (1) a number of working hours

(e.g., in a day or a week); (2) income level (e.g., earnings per hour or week); (3) duration of employment (e.g., less or more than 6 months); and (4) the time from program discharge to some form of employment (e.g., employed at discharge, at 30 days, or at 60 days). Consumers' performance and status with respect to these differing criteria no doubt influence the variability of treatment outcomes.

Because of the logistical difficulties in conducting longitudinal vocational-outcomes studies in this population, few have been conducted (Killackey, Jackson, & McGorry, 2008). Moreover, vocational counseling services for this population are contingent on receiving funds to conduct the programs. Hence, if the appropriate budget is secured, services are provided, but if not, no services are provided. Because of inconsistent funding, the evaluation of these services is sporadic and unpredictable.

While there are many barriers to the empirical research needed to develop vocational counseling theory–based interventions, Moos (2007) has argued that developing theory-based strategies are essential to help clinicians who provide services to consumers. In addition, clinicians need to understand the basic tenets of counseling—such as who is to receive treatment services, what services are provided, and how to provide those services (Colby, Hecht, Miller-Day, et al., 2013). Highhouse and colleagues (2010) have insisted that all treatments should be grounded in appropriate theories in order to create and refine interventions with consumers and improve treatment methodologies for clinicians.

When developing a vocational counseling theory–based treatment, the internal and external forces influencing consumers should be considered (Henderson, 2011). Vocational researchers have examined these forces through the lens of structured behavioral theory (Alloy, Bender, Wagner, et al., 2009), life course perspective (Atherton, 2011), holistic perspective (Dass-

Brailsford, 2007), and ecological theory (Lee & Park, 2007), the theory in which the current study is grounded.

Szymanski and Hershenson (2005) developed ecological theory to focus simultaneously on consumers' internal (individual) and external (environmental) characteristics. Because ecological theory emphasizes principles related to vocational issues, it has been used to design and evaluate programs that help people return to work after traumatic events (Lee & Park, 2007). As noted above, up to this point, ecological theory has not been applied to the treatment of consumers with SUDs and psychiatric disorders, even though it has shown itself helpful in identifying consumers' internal and external problems, exploring treatment needs, developing treatment plans, and evaluating treatment outcomes (Stauffer et al., 2012). Because of its comprehensive nature, ecological theory could be useful in developing broadly applicable vocational strategies to augment existing standard treatment approaches that ignore vocational considerations. The next section describes how the relationships between the critical variables can be examined to address limitations in current standard treatment and apparent gaps in the literature.

## Relationships between Critical Variables

Many variables have been explored and evaluated to determine the appropriate outcomes for measuring best practices in substance abuse and psychiatric treatment. When developing goals, evaluating outcomes, and examining effectiveness of services, increasing numbers of rehabilitation researchers and clinicians have focused on the five critical variables on which this study will focus: level of alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment (Craig et al., 2008; Funn & Woodruff, 2011; Hatzenbuehler et al., 2011; Woodford et al., 2012). In the database of the National Institutes of Health's National Library of Medicine (PubMed) in 2013, there are approximately 3,000 articles documenting the importance

of these critical variables in treatment. The majority of the articles related to studies focused on finding and examining treatment effectiveness. For example, one such article describes how by comparing baseline and post-treatment levels of drug use, alcohol use, and psychiatric issues, Grella and colleagues (2009) were able to determine how standard treatment influenced consumers' issues. Likewise, by examining the different rates of consumers' treatment participation, Tonigan and colleagues (2010) were able to determine the influence of CBT and MI interventions on consumers' issues. After observing how concurrent vocational counseling services influenced post-treatment employment status, Xie and colleagues (2010) recommended that these services should be used more frequently to enhance consumers' employability.

The relationships between some of these critical variables have already been examined, and the following studies have yielded significant evidence for (1) a negative relationship between alcohol use level and treatment participation rate (Kelly, Stout, Zywiak, & Schneider, 2006); (2) a positive relationship between drug use and psychiatric issue level (Latkin, Curry, Hua, & Davey, 2007); (3) a negative relationship between substance abuse level and employment rate (Evans et al., 2009); and (4) a negative relationship between psychiatric problems and employment status (Funn & Woodruff , 2011).

Various statistical methods have been used to examine treatment effectiveness and the relationship between critical variables (Brook et al., 2010; Connor et al., 2009; Curran et al., 2008; Horsfall et al., 2009). Baker and colleagues (2012) describe researchers' use of *t*-test, correlation, and simple regression analyses to measure changes in and relationships between the critical variables. The matched pairs *t*-test analysis is a statistical test used to determine if there is a significant difference between pre- and post-treatment measurements (Martel, Pierce, Nigg, et al., 2009). While correlation analysis can be applied to examine the variation in one variable

using the variation in another, this technique does not establish the best model to find the comprehensive relationships in the collected data (Funn & Woodruff, 2011). With simple regression analysis, researchers attempt to determine how well one or more variables predict the outcome variables (Woodford et al., 2012). In summary, with these statistical methods, researchers are able to examine simple relationships that can help explain the different outcomes of critical variables that different treatment protocols yield (Baker et al., 2012).

To understand consumers' issues and develop effective treatment plans, however, clinicians and researchers must understand the comprehensive relationships between critical variables (Funn & Woodruff, 2011). Kwon and colleagues (2010) emphasize the need to explain the comprehensive relationships between critical variables in order to provide best practices for consumers receiving services. In order to find the best-fitted model and determine the strength of relationships between variables, the *t*-test, correlation, and regression analyses discussed above are inadequate (Ferguson & Xie, 2012). Instead, to develop and examine the model that best fits collected data, researchers frequently apply structural equation modeling (SEM) and multiple regression statistical procedures (Brodish, Cogburn, Fuller-Rowell, et al., 2011; Ferguson & Xie, 2012; Fowler, Toro, & Miles, 2009; Meade, Kershaw, Hansen, & Sikkema, 2009; Woodford et al., 2012).

To find studies that have examined the reciprocal relationships between the critical variables using these statistical procedures, a PubMed search was done using the keywords and phrases *substance abuse, alcohol use, drug use, psychiatric issues, treatment participation rate, employment rate, structural equation model (SEM),* and *multiple regression.* Table 1 lists the studies yielded by the search and the significant results for the following eight relationships between critical variables:

*(1) A positive relationship between alcohol use and drug use:* As consumers' alcohol consumption increases, drug use issues also increase (Hatzenbuehler et al., 2011; Woodford et al., 2012; Schuckit, et al., 2005).

*(2) A positive relationship between alcohol use and psychiatric issues:* As consumers' alcohol consumption increases, psychiatric issues also increase (Meade et al., 2009; Neumann & Hare, 2008).

*(3) A positive relationship between drug use and psychiatric issues:* As consumers' drug use issues increase, their levels of fear and mistrust about their neighbors also increase (Latkin et al., 2007).

*(4) A negative relationship between alcohol use issues and treatment participation rate*: As the level of consumers' alcohol use issues decreases, treatment participation rate increases (Hser et al., 2004; Kelly et al., 2006).

*(5) A negative relationship between drug use issues and treatment participation rate:* As treatment participation rate increases, the level of drug use issues decreases (Huebner & Cobbina, 2007).

(*6) A negative relationship between substance abuse and employment rate:* As consumers' substance abuse level increases, their employment rate decreases (Evans et al., 2009).

*(7) A negative relationship between psychiatric issues and employment rate:* As consumers' level of psychiatric issues decreases, their employment rate increases (Kwon et al., 2010).

*(8) A positive relationship between treatment participation rate and employment rate:* As consumers' treatment participation rate increases, their employment rate increases (McKay, 2009).

Some researchers have begun to explore the interdependence of these critical variables by including a third variable in their analyses. Hser and colleagues (2005) found that alcohol use issues, drug use issues, and treatment participation rate influence each other. Consumers with high alcohol use or drug use issues were expected to have lower treatment participation rates and higher attrition rates. Likewise, other researchers examining three variables simultaneously found that substance abuse, psychiatric issues, and employment status influenced each other. Consumers with higher levels of substance abuse or psychiatric issues participating in treatment were less likely to be employed than those with lower levels (Evans et al., 2009; Kwon et al., 2010). These studies seem to support the idea that strong direct and indirect relationships exist between the five critical variables, and provide the foundation for our examination of the relationships between the level of consumers' alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment.

Table 1

*Studies Finding Significant Reciprocal Relationships between Critical Variables Using SEM and Regression Analysis*

| Authors (pub. date) | gnificant relationship findings | Analysis method | No. of variables | N |
|---|---|---|---|---|
| McKay et al. (2004) | Treatment participation rate & employment rate | Least-squares regression | Two | 504 |
| Schuckit, Smith, Danko, et al. (2005) | Alcohol & drug use | SEM | Two | 238 |
| Kelly et al. (2006) | Treatment participation rate & alcohol use | Robust regression | Two | 227 |
| Huebner &Cobbina (2007) | Drug use & treatment participation rate | Logistic regression | Two | 3,017 |
| Latkin et al. (2007) | Psychiatric issue & drug use | SEM | Two | 838 |
| Neumann & Hare (2008) | Alcohol use & psychiatric issues | SEM | Two | 514 |
| Meade et al. (2009) | Psychiatric issues & drug use | SEM | Two | 152 |
| Hatzenbuehler et al. (2011) | Alcohol use, drug use, & coping skills[a] | SEM | Two | 1,539 |
| Woodford et al. (2012) | Alcohol & drug use | Logistic regression | Two | 2,497 |
| Hser et al. (2004) | Alcohol issues, drug use issues, & treatment participation rate | SEM | Three | 1,939 |
| Evans et al. (2009) | Substance abuse, psychiatric issues, & employment status | Logistic regression | Three | 926 |
| Kwon et al. (2010) | Alcohol issues, psychiatric issues, & employment rate | SEM | Three | 5,420 |
| Funn & Woodruff (2011) | Employment status, psychiatric problems, & income level[a] | Logistic regression | Three | 1,369 |

*Note.* SEM= structural equation modeling. [a]Not a critical variable

## Examining the Complex Relationships between Critical Variables

Although several researchers have begun exploring the complex relationships between critical variables (Xie et al., 2010), there are few studies that have examined causality in them (Hawkins, 2009; Petry, 2007). The majority of the 3,000 articles in PubMed documenting the importance of these five variables in treatment examined and found the unidirectional and simple

relationships between two variables in treatment (Clark, 2008; Funn, & Woodruff, 2011; Herrenkohl et al., 2012; Kemp et al., 2007; Savidge & Stein, 2012). Specifically, we understand the clear relationships between consumers' treatment participation rate and alcohol use (Kwon et al., 2010); drug use (Neumann & Hare, 2008); psychiatric issues (Funn & Woodruff, 2011); and employment rate (Dauber et al., 2010). However, increasing numbers of researchers are arguing for the use of more sophisticated statistical procedures to better understand the complexities of these relationships (Baker et al., 2012; Ferguson & Xie, 2012; Funn & Woodruff, 2011; Hatzenbuehler et al., 2011; Marmorstein, White, Loeber, & Stouthamer-Loeber, 2010; Meade et al., 2009; Woodford et al., 2012).

Some researchers have helped consumers to improve their lives by developing and implementing SUDs treatment strategies and providing psychiatric treatment services (Grella et al., 2009; Tonigan et al., 2010; Xie et al., 2010). Consumers who completed these comprehensive services decreased their alcohol use, drug use, and psychiatric issues, and improved their employment rate (French & Drummond, 2005). While researchers have assumed strong comprehensive relationships between these critical variables and a relationship between them and the variable of treatment participation rate, as of this date no studies have been done to examine the comprehensive direct and indirect relationships between critical variables. Hawkins (2009) indicated that because at this point researchers only recognize the partial effects of treatment on consumers' issues without understanding the whole process of relationships, studies analyzing these comprehensive relationships must be conducted.

The next step in this line of research is to use path analysis and SEM to study the influence of the complex relationships between consumers' issues, treatment participation rate, and employment. Ideally, this type of study would evaluate (1) the relationships between consumers'

issues and treatment participation rate, and (2) the mediating effect of consumers' treatment participation rate on the outcome of employment status. By gaining information about the mediating effects of treatment participation on consumers' issues, researchers and consumers would be better able to predict treatment outcomes (Conduit et al., 2004; Defife et al., 2010; Lacy et al., 2004).

Several researchers have noted the need to examine the mediating effect of treatment participation rate on employment (Baker et al., 2012; Biegel et al., 2010; Huang, Evans, Hara, Weiss, & Hser, 2011), which is this study's second research question. If a comprehensive relationship between all five critical variables is confirmed, researchers and clinicians could focus on providing comprehensive treatment services with a vocational counseling component to not only reduce consumers' issues but also increase participation rate and thus optimize treatment outcomes. When researchers understand the complexity of the relationships between the critical variables, they may come to realize that examining simple unidirectional relationships is insufficient. In addition, by exploring the relationships between critical variables, researchers and clinicians will be able to develop more comprehensive treatment models that incorporate more effective strategies and treatment services to reduce various consumers' issues, in turn influencing treatment outcomes. Based on these study outcomes, it seems that strong relationships have been found between critical variables. In this study, two models were developed in order to find relationships between critical variables (*Figure 1* and *2*). The initial measurement model specifies seven pathways and the respecified measurement model specifies four pathways.

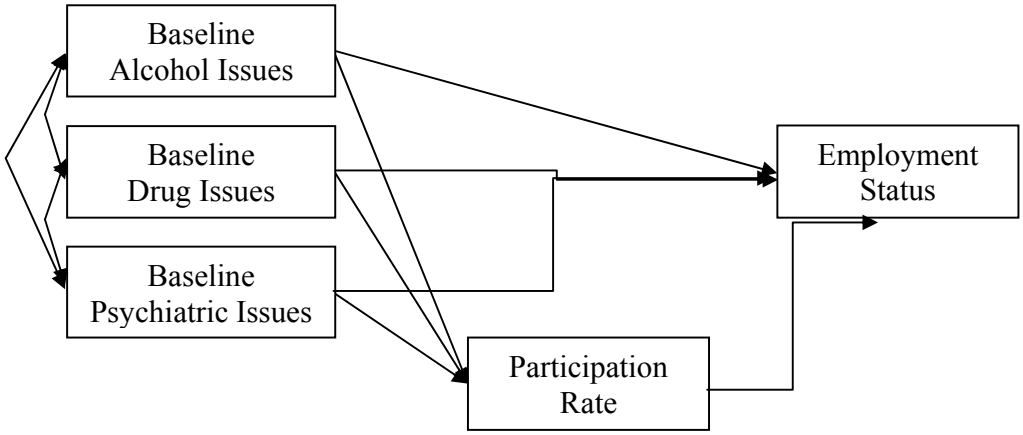


*Figure 1*. Initial measurement model.

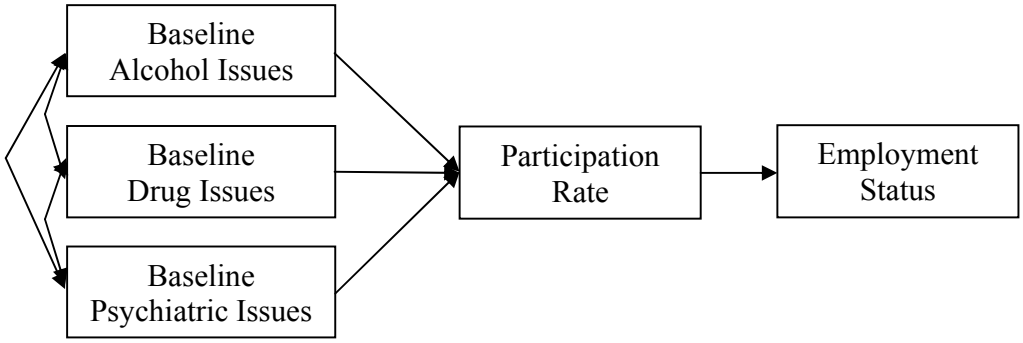


*Figure 2.* Respecified measurement model.

## Chapter Summary

There are various interventions for individuals with SUDs and psychiatric disorders (e.g., comprehensive substance abuse counseling, relapse prevention, 12-step facilitation, CBT, and MI) that comprise what is widely accepted as standard treatment for consumers with SUDs and psychiatric disorders (Frounfelker et al., 2011). In addition, many studies have confirmed that vocational counseling services are useful to increase employability in this population (Atherton, 2011; Grella et al., 2009; Silverman et al., 2007; Xie et al., 2010) and to facilitate participation in the workforce (Highhouse et al., 2010; Kang et al., 2006). Although there is a strong need to integrate vocational counseling services into standard treatment strategies, this change has not

occurred for two reasons: (1) researchers have neglected to incorporate study of what they view as supplemental treatment into their study of standard treatment; and (2) substance abuse theorists are unfamiliar with vocational counseling theory. Therefore, more studies exploring the effectiveness of the concurrent provision of vocational counseling services with standard treatment are required to expand their use in the treatment of SUDs (Hong et al., 2011) and psychiatric disorders (Highhouse et al., 2010).

To address researchers' growing interest in understanding consumers' complex challenges and designing effective strategies to increase treatment participation rate and employment rate (Kemp et al., 2007), this study explores some of the relationships and mediating effects between five critical variables. By designing a model and analyzing the complex relationships between these variables, I explore pathways to determine how consumers' issues, treatment participation, and employment interact with and influence each other (Barrowclough et al., 2001; Laudet & White, 2010; Richardson et al., 2012). This study's results provide useful suggestions for changes in treatment strategies to improve treatment outcomes. The following chapter will introduce the study's methodology by describing the study's research design, population, and procedure.

# CHAPTER 3: METHODS

This chapter describes the methodological approach that Iapplied in a retrospective study of unemployed and underemployed consumers in a substance abuse intensive outpatient program (SAIOP) based on vocational counseling services, using archival data collected from October 1, 2007, to July 30, 2010. This chapter explains the research questions and hypotheses, rationale for the research design, and methods of statistical analysis. Next, the study population, sample, and sampling procedures, study procedures, and instrumentation are described. The final section of the chapter addresses the ethical considerations examined in order to conduct this evaluation.

## Research Questions and Hypotheses

The purpose of this study was to examine the effects of a long-term SAIOP based on vocational counseling services on the severity of consumers' alcohol use, drug use, and psychiatric issues as measured by change from baseline and on their employment status. In addition, this study investigated the relationships and mediating effects between alcohol use, drug use, psychiatric issues, treatment participation rate, and employment, specifically whether treatment participation rate mediates the relationship between baseline levels of consumers' issues and 210-day post-baseline employment. The following are the research questions and hypotheses of the study:

***Research question 1***: Will there be significant changes from baseline in alcohol use, drug use, and psychiatric issue severity, as measured by the ASI-5, and in the employment rate for unemployed or underemployed consumers at 210 days at an SAIOP based on vocational counseling services?

***Hypothesis 1***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' alcohol issues will decrease.

***Hypothesis 2***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' drug issues will decrease.

***Hypothesis 3***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' psychiatric issues will decrease.

***Hypothesis 4***: At 210 days post-baseline in an SAIOP based on vocational counseling services, the percentage of consumers who are employed will increase.

***Research Question 2****:* In an SAIOP based on vocational counseling services, is the influence of participants' baseline ASI-5 severity of alcohol use, drug use, and psychiatric issues on 210-day employment status mediated by their treatment participation rate?

***Hypothesis 1***: The treatment participation rate will mediate the relationship between baseline alcohol use severity and employment status at 210 days.

***Hypothesis 2***: The treatment participation rate will mediate the relationship between baseline drug use severity and employment status at 210 days.

***Hypothesis 3***: The treatment participation rate will mediate the relationship between baseline psychiatric issue severity and employment status at 210 days.

## Archival Data and Definition of Variables

This was a retrospective study that used archival data from the case files of participants in Project Working Recovery (PWR), a vocational counseling services–based SAIOP. The data were collected over a 33-month period (from October 2007 to July 2010) by the SAIOP staff, graduate students from the East Carolina University Department of Addiction and Rehabilitation Studies. The staff entered data from the original forms and Access database into the SPSS release version 18.0.0 program (SPSS: An IBM Company, 2009). In addition to standard demographic information (e.g., age, marital status), this study used the following from the PWR database: (a)

ASI-5 composite scores for alcohol use, drug use, and psychiatric issue severity collected at baseline and 210 days; (b) treatment participation rate; and (c) employment at baseline and 210 days. A descriptive analysis was conducted to describe the participants.

**Definition of Variables**

In order to test the hypotheses delineated above, this study examined the following variables: severities of alcohol use, drug use, and psychiatric issues; treatment participation rate; and employment status.

*Alcohol use, drug use, and psychiatric issue severities:* Participants' alcohol use, drug use, and psychiatric issue composite scores were derived from their responses to ASI-5 items. These composite scores are calculated from data that reflect an individual's subjective report of his or her experiences over the past 30 days, and the scores on this scale range from 0 (not an issue) to 1 (severe issue) (Cacciola et al., 2011).

*Treatment participation rate*: The study calculated participants' treatment participation rate in the SAIOP's services using Fung et al.'s equation (2008): number of appointments kept / (number of appointment cancellations + number of no-shows + number of appointments kept). Treatment refers to psychosocial interventions conducted by a clinical staff member of the SAIOP, which included, but were not limited to, individual and group counseling exploring issues related to relapse prevention, barriers to employment, and motivation to change SUD behaviors and engage in employment-related activities (Atherton, 2011).

*Employment:* Participants' employment status is categorized unemployment, underemployment (0-30 hours/a week), and full-time employment (over 30 hours/a week).

*Critical Variables:* In this study, the term 'critical variables' refers to participants' alcohol use, drug use, and psychiatric issue severity levels; treatment participation rate; and employment status.

## Research Design

This study utilized a non-experimental, one-group pre-posttest design. This design has been widely used in the rehabilitation counseling field (Kirk, 2013; Reichardt, 2009). Because the study uses no counterpart group, this research design offers plausible hypotheses explaining the difference between the pre- and post-tests (Campbell & Stanley, 1963). Consumers in the PWR study population who consented to participate in the treatment efficacy study of the SAIOP were given the PWR Evaluation Survey (Appendix A) at intake (pretest) to assess baseline consumer issue levels and employment status. In consultation with PWR staff, individuals agreed to treatment plans composed of the SAIOP's offerings, which included SUD, psychiatric, and vocational interventions (e.g., diagnostic, assessment, individual counseling, family counseling, group support, relapse prevention, stress management, and work management).Posttest measures of consumer issues and employment were assessed after study participants filled out the PWR Evaluation Survey at 210 days post-baseline. If the pretest and posttest consumer issue composite scores and employment rate were different, then the difference could be explained by the SAIOP treatment.

In the one-group pre-posttest design, there are inherent threats to internal validity. To begin, there are two issues that cannot be controlled. The first is *history* (the events may have occurred by time passed). During the period between baseline and treatment outcome assessments, a consumer might experience a natural disaster such as a hurricane, or a car accident, or a change of bus routes. These events might influence consumers' participation in treatment. The other

issue is *maturation* (the biological or psychological changes measured may have occurred on their own, without treatment, due to the passage of time and external events) (Reichardt, 2009). During the period between baseline and outcome assessments, a consumer may experience biological or psychosocial issues related to substance use that could compromise or influence their treatment participation. Any interpretation of a study's treatment effects must take into account these potential threats to internal validity. Thus, this non-experimental design helps ensure that the difference of pre and posttest is caused by the intervention effects (Campbell & Stanley, 1963; Kirk, 2013).

The first research question explored the effectiveness of an SAIOP based around vocational counseling services using two statistical procedures: (1) The paired *t*-test was applied to examine the difference in study participants' alcohol use, drug use, and psychiatric issues as measured by the ASI-5 before and after 210 days of treatment; and (2) a two-by-two crosstab analysis (McNemar's test) comparing employment status (unemployed, employed) by period (baseline, 210 days post-baseline) was used to examine the changes in participants' employment rate.

The second research question examined relationships and mediating effects using Spearman's correlation and SEM with maximum-likelihood parameter estimation. Using these modeling techniques, the study explored the mediating effect of treatment participation rate on the comprehensive relationships between severity of alcohol use, drug use, and psychiatric issues and employment status. In order to test the mediating effect of treatment participation rate, two criteria must be satisfied (MacKinnon, Krull, & Lockwood, 2000): the independent variable must predict the mediator, and the mediator must predict the dependent variable. These variables were evaluated simultaneously using SEM to answer the second research question.

## Population

The population for this study was a group of consumers who received concurrent substance abuse treatment and vocational counseling services from PWR, an SAIOP in the Department of Rehabilitation Studies at East Carolina University, from October 1, 2007, through July30, 2010. To be eligible for the PWR study, participants were required to present with issue severity indicating need for treatment that met the intensive-outpatient level criteria of the American Society of Addiction Medicine, and to be medically and psychiatrically stable at time of enrollment. Additional screening criteria for entrance to this SAIOP were (1) age of at least 18 years or older, (2) a history of SUDs, and (3) lack of full-time employment.

### Sample and Sampling

Participants were selected for this study in the area of Greenville, NC. In order to mitigate the weakness of the sampling method, the PWR staff conducted outreach for eligible consumers by contacting staff at a broad array of local SUD agencies, homeless shelters, halfway houses, and the local NC Division of Vocational Rehabilitation Services. Brochures describing PWR, its services, and enrollment information were either faxed or hand-delivered and made available to consumers at the agencies. Consumers then self-referred to the program, and those considered eligible for PWR after a pre-screening process received an intake appointment.

## Procedures

### Data Collection

After their eligibility was verified, consumers completed the program's intake process. They were told about the research related to PWR and given the option to participate or refuse participation in the SAIOP's efficacy study. Consumers who consented to participate in the research then reviewed and signed the informed consent form for research approved by the ECU

Institutional Review Board (Appendix B) and HIPAA notification documentation (Appendix C). They then completed a form that included demographic information and contact information that would enable staff to conduct follow-up surveys (Appendix D). After completing the baseline PWR Evaluation Survey, which consisted of an employment status question plus the standard 40 questions of the ASI-5 from which composite scores are calculated, each consumer met with a PWR staff member, who was either a master's or doctoral student, for an interview to develop an individualized treatment plan. At 210 days after intake, consumers again completed the PWR Evaluation Survey. Over the course of the program, to generate participants' treatment participation rate, clinic staff also recorded the number of hours of their participation in treatment services (number of appointments kept / (number of cancellations + number of no-shows + number of appointments kept).

**Intervention**

Using the results of the baseline PWR survey and intake interviews, participants' internal and external characteristics were considered in order to develop individualized treatment plans. The PWR clinic staff assessed participants' SUD and psychiatric issues and job interests and training needs to develop an appropriate course of treatment services from the menu of program offerings. Appendix E provides an overview of the services available to consumers enrolled in PWR. The overall purpose of these services was to reduce the severity of issues related to SUDs and psychiatric problems and to increase employability. Along with SUD and psychiatric treatments, all study participants received job readiness and vocational counseling services in order to increase employability. The PWR staff used the motivational interviewing approach to address consumers' ambivalence about participating in treatment and joining the workforce.

In their individualized treatment plans, consumers would typically attend three treatment

blocks per week of three hours each. Treatment sessions were led by PWR staff, masters and doctoral students from ECU's Department of Addiction and Rehabilitation Studies who received ongoing training and supervision in the application of a variety of therapeutic techniques (e.g., motivational interviewing, community reinforcement approach, and brief solution-focused therapy). Because of this training and supervision, the staff was equipped to facilitate participation of consumers in treatment services addressing issues related to SUDs and psychiatric problems and to increase consumers' engagement in vocational counseling and job readiness trainings. For every 3-hour service block completed, consumers were eligible to receive one of the following incentives valued at $7.00: seven $1.00 Greenville Area Transit bus passes; one $5.00 McDonald's gift card and two $1.00 bus passes; or one PORT methadone dose voucher (available solely for those consumers actively enrolled for treatment at PORT Human Services, a substance abuse agency with a methadone clinic located in Greenville, NC).

In addition, the PWR staff developed and provided treatment services by integrating psychiatric, crisis contingency, disease management, relapse prevention, family counseling, and group support. In addition, vocational counseling services based on the concept of work and recovery from addiction were provided in both individual and group formats. During vocational counseling services, various interventions (e.g., assessment of employability and placeability, assessment of employment interest and work aptitudes, job search strategies, resume development, and job interview preparation) were also provided to study participants, and they completed activities designed to help to consumers choose, get, and keep a job, drawn from the workbook *Working It Out* (Thum, Briber, & Butler, 2000).

## Instrumentation

### Project Working Recovery Evaluation Survey

This study analyzes data obtained from baseline and 210-day administrations of the two-part PWR Evaluation Survey. The survey begins with a question asking whether participants are employed full- or part-time (30 hours/week or less) or unemployed. If employed, participants are asked to enter the name of their employer and job title (PWR staff later assign a Dictionary of Occupational Titles [DOT] code to the job).

The survey then moves on to the 40 domain-specific items within the ASI-5 from which each domain's composite scores are calculated. These items concern data indicative of the individual's status dating back 30 days that reflect his or her subjective report of problem severity and need for services. Before the data can be analyzed, composite scores for each domain must be calculated from the raw data using a pre-set formula entered into the PWR Access software; this yields composite scores that range between 0 (not a problem) and 1 (severe problem). Using the PWR Evaluation Survey, information from all seven domains was gathered and used to help design individual treatment plans for consumers. For the purposes of outcome measurement, the current study concerned itself only with the baseline and 210-day post-baseline ASI-5 composite scores for the alcohol use, drug use, and psychiatric health domains, as well as the non-ASI-5 question on employment status that opens the survey.

### Version 5 of the Addiction Severity Index (ASI-5)

**Background.** The fifth version of an instrument developed for the US Veterans Administration by Thomas McLellan and collaborators at the University of Pennsylvania's Center for the Studies of Addiction, the ASI-5 is the most commonly used instrument for exploring consumers' various issue severities in the United States (McLellan et al., 2006). The

ASI has also been translated into more than twenty different languages to assess problems, find needs, and develop treatment plans for consumers in other countries (Gerevich, Bacskai, Ko, & Rozsa, 2004; Sandi Esquivel & Avila Corrales, 1990). In addition, it is the most widely applied instrument in the clinical research area for SUDs (Cacciola et al., 2011), expanding beyond use in the veterans population to use in other wide-ranging populations such as individuals with psychiatric disorders and co-occurring disorders (Makela, 2004), its effectiveness revealed in diverse studies over three decades (McLellan et al, 2006).

**ASI Interviewer Severity Ratings and composite scores.** Each ASI-5 domain was designed to have two outputs, the Interviewer Severity Rating and the composite score. The Interviewer Severity Ratings are baseline global interviewer ratings based on items describing both lifetime and recent problems. These scores have shown poor interrater reliability (Cacciola, Koppenhaver, McKay, &Alterman, 1999) and were not scored by the PWR clinic's staff.

In contrast, there is considerable data upholding the internal validity of the ASI-5's composite scores, which are generated by consumers' own assessments of recent problem severity and treatment need. When assessed at baseline, the ASI-5's composite scores are used to evaluate consumer's problem severity and treatment need within multiple domains (McGahan, Griffith, Parente, & McLellan, 1986). Comparing these baseline scores with post-baseline scores provides a quantitative measure of consumer progress in the different domains (Petry, 2007).

**Composite scores in seven domains.** The 40 ASI-5 questions that generate the data for composite scores evaluate an individual's recent (past 30 days) status in seven domains, described below by McLellan and colleagues (1980): alcohol use, drug use, psychiatric health, medical health, problems pertaining to employment/supports, criminal behavior, and family/interpersonal relations.

The six alcohol use and 13 drug use questions gather information about recent substance use—number of days using, what substances used—and perceived severity of problem and need for treatment.

The eleven psychiatric status questions address information about frequency of recent psychiatric issues (anxiety, depression, hallucinations, suicidal ideation, suicide attempts, and medical treatment received), and perceived severity of problem and need for treatment.

The four employment/support questions are designed to gather information about areas of a consumer's life associated with employment, assessing the number of workdays and work income received in the past 30 days, as well as factors related to employability, such as having a driver's license.

The three medical domain questions address information about any medical problems in the past 30 days, perceived severity of problem, and need for treatment.

The five family and social relation domain questions address consumers' interpersonal situation, such as satisfaction with current marital status and any recent problems with family, friends, and co-workers.

Finally, the five interpersonal domain questions gather basic data about a consumer's legal history, including information about ongoing criminal charges, illegal activities, and amount of income earned from such activities.

**Reliability of the ASI.** Since its creation more than 30 years ago, the ASI has been widely applied in the practical field, undergoing four revisions in its development (Cacciola et al., 2011). McLellan and colleagues (1980) assessed test–retest reliability with individuals with SUDs and found no significant difference between two administrations. Cacciola et al., (1999), supported this finding in their two administrations of the test to 108 alcohol- and cocaine-dependent

individuals. They noted that the ASI-5 was especially effective in the domains of drug use, psychiatric health, and medical health. In addition, in a confirmatory factor analysis of composite scores, the authors found appropriate internal consistency, with Cronbach's alpha coefficients ranging from .76 to .92. A study by Petry (2007) of 231 pathological gamblers found similar reliability results for the composite scores, with Cronbach's alpha coefficients ranging from .70 to .84. According to Kline (2004), Cronbach's alpha coefficients greater than .70 demonstrate an instrument's high internal consistency and suitability for research investigations.

To address concerns that the population of the PWR SAIOP differs from those described above, I conducted a reliability analysis on the study's ASI-5 composite scores in the domains of alcohol use, drug use, and psychiatric health. The Cronbach's alpha coefficients for these three consumer issues were found to have high internal consistency: alcohol use, .84; drug use, .93; psychiatric issues, .97; and total issues, .87.

**Validity of the ASI.** In their study of the validity of the ASI, McLellan and colleagues (1980) reported moderate concurrent validity results ranging from .43 to .72. McLellan et al.'s concurrent validity results demonstrated moderate correlations between the following: the alcohol use composite score and the Michigan Alcoholism Screening Test (.42); the drug use composite score and the Gunderson Drug Scale (.39); the psychiatric issue composite score and the Beck Depression Inventory (.52); the employment issue composite score and the Estes Employability Scale (.54); and the medical problems composite score and the Cornell Medical Index (.58). There was a poor correlation between the family and social relations composite score and the Social Adjustment Scale (.16). McLellan et al. concluded that the ASI is useful in the assessment of consumers' specific problems.

Three decades later, Cacciola and colleagues (2011) updated the study of concurrent validity by comparing the ASI-5 with different contemporary scales. Their study demonstrated moderate correlations between the following: the alcohol use composite score with the Short Index of Problems (SIP; .68); the drug use composite score with the SIP-Drugs (.61); the psychiatric issue composite score with the Symptom Checklist Revised 10-Item Version (SCL-10R; .68); the employment issue composite score with the Social Adjustment Scale Self-Report (SAS-SR; .76); the medical problems composite score with the SCL-10R (.44); and the family and social relations composite score with the SAS-SR (.44). There was a poor correlation between the legal issue composite score and the SIP-Drugs (.28). Because of its good correlation and efficiency, the ASI-5 remains the gold standard for evaluation of alcohol use, drug use, and psychiatric issues.

**Summary.** Since its introduction in 1980, the ASI instrument has been increasingly refined. The composite scores yielded by the version used in this study, the ASI-5, have demonstrated good reliability and validity in the assessment of alcohol use, drug use, and psychiatric health issues in differing populations (Cacciola et al., 2011; Gerevich et al., 2004; Makela, 2004; McLellan et al., 2006; Petry, 2007).

## Statistical Analysis

Several types of statistical analyses were used to examine the archival data collected for use in this study. SPSS release version 20.0 and AMOS 20.0 (IBM Company, 2012) were used to conduct analyses that included the paired *t*-test, two-by-two crosstab, correlation, and SEM. For the analyses of this study, an alpha level of 0.05 was set. In addition, descriptive statistics were used to summarize participant demographics like age, gender, educational achievement, ASI-5 scores, treatment participation rate, and employment status.

**Analyses Used for Research Question 1**

To find answers to research question 1, a two-by-two crosstab analysis and the paired *t*-test were used. The two-by-two crosstab analysis is useful to find the change in the employment rate of study participants (Li, Zhao, Kranzler, et al., 2012). A significant difference between the two periods of data collection could indicate that participation in this SAIOP based on vocational services had a significant influence on employment. The paired *t*-test (pre–post) was used to examine the before- and after-treatment differences in participants' level of alcohol use, drug use, and psychiatric issues. A significant difference between pre- and post-test levels might suggest that participation in an SAIOP based on vocational services is also effective in reducing alcohol use, drug use, and psychiatric issues.

**Analyses Used for Research Question 2**

To find answers to research question 2, correlation and SEM procedures were applied. Correlations were computed to examine the bivariate relationships between the critical variables (i.e., employment status at 210 days, treatment participation rate, and the pre–post-treatment measures of alcohol use, drug use, and psychiatric issues). The correlation patterns describing the relationships between variables were explained. By examining these correlations, the most critical variables were determined and then analyzed with SEM, as Kline suggested (2004). Because the SEM procedure employs principles of factor analysis and regression, in recent years many researchers have implemented this comprehensive procedure to test theoretical models. Specifically in the rehabilitation and substance abuse counseling fields, SEM has been effective in examining the relationships between consumers' issues and treatment outcomes (Ferguson & Xie, 2012; Fowler et al., 2009; Lee & Park, 2007). Using the SEM procedure, researchers have been able to develop and confirm a model of complex rehabilitation patterns and theories in

order to generate comprehensive outcomes (Bornovalova, Ouimette, Crawford, & Levy, 2009; Kline, 2004).

Structural equation modeling has three advantages as an analytic tool:

First, using SEM is appropriate for comparing the observed data with a respecified model developed to describe a particular theory (Bornovalova et al., 2009). In addition, researchers often employ SEM to revise existing models in order to improve them practically and increase their applicability in the field.

Second, using SEM is appropriate for generating clear and precise models that include various variables and error terms (Hoyle, 2012). While the alternative methods of verifying a model (e.g., the general linear model and regression model) ignore error terms of predictors in analysis, the SEM procedure incorporates the error terms in order to generate an accurate model (Kline, 2004).

Third, SEM is appropriate for examining a model with several different fit indices, such as goodness-of-fit, root mean square residual, normed fit index, and comparative fit index. With these indices, the strength of relationships between variables can be understood in a comprehensive way (Kline, 2004). By using this information, researchers are able to develop and revise competing models and then select the best one.

Based on these advantages, this study applied the SEM procedure to develop a path diagram of critical variables. Using this procedure to develop various structural or regression equation models, I was able to examine the relationships between variables and find the best model (Brodish et al., 2011). Figure 1 and 2 (p. 47) show initial and respecified measurement models of mediating effects and direct and indirect relationships between the critical variables. Using curved arrows, the SEM model also accounts for the correlations between baseline alcohol use,

drug use, and psychiatric issues. Next, the complex relationships and direct effects between the three consumer issue variables and treatment participation rate were examined. Finally, the mediating effect of treatment participation rate on these three variables and 210-day post-baseline employment status were explored. AMOS 20.0 (AMOS: An IBM Company, 2012) was used to analyze the direct and mediating effects.

## Ethical Considerations

Project Working Recovery obtained ECU Institutional Review Board approval in 2007 to conduct research based on its SAIOP. To ensure participant privacy and meet ethical considerations, coded identifiers were used during data collection, data entry, and data analyses, which ensured consumer anonymity. Study participants' personal information (name, address, and contact numbers) was not included in the database being analyzed. Coded identifiers were linked only to demographic and evaluation data, thus minimizing the risk of privacy infringement.

## Chapter Summary

The purpose of this study was to explore the effectiveness of a 210-day SAIOP based on vocational counseling by comparing baseline and end-of-treatment severity levels of consumers' alcohol use, drug use, psychiatric issues, and employment. In addition, this study explored how treatment participation rate mediates the influence of baseline alcohol use, drug use, and psychiatric issues on post-treatment employment status. The population under study was a self-referred group of initially unemployed or underemployed consumers with SUDs who learned of the PWR program from agencies in and around Greenville, NC, all of whom presented with issue severities indicating a need for intensive outpatient treatment. The study design was self-reported

survey research. Limitations included the use of archival data, a non-experimental research design, and use of a self-report instrument.

# CHAPTER 4: RESULTS

The purpose of the present study was to investigate the effectiveness of a vocational services–based substance abuse intensive outpatient program (SAIOP) on the severity of consumers' baseline alcohol use, drug use, and psychiatric issues and on their employment rate at 210 days. In addition, this study investigated the direct and indirect effects between five critical variables (i.e., alcohol use, drug use, psychiatric issues, treatment participation rate, and employment). This chapter begins with a description of participant attrition and a review of sample demographics. Next, the data analysis results for the influence of the vocational services–based SAIOP on consumer issue severity and employment are reported, followed by a description of the correlations between the critical variables and the hypothesized relationships between the variables, specifically whether the influence of participants' baseline ASI-5 severity of alcohol use, drug use, and psychiatric issues on 210-day employment status is mediated by their treatment participation rate. The chapter concludes with a summary of the results.

## Attrition

This study used archival data from a population that participated in a vocational services–based SAIOP called Project Working Recovery (PWR) at East Carolina University's Department of Rehabilitation Studies. Between October 1, 2007, and July 30, 2010, a total of 313 consumers were enrolled in the SAIOP and consented to participate in evaluation activities. Of these, 106 completed both the baseline and 210-day post-baseline PWR Evaluation Survey (Appendix A). Thus, over the 3 years of the study, there was participant attrition of 66.14%.

## Sample Demographics

All 313 study participants had a history of SUDs and were unemployed or under-employed at time of enrollment. The 106 consumers who completed PWR surveys at baseline and 210 days

comprised the usable sample for this study. Of these 106 participants, 60 (56.6%) were male and 46 (43.4%) were female, ranging in age from 21 to 62 years ($M$ = 41.10 years, $SD$ = 11.82). Participants identified their ethnicity as follows: 55 (51.9%) as African American, 45 (42.5%) as Caucasian, and 6 (5.7%) as Other. The distribution of the highest level of education completed was as follows: 66 (62.3%) high school degree or GED; 25 (23.6%) no high school degree; and 15 (14.1%) post-secondary degree. Of these last, 9 (8.5%) held an associate's, 3 (2.8%) a bachelor's, and 3 (2.8%) a graduate degree.

## Data Analysis for Hypothesis Testing

This section provides the results of the analyses for each research question and hypothesis, followed by a summary of the research questions and hypothesis testing results. Data on consumer issues was obtained using the PWR Evaluation Survey, on which participants answered ASI-5 questions about problem severity of alcohol use, drug use, and psychiatric issues at baseline and at 210 days, from which composite scores were calculated to determine issue severity levels at both time points. ASI composite scores range from 0 to 1, with higher scores indicating more severe problems (McGahan et al., 1986). Participants answered a separate question to determine employment status.

### Research Question 1

Question 1: Will there be significant changes from baseline in alcohol use, drug use, and psychiatric issue severity, as measured by the ASI-5, and in the employment rate for unemployed or underemployed consumers at 210 days at an SAIOP based on vocational counseling services?

To examine this research question, the following four hypotheses were examined. For hypotheses 1 to 3, the paired $t$-test was used to find the differences in study participants' issue levels by comparing ASI-5 composite scores at baseline and at 210 days. In this study,

Bonferroni correction was not applied because sample size is small and the number of each group is not much difference (Garamszegi, 2006). For hypothesis 4, a two-by-three cross-tab analysis was conducted to examine the difference in the employment rate by comparing respondents' answers to the employment question on the PWR Evaluation Survey at baseline and at 210 days.

**Hypothesis 1**

At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' alcohol issues will decrease. The null and alternative hypotheses are as follows:

$H_0$: There is no difference in the alcohol use severity of consumers between baseline and 210 days.

$H_A$: There is a significant decrease in the alcohol use severity of consumers between baseline and 210 days.

The first row of Table 2 shows the descriptive statistics for alcohol use severity. Mean *(SD)* composite scores at baseline and at 210 days were .23 (.09) and .18 (.15). The analysis shows a significant difference between the two scores, $t(105) = 5.93$, $p < .001$. Therefore, we can accept $H_A$. The significant decrease from baseline in the mean issue severity score indicates that consumers attending an SAIOP based on vocational counseling services tended to have less severe alcohol use issues at 210 days.

Table 2

*Problem Severity Descriptive Statistics*

| | Evaluation Period | | | |
|---|---|---|---|---|
| | Baseline | 210-day | *t* | *df* |
| Alcohol Use | .23 | .18 | 5.93*** | 105 |
| | (.09) | (.15) | | |
| Drug Use | .23 | .18 | 6.60*** | 105 |
| | (.13) | (.17) | | |
| Psychiatric Issue | .40 | .34 | 7.78*** | 105 |
| | (.21) | (.24) | | |

*Note*. ***$p < .001$. Standard deviations appear in parentheses below means.

**Hypothesis 2**

At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' drug issues will decrease. The null and alternative hypotheses are as follows:

$H_0$: There is no difference in the drug use severity of consumers between baseline and 210 days.

$H_A$: There is a significant decrease between the drug use severity of consumers between baseline and 210 days.

The second row of Table 2 shows the descriptive statistics for drug use severity. Mean (SD) composite scores at baseline and at 210 days were .23 (.13) and .18 (.17). The analysis shows a significant difference between the two scores, $t(105) = 6.60$, $p < .001$. Therefore, we can accept $H_A$. The significant decrease from baseline in the mean drug use severity score indicates that

consumers attending an SAIOP based on vocational counseling services tended to have less severe drug use issues at 210 days.

**Hypothesis 3**

At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' psychiatric issues will decrease. The null and alternative hypotheses are as follows:

$H_0$: There is no difference in the psychiatric issue severity of consumers between baseline and 210 days.

$H_A$: There is a significant decrease in the psychiatric issue severity of consumers between baseline and 210 days.

The third row of Table 2 shows the descriptive statistics for psychiatric issue severity. Mean *(SD)* composite scores at baseline and at 210 days were .40 (.21) and .34 (.24). The analysis shows a significant difference between the two periods, $t(105) = 7.78$, $p < .001$. Therefore, we can accept $H_A$. The significant decrease from baseline in the mean psychiatric issue severity score indicates that consumers attending an SAIOP based on vocational counseling services tended to have less severe psychiatric issues at 210 days.

**Hypothesis 4**

At 210 days post-baseline in an SAIOP based on vocational counseling services, the percentage of consumers who are employed will increase. The null and alternative hypotheses are as follows:

$H_0$: There is no difference in the employment rate of consumers between baseline and 210 days.

$H_A$: There is a significant increase in the employment rate of consumers between baseline and 210 days.

A two-by-three cross-tab analysis demonstrated significant service effectiveness. At baseline, of the 106 participants who completed the study, 98 (92.5%) reported being unemployed, 8 (7.5%) reported being employed part-time, and 0 were employed full-time. At 210 days, 80 (75.5%) reported being unemployed, 10 (9.4%) reported being employed part-time, and 16 (15.1%) reported being employed full-time, $\chi^2 = 36.67$, $p < .001$. Thus, of the 106 participants, the number of participants employed in any capacity increased from 8 (7.5%) to 26 (24.5%). Therefore, we can accept $H_A$. The significant increase from baseline in the mean employment rate indicates that consumers attending an SAIOP based on vocational counseling services were more likely to have employment at 210 days.

## Research Question 2

Question 2. In an SAIOP based on vocational counseling services, is the influence of participants' baseline ASI-5 severity of alcohol use, drug use, and psychiatric issues on 210-day employment status mediated by their treatment participation rate?

This question was examined in two parts. The first part looked at the overall fit of the respecified model. The second part looked at the direct and indirect effects within the respecified model and tested the following three hypotheses: (1) the treatment participation rate mediated the relationship between baseline alcohol use severity and employment status at 210 days; (2) the treatment participation rate mediated the relationship between baseline drug use severity and employment status at 210 days; and (3) the treatment participation rate mediated the relationship between baseline psychiatric issue severity and employment status at 210 days.

**Estimation of the Measurement Model and Respecification**

Table 3 presents the ASI-5 correlations for the three consumer issues. The highest Spearman's correlation occurred between drug use issues and treatment participation rate, with a coefficient of .58 ($p < .01$), followed by treatment participation rate and 210-day employment status, .57 ($p < .01$), and psychiatric issues and treatment participation rate, .50 ($p < .01$). Thus, there are significant correlations between any two variables.

Table 3

*Correlations between Levels of Alcohol Use, Drug Use, and Psychiatric Issue Severity*

| | Alcohol Use | Drug Use | Psychiatric Issues | TPR |
|---|---|---|---|---|
| Alcohol Use | — | | | |
| Drug Use | .48** | — | | |
| Psychiatric Issues | .28** | .47** | — | |
| TPR | -.51** | -.58** | -.50** | |
| 210-day ES | -.30** | -.40** | -.33** | .57** |

*Note.* **$p < .01$. TPR =treatment participation rate; ES = employment status.

Using AMOS 20.0 (IBM Company, 2012), the direct and indirect relationships between the critical variables were examined. The initial and respecified measurement models for the current study are shown in Figure 1 and 2. These models illustrate the direct effects between the baseline observed variables (alcohol use, drug use, and psychiatric issue severity) on treatment participation rate and their indirect effects on 210-day employment status. The curved two-way arrows between baseline alcohol use, drug use, and psychiatric issues represent covariance or

correlation between pairs of variables. According to Hoyle (2012), after a model is developed, it must be tested with the observed data by specifying the appropriate set of parameters. The next section describes the model, the specified parameters, and the estimation of the initial measurement model summary related to SEM results.

**Model, Parameters, and Estimation Summary of the Initial Model**

The first step in finding the best model is to test the initial measurement model (Figure 3), which specifies all possible relationships based on Spearman's correlation results between observed variables. That is, the three variables describing consumers' baseline issues (i.e., alcohol use, drug use, psychiatric issues) have direct effects on both the treatment participation rate and employment status at 210 days. In the initial model, when mediated by treatment participation rate, the three consumer variables also have indirect effects on 210-day employment status. The model is compared to the respecified model to test multiple plausible rival models, so that stronger evidence for supporting the correct specification of the respecified model can be adduced (Thompson, 2000). Based on the test results, the model can be respecified with appropriate modifications to develop the best fit with the data.

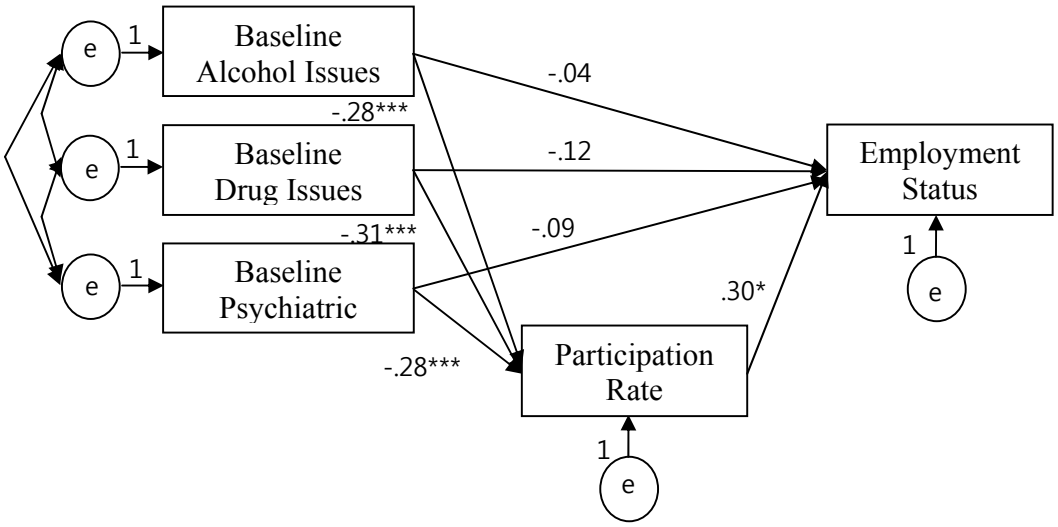


*Figure 3*. Coefficient for initial measurement model.

The initial analysis with the AMOS software provided the information regarding parameter specification of the full model. An overall summary of the model indicated a recursive type, and sample size was 106. The first step was to assess the estimated values of the initial model (Bollen & Long, 1993) by evaluating the correlations between observed variables. The highest correlation was -.31 between baseline drug use severity and treatment participation rate, and the lowest correlation was -.04 between baseline alcohol use and 210-day employment status. Although there were some significant regression weights among observed variables in the model, the minimum was not achieved statistically ($p < .0005$), which further revealed that the estimation process yielded inadmissible results. Therefore, the initial model did not fit the collected data well.

**Post Hoc Analysis and the Respecified Model**

Post hoc model specifications were conducted in order to develop a better-fitting model. In this respecified model (Figure 4), while there are significant relationships in Spearman's correlation analysis, because there were no significant ($p > .05$) paths between 210-day employment status and baseline levels of alcohol use ($p = .71$), drug use ($p = .29$), and psychiatric issue severity ($p = .41$), these three direct paths were removed from the initial model

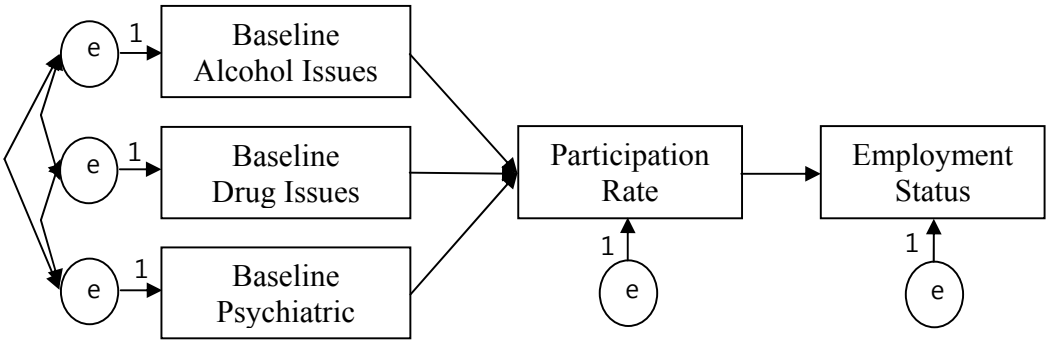


*Figure 4.* Respecified measurement model.

The likelihood-ratio chi-square statistic has been primarily used to evaluate whether a model is minimally fitted in the observed data (Hoyle, 2012). An analysis of the respecified model shows that the model fits the data reasonably well, $\chi^2(df = 3) = 2.22, p > .528$. Contrary to traditional statistical procedures, a nonsignificant chi-square statistic (the null hypothesis cannot be rejected) suggests that the respecified model fits the data reasonably well. However, the chi-square statistic is heavily influenced by sample size (Kaplan, 2009), and as the sample size increases, the likelihood of finding significant differences between the estimated and actual data also increases. Therefore, because this study has a sample size of fewer than 150 participants, it would be inappropriate to rely solely on the chi-square statistic to determine the model's goodness of fit with the observed data.

In order to mitigate the limitations of the chi-square statistic, researchers have developed various other goodness-of-fit indexes, such as the chi-square test $(\chi^2/df)$; the normed fit index (NFI); the comparative fit index (CFI); the Tucker-Lewis index (TLI); and the root mean square error of approximation (RMSEA; Bentler & Bonnett, 1980; Hoyle, 2012; Kaplan, 2009; Marsh, Balla, & Hau, 1996).Using multiple indexes in SEM helps to overcome the limitations inherent in the use of only one index (Bentler & Bonnett, 1980; Hoyle, 2012), and provides numerous perspectives to help construct the best-fitting model (Kaplan, 2009; Marsh et al., 1996). Table 4 lists the results of the chi-square test, NFI, CFI, TLI, and RMSEA. The various goodness-of-fit indexes used in this study support the respecified model.

Bollen and Long (1993) suggested that dividing the chi-square value by degrees of freedom is one of the most effective methods of finding the best model. If the resulting ratio is less than 2, the model is a good fit. More recently, other researchers have also recommended this approach for problems in the area of counseling and psychology (Martens & Hasse, 2006; Weston & Gore,

2006). The NFI preferred by Bentler and Bonnett (1980) has been the practical index of choice in SEM. However, due to the underestimation-of-fit issue often noted when the NFI is used with small samples; Bentler (1990) proposed that researchers also use the CFI. The NFI and CFI values are derived from comparison between the respecified model and the initial model. Both NFI and CFI scores range from 0 to 1, and models with scores of .9 or above on these two indexes are considered a good fit (Hoyle, 2012). The TLI has also been used to assess goodness-of-fit, with a score of .9 or above considered a good fit (Hoyle, 2012).

The RMSEA is another frequently used fit index (Kaplan, 2009). Browne and Cudeck (1993) suggested the following guidelines for the interpretation of RMSEA: values of .05 or less indicate a close fit with the observed data; those between .05 and .08, a fair fit; those between .08 and .10, a mediocre fit; and those over .10, a poor fit. Hu and Bentler (1999) suggested that a RMSEA value of .06 or less indicates a good fit. Table 4 lists the values of the fit indexes for the initial and respecified models, and shows strong support for the respecified model.

Table 4

*Goodness-of-fit Indexes in the Initial and Respecified Measurement Models*

| Indexes | Initial Model Values | Respecified Model Values | Cut-off criteria |
|---|---|---|---|
| $\chi^2/df$ | .000 | .74 | < 2 |
| NFI | 1.00 | .98 | ≥ .90 |
| CFI | 1.00 | 1.00 | ≥ .90 |
| TLI | not computed | 1.00 | ≥ .90 |
| RMSEA | .36 | .01 | ≤ .06 a close fit |

*Notes*. NFI = normed fit index; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation.

The respecified model, in which $\chi^2 = 2.22$ and df = 3, yields a ratio of $\chi^2$/df = .74, smaller than 2, suggesting that the model is a good fit with the observed data. The NFI and CFI values in this study were .98 and 1.00 respectively, indicating that the respecified model is a good fit with the observed data. The TLI score in this study was 1.00, indicating a good fit. The RMSEA value for the respecified model in this study was .01, suggesting a close fit with the observed data.

In summary, an examination of correlations and these goodness-of-fit indexes in SEM suggests strong support for the respecified model. The initial model, which described both the direct and indirect effects of alcohol use, drug use, and psychiatric issues on employment status, did not yield admissible results. The respecified model, however, is a good fit with the data because it accounts for the mediating effect of treatment participation rate on employment. The following section explores the direct and indirect effects within the respecified model.

**Analysis of the Structural Coefficients**

In SEM, all of the relations or parameters can be represented as a series of regression equations and standardized coefficients (Fassinger, 1987). Figure 5 shows the standardized coefficients of the critical variables. The first part of the model examines the direct effects of consumer issues on treatment participation. Baseline alcohol issues (-.28), drug issues (-.31), and psychiatric issues (-.28) all had negative effects on treatment participation; that is, people who had more issues were less likely to participate in treatment, and people who had fewer issues were more likely to engage. The second half of the model describes how treatment participation rate had a direct positive effect (.45) on 210-day employment status; that is, as treatment participation increased, employment increased

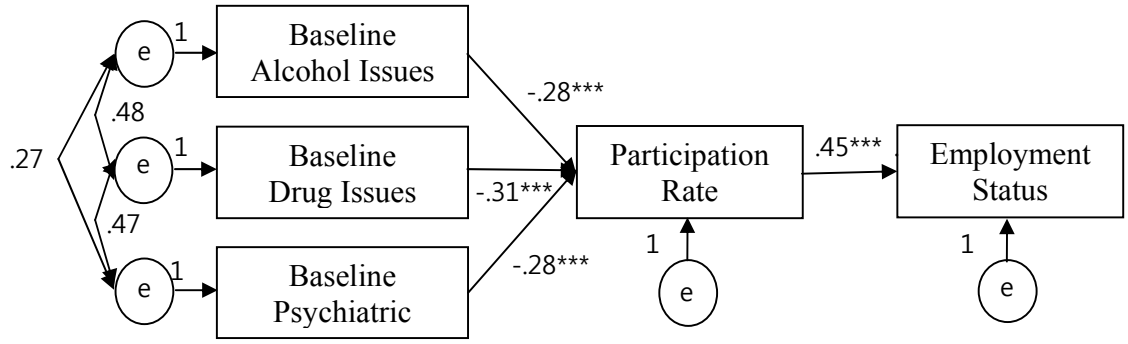


*Figure 5.* Coefficients for respecified measurement model.

The path coefficients of the structural model using maximum likelihood estimates are presented in Table 5, which reports the effect of consumers' baseline alcohol use, drug use, and psychiatric issues on treatment participation rate and the effect of treatment participation rate on 210-day employment status. Consumers' baseline alcohol use, drug use, and psychiatric issues negatively influenced treatment participation rate. For example, the influence of baseline alcohol use on treatment participation was significant, with an unstandardized coefficient of -.60, a standard error of .17, and a critical ratio of -3.42. Next, the influence of the treatment participation rate on 210-day employment was significant, with an unstandardized coefficient of .66, a standard error of .32, and a critical ratio of 5.20.

Table 5

*Structural Path Coefficients of the Respecified Measurement Model*

| Path | Standardized Coefficient | Unstandardized Coefficient | Standard Error | Critical Ratio |
|---|---|---|---|---|
| Baseline Alcohol Use →Treatment Participation | -.28*** | -.60 | .17 | -3.42 |
| Baseline Drug Use →Treatment Participation | -.31*** | -.48 | .14 | -3.52 |
| Baseline Psychiatric Issues →Treatment Participation | -.28*** | -.26 | .08 | -3.38 |
| Treatment Participation → 210-day Employment Status | .45*** | .66 | .32 | 5.20 |

*Notes.* ***$p < .001$. Critical ratio = unstandardized coefficient/standard error.

The direct and indirect effects of the respecified model are presented in Table 6, which reports both the effects of consumers' baseline alcohol use, drug use, and psychiatric issues on treatment participation rate and the effect of treatment participation rate on 210-day employment status. Baseline alcohol use, drug use, and psychiatric issues negatively influenced 210-day employment rate. That is, the indirect effects of baseline alcohol use, drug use, and psychiatric issues on 210-day employment status were significant, with unstandardized coefficients of -.13, -.14, and -.12 and standard errors of .04, .05, and .05, respectively. Therefore, it is clear that baseline severities of consumers' three issues have an indirect effect on employment.

Table 6

*Direct and Indirect Effects of the Respecified Measurement Model*

| Path | Direct Effect | Indirect Effect |
|---|---|---|
| Baseline Alcohol Use →Treatment Participation | -.28(-.60) | |
| Baseline Drug Use →Treatment Participation | -.31(-.48) | |
| Baseline Psychiatric Issues →Treatment Participation | -.28(-.26) | |
| Treatment Participation → 210-day Employment Status | .45(-.66) | |
| Baseline Alcohol Use → 210-day Employment Status | | -.13(-.04) |
| Baseline Drug Use → 210-day Employment Status | | -.14(-.05) |
| Baseline Psychiatric Issues → 210-day Employment Status | | -.12(-.05) |

*Notes.* Standardized Coefficient (Unstandardized Coefficient).

The results for the three hypotheses of research question 2 are as follows:

**Hypothesis 1.** The treatment participation rate will mediate the relationship between baseline alcohol use severity and employment status at 210 days.

This hypothesis was supported at a significance level of .001. This finding was derived from an examination of the following: (1) the direct effect between baseline alcohol use and treatment participation rate, (2) the direct effect between treatment participation rate and 210-day employment status, and (3) the indirect effect between baseline alcohol use and 210-day employment status. First, treatment participation was influenced negatively by baseline alcohol use (standardized coefficient = -.28). That is, as consumers' baseline alcohol use severity increased, their treatment participation rate decreased, confirming the findings of several other researchers (Hser et al., 2004; Lopez-Goni, Fernandez-Montalvo, Arteaga, 2011; Schulte, Meier, Stirling, & Berry, 2010). Second, consumers' 210-day employment status was affected positively by treatment participation rate (standardized coefficient = .45). As consumers' treatment participation rate increased, their likelihood of employment at 210 days also increased. This finding has also been reported by other researchers (Atherton, 2011; Evans et al., 2009; Huebner & Cobbina, 2007; Jaffe, Du, Huang, & Hser, 2012; McKay et al., 2004). Third, consumers' 210-day employment status was influenced indirectly by baseline alcohol use issues (standardized coefficient = -.13). Thus, treatment participation rate must have significantly mediated the effect of alcohol issue severity on employment at 210 days. We can accept alternative hypothesis 1.

**Hypothesis 2.** The treatment participation rate will mediate the relationship between baseline drug use severity and employment status at 210 days.

This hypothesis was supported at a significance level of .001. This finding was derived from an examination of the following: (1) the direct effect between baseline drug use and treatment participation rate, (2) the direct effect between treatment participation rate and 210-day employment status, and (3) the indirect effect between baseline drug use and 210-day employment status. First, treatment participation was influenced negatively by baseline drug use

(standardized coefficient = -.31).That is, as consumers' baseline drug use severity increased, their treatment participation rate decreased, which replicates the findings of other researchers (Evans et al., 2009; Hser et al., 2004; Mertens & Weisner, 2000). Second, consumers' 210-day employment status was affected positively by treatment participation rate (standardized coefficient = .45). As consumers' treatment participation rate increased, the 210-day employment rate also increased. Other researchers (Atherton, 2011; Evans et al., 2009; Huebner & Cobbina, 2007; Jaffe et al., 2012; McKay et al., 2004) have also reported this finding. Third, consumers' 210-day employment status was influenced indirectly by baseline drug use issues (standardized coefficient = -.14). Thus, we can accept alternative hypothesis 2.

**Hypothesis 3.** The treatment participation rate will mediate the relationship between baseline psychiatric issue severity and employment status at 210 days.

This hypothesis was supported at a significance level of .001. This finding was derived from an examination of the following: (1) the direct effect between baseline psychiatric issue severity and treatment participation rate, (2) the direct effect between treatment participation rate and 210-day employment status and (3) the indirect effect between baseline psychiatric issue severity and 210-day employment status. First, treatment participation was influenced negatively by baseline psychiatric issues (standardized coefficient = -.28). That is, as consumers' baseline psychiatric issue severity increased, their treatment participation rate decreased. This confirms the findings of several other researchers (Angelo, McDonell, Lewin, et al., 2012; Evans et al., 2009; Hiller, Knight, & Simpson, 1999; Tsang, Fung, & Chung, 2010). Second, consumers' 210-day employment status was affected positively by their treatment participation rate (standardized coefficient = 0.45).As consumers' treatment participation rate increased, their 210-day employment rate also increased. This finding has also been reported by other researchers

(Atherton, 2011; Evans et al., 2009; Huebner & Cobbina, 2007; Jaffe et al., 2012; McKay et al., 2004). Third, consumers' 210-day employment status was influenced indirectly by baseline psychiatric issues (standardized coefficient = -0.12). Thus, we accept alternative hypothesis 3.

## Chapter Summary

In examining two research questions, this study demonstrated the following: First, at an SAIOP based on vocational counseling, there were significant changes from baseline in alcohol use, drug use, and psychiatric issue severity and the employment rate at 210 days. Second, the initial model, which described a direct effect of baseline severity levels of alcohol use, drug use, and psychiatric issues on 210-day employment status, was not supported by the observed data. This finding is in direct contrast to that of other studies that found a significant relationship between baseline severity levels of consumers' issues and post-treatment employment status (Evans et al., 2009; Funn & Woodruff, 2011; Kwon et al., 2010). In the current study, the respecified model indicated that treatment participation rate mediated the relationship between alcohol use, drug use, and psychiatric issue severity and 210-day employment status. The next chapter provides a discussion based on the study results.

# CHAPTER 5: DISCUSSION

This chapter begins with a brief description of the study, including its variables, sampling, and data collection. Next, I review the study and discuss the results, including descriptive statistics, research questions and hypotheses analyses. The limitations of this study are then explored, along with the implications for theory research and clinical practice. Finally, a summary concludes this chapter.

## Summary of the Study

The purpose of this study was two-fold. First, with the framework proposed by ecological theory in mind, I examined the effectiveness of an SAIOP based on vocational counseling services for individuals with SUDs, many of whom had psychiatric disorders. To address this research question, archived data collected by the Project Working Recovery (PWR) clinic at East Carolina University were analyzed using a non-experimental design. Baseline and 210 days post-baseline differences were calculated with three paired *t*-tests and a two-by-three crosstab analysis. This question explored the SAIOP's effectiveness on the level of consumers' problem severities in specific domains measured by the ASI-5 (i.e., alcohol use, drug use, and psychiatric issues) and on employment.

Second, I examined the direct and indirect effects between critical variables (baseline alcohol use, drug use, and psychiatric issue severity; treatment participation rate; and employment status at 210 days). I first examined the direct and indirect relationships between baseline severity levels of consumers' issues, their treatment participation rate, and their employment status at 210 days. A model was developed based on my hypotheses about direct and indirect relationships between critical variables. Using recursive SEM, this model and a

second model were tested in order to assess which one better fit the collected data (Brodish et al., 2011).

## Sample Demographics

Between October 1, 2007, and July 30, 2010, 313 consumers enrolled in the PWR SAIOP and consented to participate in this study, intake interview, and completion of the PWR Evaluation Form at baseline and 210 days. All consumers had a history of SUDs and were unemployed or under-employed at time of enrollment.

The 106 consumers who completed baseline and 210-day post-baseline PWR surveys comprised the study's usable sample. Of these 106 participants, 60 (56.6%) were male and 46 (43.4%) were female, ranging in age from 21 to 62 years ($M$ = 41.10 years, $SD$ = 11.82). Participants identified their ethnicity as follows: 55 (51.9%) as African American, 45 (42.5%) as Caucasian, and 6 (5.7%) as Other. The distribution of the highest level of education completed was as follows: 66 (62.3%) high school degree or GED; 25 (23.6%) no high school degree; and 15 (14.1%) post-secondary degree. Of these last, 9 (8.5%) held an associate's, 3 (2.8%) a bachelor's, and 3 (2.8%) a graduate degree. The next section discusses the findings from statistical analyses based on the research questions and hypotheses.

## Results of Research Questions and Hypotheses Testing

### First Research Question

*Research question 1.* Will there be significant changes from baseline in alcohol use, drug use, and psychiatric issue severity, as measured by the ASI-5, and in the employment rate for unemployed or underemployed consumers at 210 days at an SAIOP based on vocational counseling services?

To examine this research question, four hypotheses were examined. For hypotheses 1 to 3, the paired *t*-test was used to find the differences in study participants' issue levels by comparing ASI-5 composite scores at baseline and at 210 days. For hypothesis 4, a two-by-three crosstab analysis was conducted to examine the difference in the employment rate by comparing participants' answers to the employment question on the PWR Evaluation Survey at baseline and at 210 days. The following section discusses the data analyses for each hypothesis and compares the current study results to those of previous studies.

*Hypothesis 1*: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' alcohol issues will decrease. Paired *t*-test results showed a significant reduction in alcohol use issues. This finding is congruent with previous literature that describes similar treatment interventions: Martinez and colleagues (2009) found that after completing a SUD treatment program with vocational counseling, participants experienced reductions in SUD symptoms and an increase in employment. Likewise, Foley and colleagues (2010) found that attending vocational interventions reduced consumers' alcohol consumption behaviors; specifically, Native Americans with alcohol use disorders who attended job-seeking workshops or job interview training showed significantly reduced frequencies of alcohol use behaviors at 3-month follow-up evaluation. Moreover, in addition to reduction of alcohol consumption, providing employment skills training is likely to produce other positive effects (i.e., improvement in positive view of society) among individuals with alcohol use disorders (Livingston, Milne, Fang, & Amari, 2011).

*Hypothesis 2*: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' drug issues will decrease. Paired *t*-test results showed a significant reduction in drug use issues. This finding is congruent with previous literature that

describes similar treatment interventions: Examining the effect of vocational counseling interventions given concurrently with methadone maintenance treatment, Staines and colleagues (2004) found an increased employment rate and reduced substance use severity at a follow-up survey given 6 months after treatment completion. Likewise, in their study, Evans and colleagues (2009) found that the group receiving vocational counseling services along with SUD treatment had a 1.5 times higher completion rate than the group not receiving vocational services.

*Hypothesis 3*: At 210 days post-baseline in an SAIOP based on vocational counseling services, the severity of consumers' psychiatric issues will decrease. Paired *t*-test results showed a significant effect on psychiatric issues. This finding is similar to those of earlier studies that describe congruent treatment interventions: Mueser and colleagues (1997) found that attending vocational counseling services reduced the psychiatric symptoms of individuals with schizophrenia. McLellan and colleagues (2003) found that in addition to reducing consumers' psychiatric issue levels, comprehensive interventions were also effective in improving employability and increasing job-interview opportunities. Killackey and colleagues (2008) also found that attending vocational counseling services proved valuable for individuals with psychiatric disorders, reducing their reliance on welfare benefits and increasing psychiatric recovery. In their recent study of individuals with psychiatric disorders, McHugo and colleagues (2012) also suggested that comprehensive treatment including vocational counseling services was effective. When comparing employed and unemployed consumers after treatment, the authors found that employed consumers had fewer psychiatric issues.

*Hypothesis 4*: At 210 days post-baseline in an SAIOP based on vocational counseling services, the percentage of consumers who are employed will increase. Two-by-three table results showed a significant effect in improving the likelihood of employment, especially full-

time employment. At baseline, 8 of 106 participants were employed (part-time); at 210 days, 26 were employed (10 part-time and 16 full-time). This finding is congruent with previous literature that deals with vocational counseling interventions in individuals with SUDs: Luchansky and colleagues (2000) found that after completing comprehensive treatment that included vocational counseling services (e.g., work therapy, job-readiness training, and job-placement assistance), the employment rate of veterans with SUDs increased. The group who completed the comprehensive intervention showed an employment rate two times higher than that of the group who completed only addiction treatment, and the comprehensive-treatment group had mean post-treatment weekly earnings double those of the addiction-treatment-only group, $268 and $130, respectively. In their study of individuals with autism spectrum disorders and SUDs, Lawer and colleagues (2009) found that the group receiving both addiction treatment and vocational services (e.g., on-the-job support) had a higher rate of employment than the group who received only SUD treatment. More recently, several other researchers have also found that addiction treatment is more effective when augmented with vocational counseling services (e.g., Atherton, 2011; Hefferman and Pilkington, 2011; and Morgenstern et al., 2009).

Based on the findings of the current study and relevant literature, I conclude that comprehensive treatment with concurrent vocational counseling services can have a significant positive effect on consumers' alcohol use, drug use, and psychiatric issue levels and likelihood of employment. These results suggest that vocational counseling services should be required when designing treatment for individuals with SUDs, many of whom have co-occurring disorders, to address more effectively their substance abuse, psychiatric, and employment issues. These results also echo a meta-analysis study by Magura and colleagues (2004), who reviewed studies related to the effectiveness of vocational counseling services. They found that vocational

counseling is a critical variable in increasing treatment participation and completion rates and reducing the symptoms of various disorders, such as SUDs and psychiatric disorders. Especially, these authors concluded that providing vocational counseling services concurrently with standard treatment would be the most effective in decreasing disorder symptoms and increasing vocational skills. Atherton (2011) indicated that comprehensive treatment would thus have added benefits for consumers in helping them to address the serious SUD and psychiatric issues and lack of vocational skills that are critical barriers to their participation in the workforce, thus limiting their opportunities for integration into their communities.

When developing these comprehensive treatments, the application of ecological theory could be helpful for clinicians in the measurement and interpretation of consumers' barriers and facilitators to treatment. Specifically, using the five constructs of the theory (i.e., individual, contextual, mediating, environmental, and outcome), clinicians would analyze consumers' treatment priorities, assessing their internal and external characteristics in home, neighborhood, clinic, and workplace environments. Then, they would develop individualized plans for reducing consumers' physical and emotional issues in order to facilitate integration into their community and participation in the workforce. These ecological theory–based individualized plans would help consumers identify and address important problems, which would in turn influence their treatment participation rate and treatment outcomes (Angelo et al., 2012; Brodish, Cogburn, Fuller-Rowell, et al., 2011; Gilbert & Marwaha, 2013). Having such an individualized plan encourages consumers to construct a rationale for participating in treatment, thereby increasing positive treatment outcomes, because of the strong relationship between treatment participation rate and treatment outcomes (Graff, Morgan, Epstein, et al., 2009; Hser et al., 2004).

When participants receive vocational counseling services (e.g., job-readiness, job-searching, and resume-development training) along with SUD treatment, they can focus on improving employability and reducing vocational issues. In addition, clinicians can help them increase their expectations about the possibility of transitioning from unemployment with an unhealthy lifestyle to employment with a healthier lifestyle. Consumers and clinicians could also benefit by using individualized plans and appropriate services based on ecological theory because as consumers' motivation and expectations increase, the probability of successful treatment completion also increases. Clinicians would have appropriate expectations and be able to set effective treatment goals for consumers. When consumers have greater motivation, they are more likely to commit to treatment, thereby reducing the likelihood of attrition. Therefore, applying ecological theory is an effective strategy for developing individualized plans in order to increase consumers' participation rates and improve their chances of recovery (e.g., reduction in severity of alcohol use, drug use, and psychiatric issues and increase in employability).

This study recognizes the benefits of employing an ecological theory framework to design and execute a comprehensive treatment plan for unemployed and underemployed individuals with SUDs and co-occurring psychiatric disorders, providing strong evidence that consumers' alcohol use, drug use, and psychiatric issues are reduced and employment rates are increased with comprehensive addiction and vocational treatment.

**Second Research Question**

The second research question examined whether the treatment participation rate mediated the relationships between baseline alcohol use, drug use, and psychiatric issue severity and 210-day post-baseline employment status. The following is a discussion of the data analyses results and comparison of these results to those found in previous literature. Unfortunately, while some

studies have addressed treatment participation rate as an endpoint, and others have addressed the influence of baseline issue severity on employability and consumer issue outcomes, no other studies of consumers have investigated the pathway from baseline consumer issue severity through treatment participation rate to issue and employment outcomes in consumers receiving SUD and vocational counseling services. In addition, many studies of the influence of consumers' baseline severity of alcohol, drug, and psychiatric issues use the endpoint of treatment attrition rather than treatment participation rate. However, for over 30 years, clinicians have commented that a low treatment participation rate is related to a high treatment dropout rate (Hser et al., 2004; Klesges et al., 1988; Maes & Schlosser, 1988; Neumann & Hare, 2008; Stanton & Shadish, 1997). A high rate of treatment participation is critical a prerequisite for completing treatment and directly influences treatment outcomes (Garnick et al., 2009).

**Baseline alcohol use severity, treatment participation rate, and 210-day employment status.** Using SEM, I found the following: (1) a negative direct effect between severity of consumers' baseline alcohol issues and treatment participation rate, (2) a positive direct effect between treatment participation rate and 210-day post-baseline employment status, and (3) a negative indirect effect between baseline alcohol issues and 210-day post-baseline employment status.

First, the finding of a negative relationship between severity of baseline alcohol issues and treatment participation rate is congruent with previous literature: In their examination of baseline alcohol issues and treatment participation rates, Hser and colleagues (2004) also found that as consumers' baseline alcohol issues increased, treatment participation rates decreased. In their study of high treatment dropout rates of individuals with SUDs, Schulte and colleagues (2010) found that baseline alcohol misuse level consistently predicted treatment dropout rates. Lopez-

Goni and colleagues (2011) and Odenwald and Semrau (2013) found that more severe baseline alcohol issues were associated with a higher likelihood of treatment dropout.

Second, the current study found that lower SAIOP participation rates (i.e., frequent appointment cancellations and high no-show rates) directly influenced consumers' 210-day employment status. This finding is congruent with those of previous studies: McKay and colleagues (2004) found that as consumers' treatment participation rates increased, their post-treatment employment rates increased. In their study, Huebner and Cobbina (2007) showed that the group who completed SUD treatment showed a higher post-treatment employment rate than the group who failed completion. In another study, Evans and colleagues (2009) found that the group who completed treatment showed an employment rate approximately two times higher than that of the dropout group at 12 months follow-up evaluation. Likewise, Jaffe and colleagues (2012) found that a group with fewer SUD issues had higher employment rates after completing SUD treatment than a group with a more severe level of SUDs.

Third, the current study found an indirect effect, but no direct effect, between baseline alcohol issues and 210-day post-baseline employment. This finding contradicts those of multiple studies that have found a direct relationship (Catalano, Dooley, Wilson, & Hough, 1993; Evans et al., 2009; Kessler, Turner, & House, 1987; Kwon et al., 2010; Pirkola, Isomrtsa, Suvisaari, et al., 2005). The simple explanation for this discrepancy is that adding treatment participation rate as a mediating variable provides a more accurate model of the relationship between consumers' baseline alcohol use issues and their employment status after long-term comprehensive treatment.

This model illustrates a three-step cycle: First, the more severe consumers' alcohol issues are, the lower their treatment participation rate is. Second, the lower their treatment participation rate is, the less likely the acquisition of appropriate skills to confront their alcohol issues and to

increase their employability. Third, when consumers still have a severe alcohol issue level and low work-related skills, their opportunity to enter the workforce is decreased. Thus, severe alcohol issues can influence the employment process in a vicious cycle that keeps consumers from entering the workforce. However, when treatment participation rate is seen as a mediating factor, one that can be ameliorated, the vicious cycle has the potential to change so that even consumers with severe alcohol issues at baseline can have a greater likelihood of reducing their alcohol issues and gaining employment.

With these findings, which describe the three-step model of linked baseline alcohol use, treatment participation rate, and post-treatment employment and alcohol severity outcomes, my study addresses important theoretical links raised by others. Lopez-Goni and colleagues (2011) showed that consumers' baseline severity of alcohol issues significantly predicts lower treatment participation rates, and Campbell and colleagues (2011) showed that treatment participation rates are significantly related to outcome levels of job readiness and vocational skills. Both these studies showed that individuals with more severe baseline alcohol use issues were less likely to participate in treatment and more likely to have poorer treatment outcomes in terms of severe alcohol issues and lower employment rates (Campbell et al., 2011; Lopez-Goni et al., 2011).

As my results indicate, seeing treatment participation rate as a powerful mediating factor between baseline consumer issues and treatment outcomes makes the relationships in the model more distinct. Although severity of consumers' baseline alcohol issues would appear to influence directly the outcomes of employment and issue severity, high treatment participation rates can mitigate this influence. These findings suggest that to have a greater likelihood of success in improving alcohol use and employment outcomes, more resources need to be devoted to clinical

SUD interventions such as concurrent vocational services, which have been shown to increase treatment participation (Baldwin & Marcus, 2007; Baldwin et al., 2010; Highhouse et al., 2010)

**Baseline drug use severity, treatment participation rate, and 210-day employment status.** Using SEM, I found the following: (1) a negative direct effect between consumers' baseline drug issues and treatment participation rate, (2) a positive direct effect between treatment participation rate and 210-day post-baseline employment status, and (3) a negative indirect effect between baseline drug issues and 210-day employment status.

First, the finding of a negative relationship between severity of baseline drug issues and treatment participation rates echoes those of previous studies: In their examination of baseline drug issues and treatment participation rates, Mertens and Weisner (2000) found that as consumers' baseline drug issues increased, treatment participation rates decreased. In their study of high treatment dropout rates of individuals with drug use issues, Hser and colleagues (2004) found that more severe drug issues were associated with a higher likelihood of treatment dropout. Evans and colleagues (2009) also found that consumers with more severe drug issues showed lower treatment completion rates than those with less severe issues.

Second, the current study found that consumers' lower SAIOP participation rates directly influenced their 210-day employment status. This finding echoes those of previous studies examining the relationship between treatment participation rate and the outcome of employment status (Atherton, 2011; Evans et al., 2009; Huebner & Cobbina, 2007; Jaffe et al., 2012; McKay et al., 2004).

Third, the current study found an indirect effect, but no direct effect, between baseline drug issues and 210-day post-baseline employment status. This finding contradicts those of multiple studies that have found a direct relationship between baseline drug issues and the outcome of

employment (Evans et al., 2009; Huang, Evans, Hara, Weiss, & Hser, 2011; Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012). The simple explanation for this discrepancy is that adding treatment participation rate as a mediating variable provides a more accurate model of the relationship between consumers' baseline drug use issues and their employment status after long-term comprehensive treatment.

The three-step cycle described in my discussion of baseline severity of alcohol issues, treatment participation rate, and employment and alcohol outcomes is useful here as well. That is, first, the more severe consumers' drug issues are, the lower their treatment participation rate is. Second, the lower their treatment participation rate is, the less likely the acquisition of appropriate skills to confront their drug issues and to increase their employability. Third, when consumers still have a severe drug issue level and low work-related skills, their opportunity to enter the workforce is decreased. Thus, severe drug issues can influence the employment process in a vicious cycle that keeps consumers from entering the workforce. However, when mediated treatment participation rate is seen as a powerful factor, one that can be ameliorated, the vicious cycle has the potential to change so that even consumers with severe alcohol issues at baseline can have a greater likelihood of reducing alcohol issues and gaining employment.

With these findings, which describe the three-step model of linked baseline drug use, treatment participation rate, and post-treatment employment and drug use severity outcomes, my study addresses important theoretical links raised by others. Neumann and Hare (2008) found that consumers' baseline severity of drug issues is an important variable in predicting treatment attrition, and Rohde and colleagues (2012) found that treatment participation rate is significantly related to the outcomes of employment status and level of drug issues. Both studies suggest that individuals with severe drug use issues often participate in treatment irregularly and have poor

treatment outcomes (Neumann & Hare, 2008; Rohde et al, 2012). As my results indicate, seeing treatment participation rate as a powerful mediating factor between baseline consumer issues and treatment outcomes makes the relationships in the model more distinct. Although severity of consumers' baseline drug issues would appear to influence directly the outcomes of employment and issue severity, high treatment participation rates can mitigate this influence. These findings suggest that to have a greater likelihood of success in improving drug use and employment outcomes, more resources need to be devoted to clinical SUD interventions such as concurrent vocational services, which have been shown to increase treatment participation (Baldwin & Marcus, 2007; Baldwin et al., 2010; Highhouse et al., 2010).

**Baseline psychiatric issue severity, treatment participation rate, and 210-day employment.** Using SEM, I found the following: (1) a negative direct effect between consumers' baseline psychiatric issues and treatment participation rate, (2) a positive direct effect between treatment participation rate and 210-day post-baseline employment status, and (3) a negative indirect effect between baseline psychiatric issues and 210-day employment status.

First, the finding of a negative relationship between severity of baseline psychiatric issues and treatment participation rate is congruent with previous studies, which all found that as consumers' baseline psychiatric issue levels increased, treatment completion rates decreased (Hiller et al., 1999; Evans et al., 2009; Angelo et al., 2012; Tsang et al., 2010).

Second, the current study found that lower SAIOP participation rates have a positive direct effect on consumers' 210-day employment status. The finding of a direct effect echoes those of previous studies examining the relationship between treatment participation rate and the outcome of employment status (Atherton, 2011; Evans et al., 2009; Huebner & Cobbina, 2007; Jaffe et al., 2012; McKay et al., 2004).

Third, the current study found an indirect effect, but no direct effect, between baseline psychiatric issues and 210-day post-baseline employment status. This finding contradicts those of multiple studies that have found a direct relationship between severity of baseline psychiatric issues and the outcome of employment (Gilbert & Marwaha, 2013; Hefferman & Pilkington, 2011; Jang, Wang, & Lin, 2013; Rinaldi, Montibeller, & Perkins, 2011; Schneider, Bassi, & Ryan, 2009). Schneider and colleagues (2009) and Rinaldi and colleagues (2011) indicated that employment rate is negatively related to severe psychiatric issues. Likewise, Gilbert and Marwaha (2013) suggested that consumers' severity of psychiatric issues is a critical variable in predicting the length of unemployment. Jang and colleagues (2013) found that after completing treatment, consumers with a lower level of psychiatric disorders are more likely to be employed than those with more severe issues. The simple explanation for the discrepancy between their results and mine is that adding treatment participation rate as a mediating variable provides a more accurate model of the relationship between consumers' baseline psychiatric issues and their employment status after long-term comprehensive treatment.

The three-step cycle illustrated in my discussions of baseline severity of drug and alcohol issues, treatment participation, and employment and issue outcomes is useful here as well. That is, first, the more severe consumers' psychiatric issues are, the lower their treatment participation rate is. Second, the lower their treatment participation rate is, the less likely the acquisition of appropriate skills to confront their psychiatric issues and to increase their employability is. Third, when consumers still have more severe psychiatric issues and low work-related skills, their opportunity to enter the workforce is decreased. Thus, severe psychiatric issues can influence the employment process in a vicious cycle that keeps consumers from entering the workforce. However, when mediated by treatment participation rates, the vicious cycle has the potential to

change so that even consumers with severe psychiatric issues at baseline can have a greater likelihood of reducing these issues and gaining employment.

With these findings, which describe the three-step model of linked baseline psychiatric issues, treatment participation rate, and employment and psychiatric severity outcomes, my study addresses theoretical links raised by others. Kawakami and colleagues (2013) found that consumers' baseline severity of psychiatric issues is an important variable in predicting unemployment and employability, and Mueser and colleagues (2011) found that treatment participation rates are significantly related to the outcomes of vocational skills level and employment. In addition, Gilbert and Marwaha (2013) and Jang and colleagues (2013) indicated that individuals with severe psychiatric issues are less likely to participate in treatment regularly and more likely to have poor treatment outcomes. As my results indicate, seeing treatment participation rate as a powerful mediating factor between baseline consumer issues and treatment outcomes makes the relationships in the model more distinct. Although severity of consumers' baseline psychiatric issues would appear to influence directly the outcomes of employment and issue severity, high treatment participation rates can mitigate this influence. These findings suggest that to have a greater likelihood of success in improving psychiatric and employment outcomes, more resources need to be devoted to clinical SUD interventions such as concurrent vocational services, which have been shown to increase treatment participation (Baldwin & Marcus, 2007; Baldwin et al., 2010; Highhouse et al., 2010).

## Summary of Research Questions and Hypotheses Results

For research question 1, the results showed significant reductions from baseline in consumers' alcohol use, drug use, and psychiatric issue severities at 210 days post-baseline. Through Spearman's correlation analyses, we know that the significantly reduced symptoms of

consumers' alcohol, drug, and psychiatric issues may be due to the close associations between them (Atherton, 2011; McHugo et al, 2012; Mueser, Deavers, Penn, & Cassisi, 2013). The results also showed a significant increase from baseline in the employment rate at 210 days post-baseline.

For research question 2, the examination of the direct and indirect effects of critical variables, the overall model that best fit the data in this study was somewhat consistent with previous works, except that my data analyses indicated the mediating effect of treatment participation rate on the relationships between consumers' baseline alcohol use, drug use, and psychiatric issue severity and 210 days post-baseline employment status. Specifically, in my study, severe alcohol issues negatively influenced treatment attendance, and lower treatment participation rates led to more negative treatment outcomes with respect to alcohol issues and employment.

In addition, because individuals with severe alcohol issues (Hogue et al., 2010; Odenwald & Semrau, 2013), drug issues (Jackson & Shannon, 2012), and psychiatric issues (Medalia & Saperstein, 2011) are more likely to have a lower level of motivation to participate in SAIOP treatment, which is a significant predictor of treatment dropout and poor treatment outcomes, improving motivation is critical. Some researchers have shown that providing vocational counseling services is an effective means of motivating consumers to participate in treatment and gain economic benefits (Corbière, Zaniboni, & Lecomte, et al, 2011; Moos, 2011; Richman, Hope, & Mihalas, 2010; Rosenthal, 2012). Therefore, in order to increase consumers' treatment completion rates and related positive outcomes (i.e., a decrease in issue severity levels and increase in treatment participation and employability), a strategy to increase consumers'

motivation and provide enough rationale to participate in treatment is required (Jackson & Shannon, 2012; McKellar et al., 2006).

Furthermore, based on the results of the current study and five constructs, the mediating construct (treatment participation rate) should be given primary emphasis in this model for several reasons. First, the treatment center has no control of the consumers' substance use and psychiatric issues at baseline. Second, treatment participation rate is malleable and has a direct positive relationship to employment outcome, thus, as treatment participation rate increases, the probability of obtaining employment also increases. Third, the full model did not fit the collected data and the direct effects of alcohol, drug, and psychiatric issues did not significantly predicted employment status. Therefore, the respecified model was selected in the current study: The influences of alcohol, drug, and psychiatric issues on employment status were mediated by treatment participation rate and only this rate had a direct effect on employment status. While there were no direct effects, the respecified model better describes the variables contributing to the employment status. Specifically, in the respecified model, treatment participation rate has a positive relationship with employment. Therefore, by increasing treatment participation rate, the consumer's likelihood of obtaining employment also increases. In reviewing the findings of the current study, the interpretation of these results must be discussed in light of the limitations of the study.

## Study Limitations

The data used in this study were archival, and there are some limitations to such research. First, access to original data can be limited because of copyright or other legal issues so researchers might not have full data sources with which to conduct a study (Whitley & Kite, 2013). This limitation did not apply to this study because the PWR clinical director gave

permission to access any and all data within the SAIOP's archives. Second, because of the unknown reliability and validity of the archival data under study, which might include errors (e.g., coding and typing errors), one must carefully evaluate the data before conducting a study (Whitley & Kite, 2013). In order to resolve possible data errors, this study conducted various descriptive analyses to ensure that no unrealistic or impossible scores were entered. Third, when conducting archival research, investigators can encounter difficulties if the model violates assumptions of multivariate analysis (Hageman, 2008). In order to address any possible violations, various statistical procedures were conducted to evaluate the normality, homogeneity, and linearity of the data.

In addition to those inherent in research using archival data, this study has a number of other limitations. First, when using a non-experimental research design, there are inherent threats to internal validity because researchers do not control extraneous variables. In order to increase internal validity, this study used the SEM procedure, which incorporates errors into the model when analyzing relationships and mediating effects (Kline, 2004). Second, because of their ease of use, self-report instruments such as the ASI-5 are commonly used in SUD and psychiatric research to capture consumers' experience and post-treatment changes. Although vocational services and other forms of treatment have been shown to influence consumers, self-reporting itself may also influence participants' psychological status positively during survey completion so that they overstate treatment effectiveness (Wand et al., 2010).

## Implications of the Study

The results of this study have implications for rehabilitation administrators and counselors. This section provides an overview of these implications.

**Implications for Rehabilitation Administrators**

The findings of this study provided critical evidence for the benefits of implementing an integrated intervention approach for consumers with SUDs and psychiatric disorders. Traditional treatment interventions have specifically focused only on the physiological and psychiatric symptoms that come with alcohol, drug, and psychiatric issues (Baker et al., 2012; Grella et al., 2009; Highhouse et al., 2010; Staines et al., 2004). However, because the treatment needs of consumers and stakeholders are complicated, more effective treatment requires integrated services that take individual, environmental, and mixed issues into account (He et al., 2010). Comprehensive treatment plans should be developed and provided for consumers to reduce SUD and psychiatric issues and to increase employability (Atherton, 2011; Magura et al., 2004).

Using these five constructs, rehabilitation administrators would assess consumers' internal, external, and mixed issues in order to develop comprehensive treatment plans to reduce consumers' issues and increase employability. By providing concurrent SUD, psychiatric, and vocational counseling services, rehabilitation administrators might expect consumers' maximized movement from unemployment with an unhealthy lifestyle to employment with a healthier lifestyle (He et al., 2010). The Center for Substance Abuse Treatment (2000) indicates that assessing baseline and outcome levels of SUDs, mental illness issues, and employment are important criteria in evaluating program effectiveness. Emphasizing the key role employment plays in SUD recovery, the report strongly recommended legislative reform that mandates the integration of vocational services into substance abuse treatment programs and their evaluations (Center for Substance Abuse Treatment, 2000).

In addition, the findings of my study indicating that consumers' alcohol use, drug use, and psychiatric issues influence one another and affect treatment participation rates strengthen the

rationale for assessing all of consumers' various issues at intake in order to develop comprehensive interventions. However, because so few vocational counseling strategies have been studied and assessed, rehabilitation administrators may face difficulties in designing comprehensive services (Atherton, 2011; Baker et al., 2006; Grella et al., 2009; Richardson & Abraham, 2012). This lack of practice-based information has already proved troublesome to rehabilitation administrators when designing integrated interventions, delivering services, and evaluating treatments (Killackey et al., 2008; Magura et al, 2004; Rogers & MacDonald-Wilson, 2011). In order to encourage the design, provision, and evaluation of comprehensive treatments, licensing and credentialing boards could require that rehabilitation administrators take continuing education courses that keep them abreast of current trends in SUD and psychiatric treatment plans that incorporate vocational counseling services.

When consumers have severe SUD and psychiatric issues and low work-related skills, their probability of entering the workforce is greatly reduced. This study provided significant evidence of the importance of higher treatment participation rates in predicting positive treatment outcomes (e.g., decreased alcohol use, drug use, and psychiatric issues and increased employability). The implication is that increasing consumers' treatment participation rates maximizes their treatment outcomes. This finding is congruent with previous literature that found individuals with severe SUDs and psychiatric issues need interventions that increase their rationale to participate (Boscarino, Rukstalis, Hoffman, et al., 2010; Evans et al., 2009; Garcia-Rodriguez, Secades-Villa, Higgins, et al., 2009; Gilbert & Marwaha, 2013; Hefferman & Pilkington, 2011; Kwon et al., 2010).

Finally, when designing treatment plans, rehabilitation administrators should employ strategies that increase consumers' motivation to participate consistently in treatment in order to

change the vicious cycle cause by high levels of consumer issues that have previously undermined treatment participation and employability. To change the vicious SUDs-unemployment cycle of high consumer issues-lower treatment participation rate-poor issue and employability outcomes, rehabilitation administrators must include additional strategies in designing treatments (Jang et al., 2013; Rinaldi et al., 2011). The Department of Veterans Affairs/Department of Defense (VA/DoD) has noted that because motivation influences treatment participation, which affects outcomes, psychosocial interventions that spur consumer initiative, such as concurrent vocational counseling, motivational interviewing, and cognitive-behavioral therapy, should be incorporated into comprehensive SUD treatment plans (U.S. Department of Veterans Affairs, 2009). By participating in vocational training, consumers would gain increased confidence in their own employability as they complete assignments that have real-world implications, increasing their motivation to participate in treatment and gain more skills. Therefore, to increase consumer motivation and treatment participation, rehabilitation administrators should become knowledgeable about SUD treatment strategies that incorporate vocational counseling.

**Implications for Rehabilitation Counselors**

Ecological theory is a useful framework for exploring consumers' issues and developing effective treatment plans. In my study, consumers who participated in comprehensive treatment that included vocational services showed reduced levels of alcohol use, drug use, and psychiatric issues and increased likelihood of employment, with treatment participation rate mediating the relationship between consumers' baseline issues and 210-day employment. In order to use the framework of ecological theory in their own specific settings, rehabilitation counselors must become familiar with various strategies that integrate vocational counseling services into

comprehensive treatment (Atherton, 2011). Armed with knowledge of these strategies, rehabilitation counselors would become better equipped to help individuals with complex SUD, psychiatric, and employment issues.

In addition, some researchers have argued that providing services at an appropriate time and encouraging consumers to participate in treatment are important roles of services providers (Atherton, 2011; Barkhof, De Haan, Meijer, et al., 2006; Mulder, Koopmans, & Hengeveld, 2005). These two ideas are supported by the results of my study, which showed the effectiveness of a long-term SAIOP that provided concurrent vocational and SUD treatment. Based on the study's finding that consumers' baseline issues influence their treatment participation rate, which in turn affects treatment outcomes, rehabilitation counselors should participate in continuing education courses that keep them abreast of the most effective strategies to reduce consumers' attrition and absenteeism, including interventions that increase consumers' insights into the beneficial effects of attending and participating in treatment, thus increasing their motivation.

By applying the six processes outlined by Szymanski and Hershenson (1998), new strategies could be developed for improving consumers' treatment participation rate. These six processes are congruence, decision-making, development, socialization, allocation, and chance.

*Congruence* was defined as the relative match of individuals with their environments (Szymanski & Hershenson, 2005). Consumers with a high level of congruence with the clinical and work settings are more likely to persist compared to those with a low level of congruence. Perhaps many of the unemployed consumers who were interested entering in workforce were discouraged by the perceived social barriers. Thus, by educating consumers about the clinical setting and the benefits of participating in workplace and society, they would have fewer perceived barriers and increase feelings of congruence with the environment.

*Decision-making* was defined as the process used to consider career-related alternatives and formulate decisions (Szymanski & Hershenson, 2005). As consumers become aware of and responsible for the decision-making process, they will also become mindful of the costs and benefits of attending SAIOP based on vocational counseling services and then their treatment participation rate would be increased (Conyers, 2004). In general, when consumers believe that their lives would be better because of treatment, then their anxiety levels to attend the treatment would decrease (Taylor & Abramowitz, 2013).

The third process, *development or changes,* are influenced by interaction between perceptions and characteristics of the consumers and their environment (Szymanski & Hershenson, 2005). Consumers influence their environment, conversely, the environment influence them. When the environment impedes consumers, consumers and clinicians should attempt to change their environment and reduce the barriers impeding treatment participation.

The four process that could have a positive influence of treatment participation rate is *Socialization* or the process by which consumers understand their role in treatment (Szymanski & Hershenson, 2005). When consumers are socialized successfully, they are likely to have positive experience and be motivated to seek and attend treatment. In the socialization process, consumers become aware of the skills to succeed in a group setting and complete treatment successfully.

The fifth process, *allocation*, was defined as a process by which external constructs (e.g., family and clinicians) include or exclude consumers attending treatment (Szymanski & Hershenson, 2005). While no one would directly deny SAIOP based on vocational counseling services to unemployed or underemployed consumers with alcohol, drug, or psychiatric issues, a lack of or misappropriation of external resources could force clinicians reduce the amount of

services available. Likewise, with efficient and effective application of external resources, treatments could not only fund the comprehensive services but also increase the attractiveness of consumers in the program, and then consumers seek and participate in treatment.

Finally, *chance* was defined as unforeseen events or meetings (Szymanski & Hershenson, 2005). Many consumers may have experienced an event, which create a barrier to attending SAIOP based on vocational counseling services. For example, a car accident may have increase the complexity of attending treatment, thereby reducing the likelihood of obtain opportunity to enter the workforce. Therefore, with mediated model developed in the current study, these six processes with would be applied when developing a strategy for improving treatment participation rate in SAIOP based on vocational counseling services.

## Implications for Future Research

The present study showed the effectiveness of an SAIOP based on vocational counseling services, and described the direct and indirect relationships between five critical variables (baseline severity level of alcohol use, drug use, and psychiatric issues; treatment participation rate; and the outcome of employment status). Future studies investigating the concurrent provision of vocational counseling services in SAIOPs would help in the accumulation of clinical evidence about the effectiveness of comprehensive services for individuals with SUDs and psychiatric disorders. Comparative studies examining the different outcomes (e.g., issue severity levels, employment rates) of a group receiving only SUD treatment and another group receiving integrated SUD and vocational treatment would provide additional clinical data on the effectiveness of comprehensive treatment, strengthening the mandate for concurrent vocational counseling services for consumers. Such studies would also clarify the effectiveness of different

vocational interventions in these treatment settings, and broaden our understanding of the limitations created by neglecting concurrent vocational counseling.

Further study of the comprehensive reciprocal relationships between critical variables is also recommended. Although this study explored one-way direct and indirect effects between five critical variables, investigating additional relationships could prove helpful in deepening our understanding of the mutual connections in treatment. In addition, collecting information on consumers' employment status and issue level severity at multiple periods during and after treatment could be helpful in the construction of a model that describes appropriate service periods for providing comprehensive interventions.

To extend the findings of this exploratory study, future research should be conducted with an appropriate number of study participants. In clinical settings, high attrition rates and low treatment participation rates are common. To mitigate this problem, researchers should conduct studies with the appropriate sample sizes for analyzing data with SEM (Killackey et al., 2008; Smelson et al., 2012). Therefore, one interesting possibility would be to have a national survey conducted at multiple sites.

## Conclusion

This study made significant theoretical and practical contributions in its examination of two research questions: (1) the effectiveness at 210 days of an SAIOP based on vocational counseling services for unemployed and underemployed consumers group with SUDs, many with co-occurring psychiatric disorders; and (2) the direct and indirect relationships between consumers' baseline levels of alcohol use, drug use, and psychiatric issues; treatment participation rate; and 210-day post-baseline employment status. The results of the current study supports the theoretical and practical use of ecological theory in the creation and operational effectiveness of

an SAIOP based on vocational counseling services to reduce consumers' alcohol use, drug use, and psychiatric issue levels and increase employment. Using SEM, this study also developed a model of the direct and indirect relationships between baseline severity levels of consumers' SUD and psychiatric issues, treatment participation rate, and 210-day post-baseline employment status. In sum, ecological theory provides a beneficial framework for exploring consumers' internal, environmental, and mixed issues, and for designing and evaluating comprehensive treatment.

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## APPENDIX A: PROJECT WORKING RECOVERY (PWR) EVALUATION SURVEY

### PROJECT WORKING RECOVERY (PWR) EVALUATION SURVEY

PWR ID#: _ _ _ _ _ Date: ____ Team Member: _____

***Reminder: If follow-up, please complete contact log for evaluation***

Survey Point (circle one): Baseline 30-day 90-day 180-day

Employment status (choose one): Full-Time Part-Time (30 hours/week or less) Unemployed

If working: Name of Employer _____

Job Title _____ DOT Code: _ _ _ -_ _ _ - _ _ _

1. Do you have a valid driver's license? (circle one) YES NO

2. Do you have an automobile available for your use? YES NO

3. How many days were you paid for working in the past 30? ____ days

4. How much did you receive from employment (new income) in the past 30 days? $____.__

Note: This is a total amount for the past 30-days.

5. How many days in the past 30 did you use any alcohol at all? ____ days

6. How many days in the past 30 did you use alcohol to the point of feeling a "buzz"?____ days

7. How many days in the past 30 have you been troubled or bothered by any alcohol problems?____ days

8. How troubled or bothered have you been in the past 30 days by these alcohol problems? (circle one)

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

9. How important to you now is treatment for these problems?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

10. How much would you say you spent during the past 30 days on alcohol? $____.__

11. How many days in the past 30 did you use Heroin? ____ days

12. How many days in the past 30 did you use Methadone? ____ days

13. How many days in the past 30 did you use other opiate? ____ days

14. How many days in the past 30 did you use Barbiturates? ____ days

15. How many days in the past 30 did you use other sedatives/hypnotics? ____ days

16. How many days in the past 30 did you use Cocaine? ____ days

17. How many days in the past 30 did you use Amphetamines? ____ days

18. How many days in the past 30 did you use Marijuana? ____ days

19. How many days in the past 30 did you use Hallucinogens? ____ days

20. How many days in the past 30 did you use more than one drug? ____ days

21. How many days in the past 30 did/ have you experienced problems with drug use? ____ days

22. How troubled or bothered have you been in the past 30 days by these drug problems? (circle one)

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

23. How important to you now is treatment for these problems?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

24. Are you satisfied with your current marital situation? (circle one) Yes No Indifferent

25. How many days in the past 30 have you had serious conflicts with your family? ____ days

26. How troubled or bothered have you been in the past 30 days by family problems? (circle one)

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

27. How important to you now is treatment for these problems ?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

28. Have you had significant periods when you have experienced serious problems in the past 30 days with your (answer all):

| | | |
|---|---|---|
| Mother | Yes | No |
| Father | Yes | No |
| Brothers/Sisters | Yes | No |
| Sexual partner/spouse | Yes | No |
| Children | Yes | No |
| Other significant family | Yes | No |
| Close Friends | Yes | No |
| Neighbors | Yes | No |
| Co-Workers | Yes | No |

29. How many days have you experienced medical problems in the last 30? ____ days

30. How troubled or bothered have you been by these medical problems in the past 30 days?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

31. How important to you now is treatment for these medical problems?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

32. Are you presently awaiting charges, trial, or sentencing? YES NO

33. How many days in the past 30 have you engaged in illegal activity for profit? ____ days

34. How serious do you feel your present legal problems are?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

35. How important to you now is counseling or referral for these legal problems?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

36. How much money did you receive from illegal sources in the past 30 days? $____.__

37. Have you had significant periods when you have experienced serious problems in the past 30 days with (answer all):

| | | |
|---|---|---|
| Experienced serious depression? | Yes | No |
| Experienced serious anxiety or tension? | Yes | No |
| Experienced hallucinations? | Yes | No |
| Experienced trouble understanding, concentrating or remembering? | Yes | No |
| Experienced trouble controlling violent behavior? | Yes | No |
| Experienced serious thoughts of suicide? | Yes | No |
| Attempted suicide? | Yes | No |
| Have you taken prescribed medication for any psychological / emotional problem? | Yes | No |

38. How many days in the past 30 have you experienced these psychological or emotional problems?
____ days

39. How much have you been bothered by these psychological or emotional problems in the past 30 days?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

40. How important to you now is treatment for these psychological problems?

0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

## APPENDIX B: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
11-09 Brody Medical Sciences Building • 600 Moye Boulevard • Greenville, NC 27834
Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb

TO: Paul Toriello, PhD, Department of Rehabilitation Studies, ECU

FROM: UMCIRB

DATE: August 16, 2010

RE: Expedited Continuing Review of a Research Study

TITLE: "Project Working Recovery (PWR)"

**UMCIRB #07-0455**

The above referenced research study was initially reviewed and approved by expedited review on 7/24/07. This research study has undergone a subsequent continuing review using expedited review on 8/16/10. This research study is eligible for expedited review because it is research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.). The Chairperson (or designee) deemed this **KBR Charitable Trust** sponsored study **no more than minimal risk** requiring a continuing review in **12 months**. Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

The above referenced research study has been given approval for the period of **8/16/10** to **8/15/11**. The approval includes the following items:

- Continuing Review Form (dated 7/26/10)
- Protocol summary
- Informed consent: General (dated 8/5/10)
- Informed consent: PORT (dated 8/5/10)
- Informed consent: WBJ (dated 8/5/10)
- Change questionnaire
- Addiction severity index

The Chairperson (or designee) does not have a conflict of interest on this study.

**The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies under the Food and Drug Administration regulation. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.**

## APPENDIX C: GENERAL CONSENT AND HIPAA DOCUMENT

**Unique Identifier: Toriello PWR Evaluation**

Title of Research Study: Project Working Recovery (PWR))
Principal Investigator: Paul J. Toriello, RhD
Institution: East Carolina University

**INTRODUCTION**

You have been asked to participate in a research study being conducted by Paul J. Toriello with East Carolina University. The purpose of this study is to evaluate the impact of employment and employment related issues on your treatment and recovery from substance abuse. As a participant in Project Working Recovery (PWR) you will have the following opportunities.

(a) Complete surveys that measure issues surrounding your substance abuse. These issues include employment, medical, legal, psychological, and motivation.
(b) *If you are unemployed*, you can participate in a 30-hour employment counseling intervention intended to help you find and keep a job, as well as support your recovery.

**PLAN AND PROCEDURES**

***If you are NOT eligible for the employment counseling:***

1. If you choose to participate you will first complete the above surveys.
2. After about 120 days, you will be contacted to complete the surveys again, over the phone or by mail.
3. Finally, after another 90-days, you will be contacted to complete the surveys one last time, again over the phone, or by mail.

***If you are eligible for the employment counseling:***

1. If you choose to participate you will first complete the above surveys.
2. You will then attend 3 counseling sessions per week for about five weeks at the PWR Clinic located in ECU's Department of Rehabilitation Studies (DRS). The purpose of the counseling sessions will be to help you with job searching, job interviewing, as well as keeping a job during your recovery. With your consent, these counseling sessions will be observed live, via a camera, from a hidden observation room as well as videotaped. The observation and video tapes will only be of the case manager: *your face will not be on camera or recorded.* The observations and video recordings will be strictly used for supervision and evaluation of the PWR case managers.
3. After about 30 days, you will be contacted to complete the surveys again in person at the PWR clinic, over the phone, or by mail.
4. After an additional 90-days, you will be contacted to complete the surveys again in person at the PWR clinic, over the phone, or by mail.
5. Finally, after another 90-days, you will be contacted to complete the surveys one last time, again in person at the PWR clinic, over the phone, or by mail.

**POTENTIAL RISKS AND DISCOMFORTS**

Risks to study participants include unanticipated emotional reactions from completing the surveys and/or counseling sessions. You may terminate the surveys and/or counseling session at any time.

**POTENTIAL BENEFITS**

By participating in PWR, our goal is to understand how employment impacts your recovery from substance abuse, as well as increase your employment functioning.

**SUBJECT PRIVACY AND CONFIDENTIALITY OF RECORDS**

To protect your confidentially, you will be assigned a five digit project number; this will allow us to track all surveys you have completed. All project data will be secured in a locked filing cabinet or secured computers within the DRS. **Please note there are limitations to the protection of your confidentially. Specifically, PWR staff will be required to contact the local authorities if they believe you are a imminent threat to hurting yourself and/or another individual. Also, local authorities will be contacted if PWR staff suspect there is child abuse occurring within your home.**

**COSTS OF PARTICIPATION**

**Unique Identifier: Toriello PWR Evaluation**
There is no cost to participate in this project.

**COMPENSATION**

You are eligible for incentives when you participate in PWR activities. Specifically, when you participate in PWR activities you will receive incentives in the form of McDonald's gift cards and/or Greenville Area bus passes.

Please note that one incentive, whether it is a McDonald's gift card, or bus pass has a $6 value.

***If you are NOT eligible for the employment counseling you will receive:***

- Two incentives when you complete the initial baseline survey; and
- Two incentives each time you complete follow-up surveys.

***If you are eligible for the employment counseling you will receive:***

- Two incentives when you complete the initial baseline survey;
- Two incentives each time you complete follow-up surveys;
- Two incentives when you attend your intake session at the PWR clinic;
- Two incentives for every three hours of services completed at the PWR clinic (maximum of 9 hours per week).

**COMPENSATION FOR INJURY**

The policy of East Carolina University and/or Pitt County Memorial Hospital does not provide payment or medical care for research participants because of physical or other injury that result from this research study. Every effort will be made to make the facilities of the School of Medicine and Pitt County Memorial Hospital available for care in the event of injury. You do not give up any legal rights as a research participant by signing this consent form.

**VOLUNTARY PARTICIPATION**

Participating in this study is voluntary. If you decide not to be in this study after it has already started, you may stop at any time without losing benefits that you should normally receive. You may stop at any time you choose without penalty or without causing a problem with your receipt of the incentives for completing the surveys.

**PERSONS TO CONTACT WITH QUESTIONS**

The investigators will be available to answer any questions concerning this research, now or in the future. You may contact the principal investigator; Paul J. Toriello at phone numbers 252-744-6297 (days) or 252-561-5703 (nights and weekends). If you have questions about your rights as a research subject, you may call the Chair of the University and Medical Center Institutional Review Board at phone number 252-744-2914 (days).

**Unique Identifier: Toriello PWR Evaluation**

**Title of research study:** Project Working Recovery (PWR)

I have read all of the above information, asked questions and have received satisfactory answers in areas I did not understand. (A copy of this signed and dated consent form will be given to the person signing this form as the participant or as the participant authorized representative.)

Please indicate which parts of the study you are willing to participate in by checking "yes" next to those parts and check "no" next to the parts you are not willing to participate in. Please check N/A for those parts for which you are not eligible. Please note that you can still withdrawal from any part of the study at any time, regardless of your response below.

a) Survey Completion Yes____ No____

b) Employment Counseling Sessions at DRS Yes____ No____ N/A____

c) Employment Counseling Session Observation & Recording Yes____ No____ N/A____

Participant's Name **(PRINT)** **Signature** **Date** **Time**

If applicable:

Guardian's Name **(PRINT)** **Signature** **Date** **Time**

**PERSON ADMINISTERING CONSENT: I have conducted the consent process and orally reviewed the contents of the consent document. I believe the participant understands the research.**

Person Obtaining consent **(PRINT)** **Signature** **Date**

Principal Investigator's **(PRINT)** **Signature** **Date**

## APPENDIX D: PROJECT WORKING RECOVERY (PWR) CONTACT INFORMATION FORM

### PROJECT WORKING RECOVERY (PWR) CONTACT INFORMATION FORM

Participant Name: Last _____ MI __ First _____

PWR ID#: _ _ _ _ _

**Participant Contact Information:**
Primary Mailing Address:

_____

_____

Secondary Mailing Address: _____

_____

Home Phone #: (____) _____ Best times to call: _____ am/pm

Cell Phone #: (____) _____ Best times to call: _____ am/pm

Work phone #: (____) _____ Best times to call: _____ am/pm

**Demographics**

*Gender* _____ male _____ female *Your Date of Birth* _ _/_ _/_ _ _ _ *Your present age in years.* _____

*Self-Description* (mark one)

_____ White American/European American

_____ African American

_____ Asian American/Pacific Islander

_____ Hispanic

_____ Native American

_____ Other (please specify) _____

*What is the highest level of school you completed?* *What is your current Marital Status?*

_____ Elementary School _____ Single

_____ Middle School _____ Divorced

| | |
|---|---|
| _____ High School/GED | _____ Married |
| _____ Associate's Degree | _____ Widowed |
| _____ Bachelor's Degree | _____ Never Married |
| _____ Graduate Degree | _____ None |

**Other Contact Numbers:**

List people who might know how to reach the client if they should move (parents, siblings, other relatives, friends, co-workers, etc.

(A). Name: _____ Relationship To Participant:_____

First Last Initial

Phone: (____) _____ Best times to call: _____ am/pm

(B). Name: _____ Relationship To Participant:_____

First Last Initial

Phone: (____) _____ Best times to call: _____ am/pm

(C). Name: _____ Relationship To Participant:_____

First Last Initial

Phone: (____) _____ Best times to call: _____ am/pm

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**Key Dates:**

Date of Baseline: _____

Date of Intake (if applicable): _____

## APPENDIX E: PROJECT WORKING RECOVERY (PWR) MENU OF SERVICES

### PROJECT WORKING RECOVERY (PWR) MENU OF SERVICES

**Key:** **Motivational Interviewing (MI)**

**Community Reinforcement Approach (CRA)**

**Cognitive Behavioral Therapy (CBT)**

| Life Dimension | Problem | Services | Intervention Model(s) | Intervention Tasks |
|---|---|---|---|---|
| 1. Acute Intoxication and/or Withdrawal | 1. Consumer has withdrawal issues that interfere with treatment or recovery. | 1A. Psychiatric.<br><br>1B. Crisis contingency planning. | 1A. Consult w/Psychiatrist. | 1A. Schedule/complete consults as needed. |
| | | | 1B. PCP crisis plan. | 1B. Review/revise crisis plan with consumer PRN. |
| 2. Biomedical Conditions and Complications | 1. Consumer has biomedical issues that interfere with treatment or recovery. | 1A. Disease management.<br><br>1B. Crisis contingency planning.<br><br>1C. Individual counseling.<br><br>1D. Relapse prevention. | 1A1. Case management. | 1A1. Refer to needed biomedical care. |
| | | | | 1A1. Follow-up on referrals and services. |
| | | | | 1A1. Revise PCP with consumer for biomedical needs. |
| | | | 1A2. CRA-job readiness. | 1A2. Evaluate biomedical barriers to work (e.g., functional skills assessment, dexterity tests, work samples). |
| | | | | 1A2. Process evaluation results with consumer. |
| | | | 1B. PCP crisis plan. | 1B. Review/revise crisis plan with consumer PRN. |
| | | | 1C. Motivational Interviewing. | 1C. Increase motivation for biomedical services. |
| | | | 1D. CRA-relapse prevention. | 1D. Practice relapse prevention skills for biomedical triggers |

| Life Dimension | Problem | Services | Intervention Model(s) | Intervention Tasks |
|---|---|---|---|---|
| 3. Emotional-Behavioral-Cognitive (EBC) Conditions/Complications | 1. Consumer has diagnosed EBC issues that interfere with treatment or recovery. This includes mild risk of behaviors endangering self, others, or property. | 1A. Diagnostic/Assessment<br><br>1B. Psychiatric<br><br>1C. Crisis contingency planning.<br><br>1D. Individual counseling.<br><br>1E. Life skills.<br><br>1F. Family counseling.<br><br>1G. Group support. | 1A. D/A team. | 1A. Complete D/A with team. |
| | | | 1B. Consult w/Psychiatrist. | 1B. Schedule/complete consults as needed. |
| | | | 1C1. PCP crisis plan. | 1C. Review/revise crisis plan with consumer PRN. |
| | | | 1C2. Safety plan. | 1C2. Implement safety plan and monitoring per PWR policy. |
| | | | 1D1. Motivational Interviewing. | 1D1. Increase motivation for addressing EBC issues. |
| | | | 1D2. CBT. | 1D2. Schedule/complete CBT sessions with LPC. |
| | | | 1E. CRA-skills training. | 1E. Develop/practice coping skills for EBC issues. |
| | | | | 1E. Practice identifying feelings. |
| | | | | 1E. Practice anger management skills. |
| | | | | 1E. Practice expressing feelings. |
| | | | | 1E. Practice coping with worry. |
| | | | | 1E. Practice coping with fears. |
| | | | | 1E. Practice coping with sadness. |
| | | | | 1E. Increase self-esteem |
| | | | 1F. CRA- relationship counseling. | 1F. Schedule/complete counseling with significant others facilitated by LPC. |
| | | | 1G. Peer support. | 1G. Participate in process groups on coping with a mental illness. Topics can focus on specific dx, bx, emotion, coping strategy, and/or tx issues. |

| Life Dimension | Problem | Services | Intervention Model(s) | Intervention Tasks |
|---|---|---|---|---|
| 4. Readiness to Change | 1. Consumer is reluctant to agree to treatment and is ambivalent about change, or the consumer is inconsistent in treatment follow-through, or the consumer has limited awareness of or commitment to change. | 1A. Individual counseling. | 1A. Motivational interviewing. | 1A. Increase motivation for treatment/change. |
| | | | | 1A. Complete/process values card sort. |
| | | 1B. Group counseling. | 1B. Peer support. | 1B. Participate in process groups on barriers and facilitators to change. |
| | | | | 1B. Participate in process groups on values clarification. |
| | | 1C. Family support. | 1C. CRA-relationship counseling. | 1C. Schedule/complete counseling with significant others facilitated by LPC. |
| 5. Relapse, Continued Use or Continued Problem Potential | 1. Consumer has a high potential for relapse/ continued use. | 1A. Relapse prevention. | 1A1. CRA-functional analysis of substance use and pro-social behavior. | 1A.1 Develop/process a framework in which the consumer substance use occurs. Mapping the external (persons, places, things) and internal (thoughts, feelings) antecedents typically associated with substance use. |
| | 2. Consumer has high potential for continued problems. | 1B. Family training. | | 1A1. Revise functional analysis as needed. |
| | | 2A. Life skills- stress management. | | 1A1. Develop/process functional analyses of pro-social behavior |
| | 3. Consumer's current legal situation will distract from treatment and recovery. | 2B. Life skills-money management. | | 1A1. Develop/process family genograms in substance use. |
| | | | | 1A1. Learn physical effects of substance use. |

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| | | 2C. Life skills–work management.<br><br>3A. Individual counseling.<br><br>3B. Case management. | 1A2. CRA- skills training | 1A2. View/process WIO "avoiding users" (JK1) |
| | | | | 1A2. View/process WIO "triggers" (RP1) |
| | | | | 1A2. Learn what a relapse is. |
| | | | | 1A2. Learn/identify relapse clues. |
| | | | | 1A2. Practice skills for coping with triggers. |
| | | | | 1A2. Practice coping with social pressures skills |
| | | | | 1A2. Practice coping with family that use. |
| | | | | 1A2. Practice coping with causes of relapse. |
| | | | | 1A2. Practice what to do if relapse occurs. |
| | | | | 1A2. Learn/practice refusal skills. |
| | | | | 1A2. Practice coping with success. |
| | | | | 1A2. Practice skills for staying away from substances. |
| | | | | 1A2. Learn the power of choice. |
| | | | 1B. CRA- relationship counseling. | 1B. Train significant others to reinforce recovery. Facilitated by LPC. |

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| | | | 2A. CRA- skills training | 2A. Practice coping skills/relaxation training. |
| | | | | 2A. View/process WIO "emotion management" (JK5) |
| | | | | 2A. View/process WIO "crisis management" (JK3) |
| | | | 2B. CRA- skills training | 2B. Complete budget development/ management training. |
| | | | | 2B. View/process WIO "money management" (JK4) |
| | | | 2C. CRA- skills training | 2C. View/process WIO "work management" (JK6) |
| | | | | 2C. View/process WIO "burnout/stress" (JK7) |
| | | | 3A. Motivational Interviewing. | 3A. Increase motivation for addressing legal issues. |
| | | | 3B. Case management | 3B. Conduct criminal background search. |
| | | | | 3B. Refer to needed legal services. |
| | | | | 3B. Follow-up on referrals and services. |
| | | | | 3B. Revise PCP with consumer for legal needs. |

| | | | | |
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| 6. Recovery Environment | 1. Consumer's current work situation will render recovery unlikely. The consumer lacks the necessary job resources/skills to maintain an adequate level of functioning. | 1A. Individual counseling.<br><br>1B. Group counseling.<br><br>1C. Life skills<br><br>1D. Case management. | 1A1. Motivational Interviewing. | 1A1. Increase motivation for choosing, getting, and/or keeping a job. |
| | | | 1A2. CRA- job choosing. | 1A2. Evaluate/process consumer's work values. |
| | | | | 1A2. Evaluate/process consumer's work interests. |
| | | | | 1A2. Evaluate/process consumer's work aptitudes. |
| | | | | 1A2. Complete/process transferable skills analysis. |
| | | | | 1A2. Complete/process an occupational aptitude profile. |
| | | | | 1A2. View/process WIO "job that fits" (JC7) |
| | | | | 1A2. Process WIO "job sampler" worksheet (JC8) (No Video) |
| | | | | 1A2. Complete/process work samples. |
| | | | 1A3. CRA- job getting. | 1A3. Complete vocational counseling on resumes and work gaps. |
| | | | | 1A3. Complete vocational counseling on application issues. |
| | | | | 1A3. Practice interviewing via role-plays. |
| | | | | 1A3. Process WIO "good for recovery" worksheet (JG5) (No Video) |
| | | | 1B1. CRA- job choosing. | 1B1. Identify/discuss job values. |
| | | | | 1B1.Learn to overcome barriers to work. |

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| | | | 1B2. CRA- job getting. | 1B2. View/process WIO "resume bldg" (JG3) |
| | | | | 1B2. Learn/practice ways to find a job. |
| | | | | 1B2. View/process WIO "interviewing" (JG4) |
| | | | 1C1. CRA- job choosing. | 1C1. Explore/discuss jobs on DOT, O*NET, OOH. |
| | | | | 1C1. Research job credential/legal requirements. |
| | | | | 1C1. Identify/process job accommodations and safety issues. |
| | | | | 1C1. Complete/process labor market survey. |
| | | | 1C2. CRA- job getting. | 1C2. Explore types of resumes. |
| | | | | 1C2. Draft resume/or cover letters. |
| | | | | 1C2. Practicing & making cold-calls. |
| | | | | 1C2. Practicing completing applications. |
| | | | 1D. Case management. | 1D. Refer to needed employment services (e.g., job fairs, training programs, VR, etc.). |
| | | | | 1D. Follow-up on referrals and services. |
| | | | | 1D. Revise PCP with consumer for employment needs. |

| Life Dimension | Problem | Services | Intervention Model(s) | Intervention Tasks |
|---|---|---|---|---|
| 6. Recovery Environment (continued) | 2. Consumer's current living situation will render recovery unlikely. The consumer lacks the necessary job resources to maintain a living environment supportive of recovery. | 2A. Individual counseling. | 2A. Motivational Interviewing. | 2A. Increase motivation for addressing housing issues. |
| | | 2B. Case management. | 2B. Case management. | 2B. Refer to needed housing services. |
| | | | | 2B. Follow-up on referrals and services. |
| | | 3A. Individual counseling. | | 2B. Revise PCP with consumer for housing services and needs. |
| | 3. Consumer lacks social network, or has inappropriate social contacts that jeopardize recovery, or has few friends or peers who do not use substances. | | 3A1. Motivational interviewing. | 3A. Increase motivation for addressing social issues. |
| | | 3B. Group counseling. | 3A2. CRA- relationship counseling. | 3A2. Schedule/complete counseling with significant others facilitated by LPC. |
| | | 3C. Case management. | 3B. CRA- social/ recreational counseling | 3B. Practice coping with family issues. |
| | | | | 3B. Practice social skills- decision making. |
| | | | | 3B. Practice social skills- non-verbal communication. |
| | | | | 3B. Practice social skills- problem solving. |

| | | | | |
|---|---|---|---|---|
| | | | | 3B. Practice social skills- taking responsibility. |
| | | | | 3B. Learn social skills- boundaries. |
| | | | | 3B. Complete leisure skills training. |
| | | | | 3B. Learn/practice to have fun in recovery. |
| | | | 3C. Case management. | 3C. Refer to needed social supports (e.g., self-help, faith-based, social services, etc). |
| | | | | 3C. Follow-up on referrals and services. |
| | | | | 3C. Revise PCP with consumer for social supports and needs. |