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Predicting substance abuse treatment participation with the Personality Assessment Inventory: An investigation of how personality and interpersonal factors affect treatment

Annese Baum Hutchins

PREDICTING SUBSTANCE ABUSE TREATMENT PARTICIPATION

WITH THE PERSONALITY ASSESSMENT INVENTORY: AN

INVESTIGATION OF HOW PERSONALITY AND

INTERPERSONAL FACTORS AFFECT

TREATMENT

by

Annese Baum Hutchins, B.A., M.Ed.

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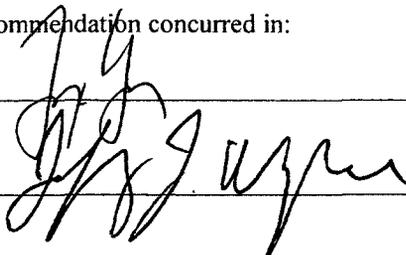
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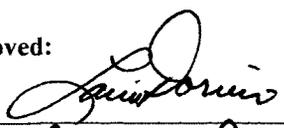
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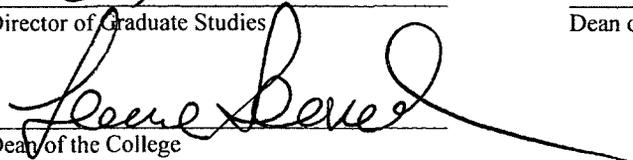
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ABSTRACT

The prevalence of alcohol and drug abuse or dependence among Americans ages 12 and over is thought to be about 9.4% of the total population, or 22 million Americans (Karpiak & Norcross, 2005; Substance Abuse and Mental Health Services Association [SAMHSA], 2003). According to Vuchinich (2002), substance use disorders (SUD) are the most common mental health problem in our society today. Additionally, estimates are that anywhere from half to 84% of all substance use disorder patients also experience a co-occurring disorder (Johnson, Brems, & Burke, 2002).

Traditional treatment facilities usually are focused primarily on either substance abuse treatment or psychiatric treatment, and rarely take into account how personal and interpersonal factors associated with one's mental health occur in conjunction with substance use disorders (Clement, Williams, & Waters, 1993). This confined focus of treatment to either substance use or psychiatric issues results in treatment that does not address the totality of the person, even though there has been a recent push to address the unique treatment needs of the substance abusing population (Straussner, 2004). The lack of integrated treatment for both substance and psychiatric problems may explain the high rates of relapse following treatment (Polivy & Herman, 2002).

The current study examined how personality and interpersonal variables are related to behaviors exhibited during treatment in an intensive inpatient substance abuse treatment program. Personality and interpersonal variables were assessed using the

Personality Assessment Inventory (Morey, 1991). Substance abuse treatment behaviors were assessed using the Treatment Process Measure (TPM), which is a brief rating scale for examining various aspects of counselor-rated treatment participation (Joe, Simpson, Greener, & Rowan-Szal, 2004). The TPM for this study was completed weekly by each participant's individual therapist, and these scores were used to assess treatment participation. Pearson Correlations, Analysis of Variance, and a Stepwise Multiple Regression Analysis were the statistical tests used to analyze the data. Results indicated that the Stress Scale, Treatment Rejection Scale, Antisocial Scale and Borderline Scale on the PAI are predictive of treatment participation. In-depth results and implications for future practice and research are discussed.

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Author _Anaese Baum Hutchin_

Date _11/5/12_

DEDICATION

Worthy are you, our Lord and God,
to receive glory and honor and power,
for you created all things,
and by your will they existed and were created.
Revelation 4:11

To the people in my life who have been my support system throughout this long process, and saw the end of this process for me, even when I could not; I could not have done this without you. This dedication is not only about this book called a dissertation, but about the entire process of graduate school from beginning to end. I have seen many things in life change over the course of attaining my Ph.D. During these last few years, personally, I have learned many things that will hopefully help me guide others into freedom. I thank God for giving me the strength to endure the tough times and rejoice in His promise for great things ahead!

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it was worth it in the end. Over these years my circle of friends have changed but you two are the constants. You are my best of friends. Thank you for your friendship. I love you. To my Grandmother who has never given up asking me how much longer till I graduate. I'm so glad you have been such a special part of my life and you got to finally see this day. I love you. You are truly an example to follow. To my little dog Scottie, who patiently sat by my side for the first four years of this program. You were a faithful companion to the end. I miss you and will always remember and love you. To Bunny, my other fur-child who has been with me through two graduate programs. You have been, and still are, a source of joy and delight, slobber and all. I wonder what I've looked like all these years through dog eyes? To my husband Paul, you are my love, soul mate, best friend, and partner for this life. You have been the voice of encouragement and reason in the times I thought I could not go on. I thank God for you daily. I love you with all my heart, and I still think we are the perfect match. I look forward to our future together. What doesn't kill us makes us stronger, right? And last but not least, to my dearest Allyson Kate. Words do not express my heartfelt love and devotion to you. You have been with me, and grown with me as I have grown in this process. Having you during this Ph.D. endeavor was a reenergizing breath of fresh air. I hope you will always know how much I love you. I hope I make you proud...you certainly make me proud. I look forward to the day I am able to support you in your educational endeavors, but above all, choose God, chose family, choose happiness, and then find a career. Oh and one last thing Allyson, yes, I am finally finished with this silly dissertation! Let's play Barbies!

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CHAPTER ONE

INTRODUCTION

Psychoactive drug use and abuse has been deeply ingrained in American society since the founding of our nation (Buchanan, 1992). Buchanan (1992) provides a historical review of landmark events of the United States, in conjunction with an illustration of the evolving yet ubiquitous role of substance use over the course of time.

Overall, the frequency of use and type of psychoactive drugs used in the United States can be linked to particular landmark periods of political, social, and economic development (Buchanan, 1992). Specifically, the availability of certain substances during particular time periods, coupled with the acceptance of usage within the population at that time, appears to be linked to an increase in usage and abuse. For example, during the American Revolution a dramatic shift in the role of alcohol occurred when the consumption of alcohol became associated with ideas of independence, equality, democracy, and loyalty to country. Also, corn, American's most abundant crop during this time was distilled into whiskey, and often used to pay worker wages. Years later, another shift in attitudes toward the use of drugs was seen during the Civil War, when cigarette, opiate, and morphine addictions rose rapidly. In modern times, substance use has been associated with ideas from self-realization and political radicalism. Examples of this include marijuana and psychedelics used in the sixties, to the more

current substance use of methamphetamines and prescription drugs, all of which are used as aids in achieving a desired personal experience of invigoration, relaxation, or socialization (Buchanan, 1992).

The abuse of substances has led to the vast problem of addiction. In fact, according to Vuchinich (2002), substance use disorders are the most common mental health problem in our society today. Prevalence reports are inconsistent as to how many individuals have a substance use disorder, because many estimates include both substance abuse and dependence. However, the scope of the problem is enormous, with the most recent estimates for alcohol and drug abuse or dependence among Americans ages 12 and over thought to be about 9.4% of the total population, or 22 million Americans (Karpiak & Norcross, 2005; SAMHSA, 2003). This estimate represents 5-10% of the population as having an alcohol dependency and 1-2% with a drug dependency (Strong Medicine, 1995).

Although substance use disorders exist within all types of individuals, pervading lines of gender, age, ethnicity, race, social class, and socioeconomic status, there is some evidence suggesting certain groups and subgroups are more vulnerable than others. In regard to gender, men are affected at higher rates than women. Estimates indicate that prevalence rates for males are 35%, while for females, rates are only 18% (Rhee et al., 2003). In regard to age, the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev; *DSM-IV-TR*; American Psychiatric Association, 2000) indicates that individuals aged 18-24 have the highest prevalence rates for all substances, including alcohol. Additionally, 10-15% of the elderly population is estimated to have a substance use disorder (Zisserson & Oslin, 2004). Within the 18-24 year old age group, race also

appears to be a differentiating factor with Hispanic and Caucasians having higher rates of substance problems than African American or Asian American individuals (McCabe et al., 2007). Other special populations such as the homeless, the disabled, individuals with mental illness, and gay, lesbian, bisexual, and transgender individuals also have higher rates of addiction, and are even classified sometimes as overlooked or "hidden" faces of addiction (Doweiko, 2006).

Although over the years the types of substances used have varied depending on the times, the problem of addiction is chronic. The scope of the problem is illustrated by a large body of research which outlines problems either caused by or associated with addiction. Overall, the problem of substance use disorders is large, affecting all aspects of the population.

Substance Use Disorders

Understanding the Terminology

Alcohol and drug use lies on a continuum ranging from use, to abuse, and to addiction. The term "use" simply refers to the ingestion of a substance of some sort used to alter physical or mental functioning (Doweiko, 2006). Use of alcohol and drugs can be illegal, such as with crack cocaine or underage drinking, or legal, as with a prescription of Xanax or of-age drinking. The term "use" also can refer to a one-time experimentation with the substance or daily use of the substance. Use of a substance does not necessarily mean that an individual will abuse or become addicted to it.

Terminology and Clinical Definitions of Substance Use Disorders

The American Psychiatric Association *DSM-IV-TR* (2000) outlines two groups of substance use disorders. The first disorder is substance dependence. Substance

dependence disorders are characterized by, "a cluster of cognitive, behavioral, and physiological symptoms" in which "the individual continues use of the substance despite significant substance-related problems" and demonstrates "a pattern of repeated self-administration that can result in tolerance, withdrawal, and compulsive drug-taking behavior" (p. 192). Substance dependence also is commonly referred to as "addiction," meaning that an individual has developed a dependence on the substance, and will continue use despite social, occupational, and interpersonal problems. The repeated use can result in the development of a tolerance to the substance, meaning that the individuals will need an increased amount each time to attain the desired outcome, withdrawal symptoms if the substance is not ingested, and compulsive drug taking behavior (*DSM-IV-TR*, 2000).

The second group of substance use disorders according to the Diagnostic and Statistical Manual of Mental Disorders-IV-TR (*DSM-IV-TR*, 2000) is substance abuse. Although less severe than dependence, abuse is characterized by "a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances" and "must have occurred repeatedly during the same 12-month period" (p. 198). The term "abuse" of a substance means that the person is using a substance for a role that it was not intended, for example, taking another person's prescription drugs or taking medication in ways other than how it was prescribed. Substance abuse can be a one-time event, as in the college student who binge drinks one evening, or can occur over the course of many times, such as regular occurrences of binge drinking, ingesting greater dosages than those prescribed or shortening the intervals between dosages of medicine taken.

Although for diagnostic purposes particular distinctions are made between use, abuse, and dependence, the psychological literature is not as clear on distinguishing these groups of individuals. In fact, in much of the literature reviewed, the terms use, abuse, and addiction or dependence often are used interchangeably, rather than to show differences on the continuum. In an effort to be consistent with and inclusive of all of the current psychological literature on substance use, abuse, and dependence, the term substance use disorder (SUD) will be used to describe any of the categories.

The word "substance" or "chemical" is most often used to reference both drugs and alcohol. The *DSM-IV-TR* (2000), uses the word "substance" to refer to "a drug of abuse, a medication, or a toxin" (p. 191). This encompassing reference is used in the psychological literature as well as the *DSM-IV-TR* (2000) for ease of description and because it is common for individuals to present with more than one substance problem concurrently. In an effort to be consistent with previous studies' terminology, this paper also will use the word "substance" to include both alcohol and psychoactive drugs.

Understanding Substance Use Disorders' Impact on Individuals and Society

Substance use disorders are associated with health and social problems that impact all aspects of our society (Straussner, 2004). The abuse of substances is associated with more deaths, accidents, disabilities, and illnesses than any other avoidable health problem today (Robert Wood Johnson Foundation, 2001). In the United States alone, it is estimated that 110-170 million dollars each year are associated with substance use disorders, such as accidents, time off from work, and hospitalizations (Taylor, 2005).

Medical problems are among the most common resulting from substance use disorders. In fact, recent estimates are that 25% of all primary care patients have a

substance abuse problem, while 20-50% of all patients admitted to a hospital are being treated for an illness related to the effects of alcohol or drugs (Greenfield & Hennessy, 2004; Jones, Knutson, & Haines, 2003; McKay, Koranda, & Axen, 2004). Medical problems that develop after sustained substance abuse, for example cirrhosis of the liver, or acute short-term medical problems, such as heart-attack or stroke, are common reasons for seeking medical attention (Doweiko, 2006; Martin, Enevoldson, & Humphrey, 1997). Other medical complications associated with alcohol and drug use include higher rates of arthritis, headache, back pain, cancers, cardiovascular diseases, infectious diseases such as sexually transmitted diseases, HIV/AIDS, tuberculosis, hepatitis, and bacterial infections such as pneumonia, endocarditis, and skin abscesses (Doweiko, 2006).

Mental health problems also are associated with substance use disorders. Though substance-use disorders comprise the most common mental health problem in the United States, substance use disorders also can exacerbate previous mental health conditions which were experienced prior to abuse, or can contribute to the formation of new mental health symptoms or disorders (Vuchinich, 2002). In fact, Doweiko (2006) cites that six out of ten individuals with a substance use disorder also have at least one mental illness, and substance use disordered individuals are twice as likely as the general population to have an anxiety or mood disorder. Psychosis in young adults also is linked to alcohol and drug abuse (Cohen, 1995). Still, other problems such as cognitive impairment and insomnia also are related to substance use disorders (Brower, Aldrich, Robinson, Zucker, & Greden, 2001; Vik, Cellucci, Jarchow, & Hedt, 2004).

Suicide is more common among alcohol and drug users than the general population. Estimates suggest that alcoholics are 30 times more likely to commit suicide

than the general population (Mosier, 1999) and of all completed suicides, 20-35% are carried out by alcoholics (Lester, 2000; Preuss et al., 2003). Overall, 5% of alcohol dependent persons (Preuss, et al., 2003) and 35% of drug dependent persons will die from suicide (Neeleman & Farrell, 1997).

Alcohol and drug use also are associated with social problems, including increased involvement with crimes such as theft, robbery, homicide, and assault; and is a consistent factor in reports of physical and sexual abuse of children, domestic violence, incest, and rape. According to the Butler Center for Research (Substance Abuse and Crime, 2000), an estimated 80% of all offenses resulting in incarceration in the United States are related to alcohol or drugs, with crimes such as theft and robbery estimated to be committed by individuals under the influence of drugs in about 38-40% of all cases, and half of all homicides being alcohol related (National Foundation for Brain Research, 1992 as cited in Doweiko, 2006). A relationship also exists between homicide and illicit drug use. Women are 28 times more likely to be the victim of intimate partner homicide when drugs are used by one or both partners (Rivara et al., 1997). In addition, 56% of all assaults are alcohol-related (Dyehouse & Sommers, 1998). Moreover, alcohol and drug disordered adults are 2.7 times more likely to physically abuse and 4.2 times more likely to neglect a child (Ireland, 2001).

Statement of the Problem

Years of research and practice have guided clinicians and researchers toward a better understanding of the magnitude of the problems associated with substance use disorders and have laid a solid framework for treating substance abuse. A review of the literature uncovers several specific areas of research of substance abuse topics. In an

article written by Heinrich and Lynn Jr. (2002), the specific areas of research were summarized into the following categories: 1. The external policy environment (such as legal issues, managed care, access to treatment) 2. Treatment and service systems (inpatient, outpatient, private, public, prison, volunteer versus mandated treatment) 3. Structural and operational features of treatment programs (individual therapy, group therapy, other activities such as completion of high school education requirements) 4. Interventions (12-step, cognitive-behavioral, combined treatments for dual diagnosis) 5. Therapist variables (such as age, ethnicity, matched with patient) 6. Patient characteristics (gender, race, ethnicity, sexual orientation, personality disorders, history of criminal activity, trauma) 7. Social environment of patient (support, family system) and 8. Patient outcomes (retention, completion of treatment program, relapse rates)

One of the largest portions of the literature is devoted to understanding patient characteristics. Previous researchers (e.g., Conley, 1981; Mayer, 2005) have profiled an addict. As a result, some characteristics that have been shown to occur more often for addicts include personality disorders, history of past traumas, family history of addiction, and co-occurring addictive and mental disorders. There has been a push to address these unique treatment needs of special substance abusing populations, calling for treatments that are both inclusive and sensitive to age, gender, race, ethnicity, sexual orientation, patients with disabilities, and patients with co-occurring mental disorders (Straussner, 2004). Although the idea of using empirically validated treatments based on the best match of what works for whom is widely accepted in theory, there still appears to be a large gap in our understanding of exactly how to implement research results to practice for the substance use disordered population. This gap is linked to the limited ability

within the current body of literature to generalize the findings, due to problems associated with conflicting results, differing operational definitions of constructs studied, and methodological limitations.

Problems in generalizing results, and conflicting results, are partially due to the variation between treatment programs. The different theoretical orientations, treatment approaches, services provided, and the varying levels of skilled practitioners make it methodologically challenging to tease out which of the factors contribute to successful treatment. Additionally, traditional treatment facilities usually are focused primarily on either substance abuse treatment or psychiatric treatment, and rarely take into account how personal and interpersonal factors associated with one's mental health occur in conjunction with substance use disorders (Clement, Williams, & Waters, 1993). This confined focus of treatment to either substance use or psychiatric issues results in treatment that does not address the totality of the person. The lack of integrated treatment for both substance and psychiatric problems may explain the high rates of relapse following treatment, with for example, 90% of individuals treated for alcohol dependence relapsing within the first 90 days after discharge from treatment (Polivy & Herman, 2002).

Another problem within the body of literature involves the differing definitions of constructs examined, because, as previously discussed, the literature often confuses and intermingles terms along the continuum of substance abuse, either combining or excluding participants based on differing use of substances or comorbid disorders. As a result, although the inclusion or exclusion of such factors makes for tidier research studies, the outcomes are likely not representative of the population in general.

Additionally, outcome research can be difficult to understand, because the reference to outcomes often refers to different things, such as completion of treatment, treatment retention, treatment participation, progression in stages of change, or long-term outcome research.

Methodological issues with previous research also pose problems. Specifically, studies examining personality or interpersonal variables associated with treatment outcomes are limited because most of these studies use the Minnesota Multiphasic Personality Inventory, Second Edition (MMPI-2). As a result, other measures of personality, particularly those which may be better suited for the SUD population or provide different information, have been ignored. As a result of all of these factors, individual patient characteristics within the substance use disordered population are still largely ignored.

Justification

As a result of the large number of individuals with substance abuse and addiction problems, as well as the secondary issues such as medical, social, or psychological problems, most mental health clinicians will at some point be faced with the task of treating substance use disorders. Accordingly, it is important to fill in the holes in the existing psychological literature regarding the best treatment approaches for substance use disordered individuals, so that treatment is efficient and efficacious.

Historically, research about interpersonal and personality factors among substance abusers has been focused on identifying the typology of an addict, specifically attempting to identify those individuals predisposed to developing a substance use disorder; however, there have not been solid answers regarding a pre-addict personality (Doweiko,

2006). That said, although it would be informative to understand personality traits which predispose to addiction, for prevention purposes, clinicians on the front lines of treating addictions would benefit more from a better understanding of how individuals with different types of personal and interpersonal traits respond to substance abuse treatment. With this understanding, substance abuse treatments could be restructured to become more integrative, targeting substance use disorders within the context of specific personality and interpersonal characteristics. For example, treatment programs could integrate empirically validated treatments for personal and interpersonal problems, such as interpersonal process therapy for depressed individuals (e.g., Teyber, 2000; Teyber & McClure, 2011), while also targeting the substance use disorder. In this way, the individual would address both the depression and substance disorder and identify the likely relationship between the two disorders. Overall, this knowledge could provide practical suggestions for better treatment, less relapse, and more successful long-term treatment outcomes.

This study examined how personality and interpersonal variables are related to behaviors exhibited during treatment and subsequent treatment participation in an intensive inpatient substance abuse treatment program. This study is relevant because previous research indicates support for identifying treatments based on sensitivity to pre-treatment client characteristics (Roth & Fonagy, 2005). Additionally, this study is particularly relevant based on its uniqueness from the bulk of research in this area in that it focuses on the immediate responsiveness of patients throughout treatment and examines participation, rather than solely relying on a long-term follow up measure to evaluate treatment outcomes. The results of this study are intended to add to the

literature examining pretreatment characteristics and the process of substance abuse treatment. The purpose of this study was to identify specific types of variables, such as symptoms of a personality disorder, and understand how these are associated with treatment participation, retention or completion, or overall rejection of treatment. For those variables which seem to determine treatment related behaviors or participation, it is possible that initial assessment before treatment begins could be useful in identifying "at risk" patients for poor treatment participation. These patients can then be targeted at the beginning of treatment with a modified supplemental treatment engaging them in treatment while addressing some other related issues, such as interpersonal relations, the ability to give constructive feedback as well as receive it from others, and other areas such as boundaries and emotional regulation, rather than sending the patient off to a "one size fits all" treatment. This approach fits very well with the widely accepted stages of change model put forth by Prochasca and DiClemente (Conners, Donovan, & DiClemente, 2001).

There are other potential benefits of this line of research: In addition to patients receiving the benefit of treatment better tailored to meet their unique needs, treatment programs also could benefit in terms of patients' more rapid response to treatment, which could contribute to less overall cost investment for each treatment program. More specifically, by targeting interventions related to "at-risk" patients, patients might respond more positively to treatment, potentially lowering the incidence of treatment dropout and treatment repetition due to relapse, thus lowering costs invested in non-completion of treatment. From an empirical perspective, this study contributes to the larger body of literature by examining characteristics of patients related to treatment

participation in state-funded, intensive, inpatient, substance abuse treatment centers for civilly committed individuals.

The following research questions are addressed with this study:

1) How do personality variables predict how a patient behaves interpersonally with staff and peers, willingness to discuss difficult material, accept feedback, and give feedback?

2) How do interpersonal variables predict how a patient behaves interpersonally with staff and peers, willingness to discuss difficult material, accept feedback, and give feedback?

3) What pre-treatment patient characteristics are associated with positive/negative participation?

Literature Review

Characteristics of Substance Abusers

Personality traits. For years, researchers have attempted to profile the substance abuser according to personality traits, as well as other psychosocial characteristics. A review of this research points to characteristic personality traits which are more likely to be present in substance abusers than in the general population. For example, alcohol-abusing individuals tend to be more impulsive, neurotic, independent, active, dominant, aggressive, antisocial, under-controlled, and non-conforming than the general population (Barnes, 1983; Martin & Sher, 1994). Similar findings also have been noted in alcoholic-dependent persons. For example, several studies indicate that alcoholics are more likely to exhibit passive, dependent, anxious, immature, irresponsible, impulsive, depressed or manic depressive psychosis, socially deviant, and psychopathological characteristics

(Barnes, 1983; Barry III, 1974; Cox, 1979; Mustanski, Viken, Kaprio, & Rose, 2003).

Although studies aimed at profiling the substance abuser/user are relatively consistent in

terms of a global characteristic snapshot of this population, thorough evaluation of these

studies also indicates that there are great differences within this population on a

microscopic level. For example, individuals with polysubstance dependence, versus

monosubstance dependence, tend to be younger, unemployed, less likely to have a

significant other, as well as have higher rates of childhood physical and emotional

neglect, aggression, self-mutilation, and impulsivity, while the monosubstance users

tended to have higher rates of depression and Axis I disorders (Martinotti, et al., 2009).

Moreover, different combinations of these personality and interpersonal traits found in

this population result in enormous disparity in the treatment needs of each patient within

a clinical setting, as well as in the overall outcomes of treatment. In summary, although

the original goals of many studies were to show similarities, there were substantially

more differences revealed, especially in treatment outcomes, ultimately indicating that

there is no way to unilaterally profile drug and alcohol users. These differences will be

discussed further in the future subsections.

Comorbidity. Because a monolithic profile of substance use disordered

individuals almost certainly does not exist, another strategy for categorizing this

population is to separate individuals into subgroups based on co-occurring disorders.

Comorbidity among individuals with substance use disorders is very common. Estimates

are that almost half of all substance use disorders (SUD) patients also experience a co-

occurring disorder, and some estimates are even as high as 84%, depending on the type of

mental health setting (Johnson, Brems, & Burke, 2002). In terms of Axis I versus Axis II

disorders, it is estimated that half of all individuals with a SUD also have another Axis I disorder, while one-third to one-half of individuals with a SUD also have an Axis II disorder (Haaga, McCrady, & Lebow, 2006; Taylor, 2005).

The most common Axis I disorders co-occurring with SUD are mood and anxiety disorders (Skinstad, & Swain, 2001). Estimates indicate comorbidity of SUD with affective disorders, such as depression, to be around 32%, bipolar disorders around 64%, anxiety disorders about 36%, eating disorders around 28%, and attention deficit hyperactivity disorder around 23% (Ziedonis & Brady, 1997). Schizophrenia has a comorbid rate with SUD of around 40-50% (Kavanagh, McGrath, Saunders, Dore, & Clark, 2002). Additionally, high rates of trauma also are associated with SUD, with recent estimates indicating that 20-33% of SUD individuals also qualify for a PTSD diagnosis (Back et al., 2000; Brown, Recupero, & Stout, 1995; Najavitis, et al., 1998; Triffleman, Marmar, Delucchi, & Ronfeldt, 1995).

Axis II disorders occur in high rates within the SUD population. The most common Axis II disorders co-occurring with SUD are Cluster B personality disorders (Fieldman, Woolfolk, & Allen, 1995; Straussner & Nemenzik, 2007). Cluster B personality disorders in the SUD population are much higher than in the general population. In fact, estimates of the general population with any personality disorder is 14.8%, while for alcohol use disordered individuals, it is estimated that 28.6% have a personality disorder, and for drug disorders, estimates are that 47.7% have a personality disorder (Grant et al., 2004). Although most practitioners agree that these estimates are an accurate reflection of this population, others disagree, stating that the symptoms of personality disorder result from the dynamics of the addiction resulting from the

substance use disorder, rather than the personality (Straussner & Nemenzik, 2007). This debate has yet to be settled, but there is some evidence that the personality disorder precedes the addiction (Compton, Cottler, Phelps, Abdallah, & Spitznagel, 2000; Trull, Sher, Minks-Brown, Durbin, & Burr, 2000).

The cluster B personality disorders include antisocial, borderline, histrionic, and narcissistic personality disorders. Individuals so diagnosed have "dramatic, emotional, and erratic" qualities (Sadock & Sadock, 2003). Of the cluster B disorders, the most common personality disorders which co-occur with substance use disorders are borderline and antisocial personality disorders (Straussner & Nemenzik, 2007). The rate of borderline personality disorder in the general populations is about 1-2%, but for SUD individuals, estimates indicate that as high as 27.4% meet the criteria for borderline personality disorder with even higher rates among drug addicts (Trull et al., 2000). Even higher rates of comorbidity have been found when examining individuals with a borderline personality disorder (BPD) diagnosis prior to the co-occurring SUD, with 57% of BPD patients having a SUD (Trull et al., 2000). In addition to borderline personality disorder, antisocial personality disorder also is more common in SUD individuals. In the general population, antisocial personality disorder is estimated to occur in only 1% of women and 3% of men , but in the SUD population, estimates are about 5 times greater (Brooner, King, Kidorf, Schmidt, & Bigelow 1997; Grant et al., 2004; Sadock & Sadock, 2003; Stefansson & Hesse, 2007).

Examinations of past research indicate commonalities among individuals with all types of personality disorders, such as greater rates of unemployment and homelessness, poorer physical health, little if any previous mental health treatment, more severe

symptoms connected to drug usage, and overall poorer functioning in personal and interpersonal areas, which are also characteristic of SUD patients; in regard to these characteristics, SUD individuals in general rate their mental and physical health, day-to-day functioning, and interpersonal relationships, as more impaired than their peers without substance use disorders (Johnson, Brems, & Bruke, 2002). Research confirms this view, indicating SUD individuals as having "substantial impairments" in quality of life as compared to their peers without substance use disorders, particularly in the area of mental health (Buchholz, Krol, Rist, Nieuwkerk, & Schippers, 2008). The higher rate of impairments as compared to their peers includes higher levels of depression, psychosis, anxiety, and impulsivity (Nace, Davis, & Gaspari, 1991). It is likely that these symptoms, whether directly or indirectly associated with the personality disorder, combined with substance use, perpetuates the cycle of addiction associated with SUD, therefore creating a cycle of increasing need to use substances in order to remain functional, also coupled with guilt about the usage (Johnson, Brems, & Burke, 2002). The guilt about usage contributes to problems with self-evaluation and self-representation, specifically with the presence of low self-esteem and self-condemnation, likely exacerbating personality disorder symptoms (Fieldman, Woolfolk, & Allen, 1995).

Drug of choice. Drug of choice also is a way to understand the substance use disordered population. Groups of users can be classified according to drug of choice. Some researchers have suggested that drug of choice is related to personality style, other comorbid psychiatric problems, or availability (Bremner, Southwick, Darnell, & Charney, 1996; Dervaux et al., 2001; Mueser, Bellack, & Blanchard 1992).

While characteristics from conduct disorder symptoms to novelty seeking have been associated with both alcohol and drug dependence, certain combinations of personality characteristics have been linked to particular substance use disorders (Grekin, Sher, & Wood, 2006). For example, extraversion and low openness to new experiences are related to alcohol use disorders, while low conscientiousness is related to drug use disorders (Grekin, Sher, & Wood, 2006). Additionally, novelty seeking has been related to type of substance used as well as motivation for using the substance. Adams et al. (2003) specifically outlined the differences between low and high novelty seeking individuals. For example, in low novelty seeking individuals, especially those using substances to avoid emotions or negative life experiences, there is a likelihood of sedative use, with preferred substances tending to be alcohol and marijuana. However, for high novelty seeking individuals, especially those using substances to obtain positive rewards such as a pleasurable experience, there is a likelihood of stimulant use, with a wider range of preferred substances. Furthermore, in terms of specific substances used, individuals with high novelty seeking and/or antisocial personality traits also are more likely to use substances which are considered socially deviant, such as illegal drugs or intravenous drugs (Chakroun, Johnson, & Swendsen, 2010).

There is evidence to suggest that use of particular substances is associated with certain psychiatric problems. Specifically, a self-medication hypothesis is believed to explain substance use and subsequent SUD (Khantzian, 1985). For example, alcohol has been proposed as more commonly used among individuals who experience problems with anxiety or depression (Bedi, & Halikas, 1985; DiSalver, 1987). Narcotics are used more commonly among individuals with tendencies to exhibit rageful and aggressive

behaviors, and cocaine for individuals wanting relief from feelings of depression, hyperactivity, or hypomania (Khantzian, 1985). Type of substance also has been linked to relief of particular symptoms of PTSD, with alcohol used most often to overcome arousal symptoms, drugs used more often for avoidance and numbing of the symptoms, and a combination of drugs and alcohol to cope with intrusive thoughts, flashbacks, or nightmares (Ouimette, & Brown, 2003).

Overview of Substance Abuse Treatment

Treatment for substance use disorders differs greatly depending on the treatment philosophy incorporated, whether it is inpatient versus outpatient, the degree of involvement of significant others in treatment, and other factors such as co-occurring disorders. The most common treatment approaches include cognitive-behavioral treatments, cognitive therapy, behavior-focused treatment, motivational interventions, 12-step approaches, stage-based methods, and relapse prevention approaches delivered via outpatient, inpatient, residential, or court-mandated programs (DiClemente, 2005). Many treatment programs use combinations of several of the above mentioned treatments, for example, using motivational interviewing techniques within the overall treatment modality of a 12-step program.

Although treatments vary, one common factor emerging in the literature is that patients can successfully overcome substance use disorders with treatment; in other words, treatment works (Roth & Fonagy, 2005). However, an all too common factor among the treatment modalities is the problem of treatment dropout. In a national statewide comparison of treatment completion rates, 59% completed treatment, leaving 41% categorized as early terminators due to dropout (Stark, 1992). Estimates of dropout

rates vary according to type of treatment program, (e.g., treatment at free will versus commitment through court system), with mandated treatment having lower dropout rates than at-will treatment (Agosti, Nunes, Ocepeck-Welikson, Phil, 1996; Doumas, Blasey, Thacker, 2005; Stark, 1992). However, although mandated treatments are likely to have lower dropout rates, there is evidence to suggest resistance to treatment is lower among participants in at-will treatment programs, thereby suggesting a greater long-term success for at-will treatments (Shearer & Ogan, 2002). Another important problem with treatment dropout, other than the loss of potential recovery to the patient, is the front-end cost to each program for initiating treatment. These costs entail medical exams, and other resources used to initiate treatment, such as treatment planning, psychological assessments, and other routine screenings. A better understanding of what makes for successful treatment could, in turn, influence programs' ability to retain patients or decrease resistance to treatment. This could cut costs to the program as well as provide better service to the patient, which would facilitate overall better outcomes for both the program and the patient.

Treatment Outcomes

Interpersonal and personality characteristics are important in substance abuse treatment because of their impact on treatment participation and subsequent outcomes, and a significant portion of research has focused on assessing treatment outcomes. Outcomes in the literature are assessed in different ways, including treatment adherence, participation, and retention; treatment completion; and long-term follow-up of treatment completers. Previous research has drawn conclusions about treatment outcomes based on

factors such as demographic, psychosocial, or interpersonal factors, and response to treatment based on personality "types" as defined by psychological tests profiles.

Demographic Characteristics

Demographic characteristics have been linked to treatment outcomes. Common correlates of treatment retention examined in the literature include factors such as age, race, gender, and marital status (Stark, 1992). Research indicates worse outcomes for younger patients than for older ones. For example, research conducted by Joe, Chasain, Marsh, and Simpson (1990) found older addicts had lower rates of relapse, and Stephens and Cottrell (1972) found that patients aged 30 and younger have higher rates of relapse after treatment than patients aged 31 and older (McCaul, Svikis, & Moore 2001).

In addition to age, race has been shown to be a delineating factor among patients in regard to outcomes. However, the research findings related to race are not consistent. For example, several studies indicate African Americans and Hispanics are more likely than Caucasians to exhibit early treatment dropout and overall noncompletion of treatment (Agosti, Nunes, & Ocepeck-Welikson, 1996; King & Candaa, 2004; McCaul, Svikis, & Moore 2001; Milligan, Nich, & Carroll, 2004). Yet, other studies produce dissimilar results, as in the study conducted by Gordon et al. (2001), which identified Caucasians as being most associated with unsuccessful detoxification treatment. Additionally African Americans and Hispanics exhibit more favorable treatment outcomes than Caucasians (Niv, Pham, & Hser, 2009). Yet, even with these conflicting results, other studies report no differences in regard to race or ethnicity (Grella, Anglin, & Wugalter, 1995; Kleinman et al., 1992).

Similar to race, the role of gender has yielded mixed findings in relationship to treatment outcomes. While some studies (e.g., King and Canada, 2004; Soyka & Schmidt, 2009), have shown females are more likely to terminate treatment early, other studies (e.g., Toneatto, Sobell, & Sobell, 1992) have shown better overall outcomes for females. Still, other evidence suggests males have better outcomes than females (McCaul, et al., 2001).

The conflicting results for both race and gender are likely a reflection of methodology. Specifically, it appears that the methodology, with variations of outcome criteria, inherently creates differences in outcome reports. For example, for race and gender, it may be that the time of assessment for outcome data may impact these reports, with outcomes varying from detoxification, to treatment completion, and finally to post-treatment long-term follow ups.

Additional demographic factors also have been linked to outcomes. Social support networks, particularly a healthy marriage and/or family relationships, full-time employment, stable housing, and a living environment free of the drug culture, have been related to prevention of post-treatment relapse (Joe, Chasain, Marsh, and Simpson, 1990; McCaul, et al., 2001). Still, other factors affecting treatment outcomes have been noted, for example, there is limited evidence suggesting that as education level decreases, the likelihood of early treatment dropout increases, and that more years of education are associated with better treatment outcomes (King, & Canada, 2004; McCaul, et al., 2001).

Psychosocial Factors

Other personal characteristics of patients have been related to positive treatment response and outcomes. Specifically, dynamic patient characteristics are associated with

treatment participation and produce more positive outcomes, with factors such as motivation, participation in treatment, and history of substance abuse being better predictors of treatment retention than demographic variables (Haaga, McCrady & Lebow, 2006; Justus, Burling, & Weingardt, 2006; Stark, 1992). There also is evidence suggesting that changes taking place while participating in treatment, such as a change in reduction of levels of hostility and aggression from the beginning to end of treatment, are the best overall predictors of substance abuse recovery (Putt, Dowd, & McCormick, 2001). However, some researchers suggest that attitudes, such as patient expectancies, readiness to change, and severity of the substance abuse disorder, are the three most important patient variables to predict treatment responses specifically, more positive treatment outcomes are associated with a patient's positive and accurate expectancies, a motivation to change, and less severe SUD (Haaga, McCrady, & Lebow, 2006).

At first glance, the different findings related to psychosocial factors and outcomes appears incongruent. However, of the factors associated with positive outcomes, there is evidence that different factors appear to be associated with outcome based on the length of time of follow-up after treatment. For example, pretreatment severity of alcohol and drug use is the best predictor of treatment outcome at three months follow up and lower levels of hostility and aggression are best predictors of 12 month follow ups (Putt, Dowd, & McCormick, 2001). As a result, it is likely that the seemingly incongruent findings may be a reflection of differing methodologies used in the studies.

Research on psychosocial variables also furthers understanding of negative outcomes. Poor adherence to treatment is associated with severe psychiatric impairment, comorbid personality disorders, cognitive impairment, poor social support, isolation, side effects of

medication, attitudes and beliefs, understanding of illness, and access to treatment/financial issues; additionally, illicit drug use and global assessment of functioning scores of 50 or less also are associated with poorer compliance and treatment response (Herbeck et al., 2005). Though there are many psychosocial variables that negatively impact treatment outcomes, evidence indicates that pre-treatment psychiatric problems are the single best predictor, with more severe psychiatric problems associated with worse treatment outcomes (McLellan, Luborsky, O'Brien, & Barr, 1986).

Personality Inventories

Objective personality measures have been used to identify personality "types" associated with treatment outcomes. One of the earliest studies to investigate the relationship between type and outcome used the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley,1940), to predict treatment drop out (Craig, 1984). Results indicated that patients scoring high on the depression (D) scale were more likely to leave treatment early than individuals with normal scores on this scale. Another early study found that treatment for individuals diagnosed with Borderline Personality Disorder based on the MMPI had shorter, usually less successful, treatments, likely due to acting out from anxiety associated with treatment (Inman, Bascue, & Skoloda, 1985). Years later, with the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kreammer, 1989), elevated scores on scale seven, which is designed to measure the presence of maladaptive behaviors or thoughts such as fears, phobias, anxiety, or self-doubt, and scale eight, which is designed to measure one's feelings of alienation from others, being misunderstood, or experiencing discomfort in social situations, were linked to non-completion of substance abuse treatment (Groth-Marnat, 2003; Marshall, & Roiger,

1996). Additionally, high scores on the Negative Treatment Indicator (TRT) scale on the MMPI-2, which measures distrust for helping professionals and resistance to change, also predict poor treatment adherence as well as final outcome (Gilmore, Lash, Foster, & Blosser, 2001; Groth-Marnat, 2003).

Factors Related to Treatment Program

Program related factors also influence treatment outcomes. Programs with higher clinical staff to patient ratios and programs with higher funding have lower attrition rates than programs with staff shortages and limited funding. Additionally, programs structured in a way that allows patients to receive quick individualized attention in small friendly groups tend to have greater treatment retention than programs which do not allow patients to receive such benefits (Stark, 1992). Adequately trained staff members also are associated with positive outcomes (Haaga, McCrady, & Lebow, 2006). Positive expectancies and a strong working alliance with the treatment provider are associated with more positive outcomes (Haaga, McCrady, & Lebow, 2006). Also, studies show that more time spent in treatment is associated with more positive treatment outcomes (Inman, Bascue, & Skoloda, 1985).

Type of Intervention

The type of intervention used impacts outcomes. For example, action-oriented interventions such as cognitive therapy, which assumes the individual is ready from the beginning of treatment to change the thoughts, beliefs, and expectations about substance abuse, have low success rates (DiClemente, 2005), while treatments geared toward increasing patients' motivation through sequential steps are most successful (Connors, Donovan, & DiClemente, 2001).

Combinations of Factors

Most recently, the integration of known factors about patient characteristics and treatment outcomes has been the benchmark for successful treatment. Specifically, the latest focus for both treatment and research has been on successful matching of treatment type to patient characteristics. For example, it was hypothesized that patients with varying pretreatment variables would respond uniquely to differing treatment types, in other words, an interaction between patient characteristics and treatment occurs; research has supported the matching hypothesis (DiClemente, 2005). A large trial of psychosocial treatments for addiction attempted to replicate the smaller studies' findings in the well-known Project MATCH (Project MATCH Research Group, 1997). Results indicated only minimal support for the concept of matching treatments to patients with certain characteristics. For example, this study found that patients with higher levels of anger had better outcomes when targeted with a motivational interviewing approach versus CBT or 12-step approaches, while patients with a longer history of drinking fared better with 12-step approaches and Alcoholic Anonymous attendance (Project MATCH Research Group, 1997).

The concept of matching treatments with patients' characteristics as seen in the MATCH study used a static conceptualization of treatment matching, which means that only one characteristic of a patient was used to indicate the type of treatment hypothesized to work better (Project MATCH Research Group, 1997). This view directly contradicts the more widely accepted premise that substance use disorder treatment is a dynamic process, ever-changing as individuals increase in motivation and move towards the action stage of recovery (DiClemente, 2005). Overall, when evaluating the MATCH

.results and the current idea of a stage of change treatment philosophy, there is support for a more dynamic approach to matching treatments based on shifting decisional considerations, as well as coping skills, and psychosocial factors (DiClemente & Prochaska, 1998; Prochaska, DiClemente, Velicer, & Rossi, 1993). Overall, the matching philosophy is an area of research that requires more study and development (Haaga, McCrady, & Lebow, 2006).

Summary of Treatment Outcome Literature and Conclusions

While previous studies of treatment outcomes provide a strong base for understanding what works in SUD treatment based on differing factors, there also are problems with the research. For one, the results often are not replicated, as each study finds new outcomes based on the variables being examined. Additionally, some of the factors associated with particular outcomes appear to be moderated by other factors. For example, length of time following discharge affects which variables contribute most to outcomes. This finding draws questions to other studies' outcomes in that there is a possibility that the outcome findings also are reflective of the methodology, and perhaps other outcome indicators would change according to the type of measurement used. Due to the diversity within the SUD population and the varying factors associated with SUD treatment, a combination approach may be the most promising in terms of understanding outcomes. However, in the limited body of research studying matching effects, even these outcomes are not generalizable, as only a small group of variables have been studied (Project MATCH Research Group, 1997).

Due to inconsistencies in the research findings, treatment planning is difficult (Harrison & Asche, 2001). DiClemente (2005) suggests several practical suggestions for

treatment, such as including screening for the co-occurrence of substance use disorders and psychiatric syndromes, followed with 30-60 minutes of discussion and/or feedback from the practioner. The most efficient way to screen reliably for comorbidity, as well as have a system to give feedback to the patient, is through a formal screening process based on the results of psychological assessment.

Some commonly used inventories include the Millon Clinical Multiaxial Inventory, Third Edition (MCMI-III, 1997), the MMPI-2, and the Personality Assessment Inventory (PAI; Morey, 1991). The MCMI-III is a 175-item self-report instrument requiring an eighth grade reading level. The instrument is designed to assess both Axis I and Axis II disorders. The MMPI-2 is a 567-item self-report instrument requiring a tenth grade reading level. The MMPI-2 is more useful than the MCMI-III in assessing substance using populations, as it also includes an Addiction Admission Scale; however, the reading level is often a drawback with this population, as it has one of the highest reading levels required of similar psychological inventories.

The PAI is a 344-item self-report instrument, requiring a fourth-grade reading level, which also has scales to assess alcohol and drug problems. The PAI, with the lowest reading level requirements, moderate number of test items, and attention to alcohol and drug problems, makes it an ideal choice for use with substance use disorder populations. Other characteristics of the PAI make it an ideal choice for the SUD population. Numerous studies support the use of the PAI as an ideal choice within the SUD population. There is a growing base of knowledge obtained for the SUD population through the PAI and it has several other unique strengths as compared to the MCMI-III and MMPI-2, all of which will be discussed in detail in the section below.

The Personality Assessment Inventory

The Personality Assessment Inventory (PAI) is a self-administered, objective personality measure for adults. The PAI was developed by Leslie C. Morey in 1991 and standardized on adults 18 years of age and older. It consists of 344 items and requires a fourth grade reading level. In most cases, the test can be completed in 40-50 minutes. The PAI may be administered in a group format or individually. Each question is answered by the examinee on a Likert-type scale: totally false, slightly true, mainly true, and very true.

Advantages of the PAI

There are many advantages to using the PAI over other similar instruments, such as the MMPI-II, which often is considered to be the gold standard for personality assessment. First, the minimum fourth grade reading level required for the PAI, as compared to a minimum tenth grade reading level for the MMPI-2, provides a distinct advantage, especially when working with populations with lower levels of education. A second advantage of the PAI is the lower number of total test items, with 344 items on PAI versus 567 items on the MMPI-2. Another advantage is that the PAI can be completed in most cases within 40-50 minutes, as opposed to about 90 minutes to complete the MMPI-2. The shorter length and lower reading level of the PAI contribute to another advantage of the PAI, in that because of the ease of completion, a greater numbers of valid profiles are produced as compared to the MMPI-2. (LePage & Mogge, 2001). Another advantage of the PAI is that it can be administered by any clinician trained in administering self-report inventories. This advantage is helpful in clinical or research situations, in which there are differing levels of skill and training among

practitioners. Finally, another advantage over other inventories is that the PAI is more comprehensive in the assessment of psychopathology, particularly related to severe personality dysfunction, problems with alcohol or drugs, interpersonal issues, and treatment acceptance (Karlin et al., 2005). These advantages make the PAI a first choice for many clinicians and particularly those working with the multi-faceted SUD population.

Not only is the PAI a strong instrument in terms of clinical utility, it has excellent psychometric properties. The PAI was developed based on a construct-validation framework, which emphasizes rational and quantitative methods of scale development (Morey, 1991). It emphasizes scale homogeneity, external correlates, scale stability, and selecting items based on multiple discriminative criteria (Schinka, 1995). Morey reports that internal consistency alphas for the normative population is .81, for a college sample it is .82, and for a clinical sample, .86 (Morey, n.d.). Test-retest reliability across all three samples was .83, after an interval of three to four weeks.

The PAI demonstrated reliability in many different types of populations. The original clinical sample for standardization included patients from a wide variety of settings, specifically, 35% from outpatient psychiatric settings, 25% inpatient psychiatric settings, 15% substance abuse settings, 12% correctional settings, and 2% medical settings; however, only 5% of the total patients were involuntary commitments (Boone, 1998). Based on the small percentage of involuntary commitments, Boone (1998) identified the need to study a severe inpatient sample to test reliability with involuntary participants. Subsequent research designed to evaluate the reliability of the PAI in more seriously disturbed psychiatric inpatients found large and acceptable full-scale

reliabilities, averaging .82, with lower but acceptable subscale reliabilities, averaging .66 (Boone, 1998). Further research by Boyle and Lennon (1994) supported the earlier research findings, further indicating that the clinical scales are internally consistent with more severe clinical samples. Additionally, when comparing the internal consistency reliability of the PAI full scales to other inventories, such as the MMPI-2 clinical scales, the PAI full scales consistently demonstrated higher internal consistency reliability (Boone, 1998).

There are many explanations as to why the PAI full scale score has higher internal consistency than the MMPI-2 clinical scales. The most probable reason becomes clearer with further investigation of the PAI. The PAI produces 22 non-overlapping scales. Although the subscales provide the clinician with rich information concerning the patient, the non-overlapping nature of the scales is the particular advantage of the PAI, because inflation of one scale will not inflate the others. The non-overlapping scales are much different than other test scales, such as the MMPI-2 clinical scales, which do overlap one another (Greene, 2000; LePage & Mogge, 2001; Morey, 1991). As a result, higher internal consistency is demonstrated with the PAI full scales, giving the clinician more accurate information regarding the respondent.

Subscales of the PAI

The 22 scales of the PAI include: 4 validity scales, 11 clinical scales, 5 treatment consideration scales, and 2 interpersonal scales. Ten of the clinical scales are further broken down into subscales for ease of interpretation. In addition to these scales, there are 27 critical items, which require follow up questioning by the clinician.

The four validity scales, designed to measure deviations in test takers' responding, include an Inconsistency (INC), Infrequency (INF), Negative Impression (NIM), and Positive Impression (PIM) scale. The INC and INF scales measure response consistency. The two dissimilation scales are the Negative Impression (NIM), sensitive to "fake bad" responses and Positive Impression (PIM) scales, sensitive to "fake good" responses. Additionally, there are six supplemental validity indicators. An example of a supplemental validity indicator is the Rogers Discriminate Function (RDF), which is derived from a weighted combination of 20 scales scores. The RDF is designed to distinguish genuine versus false response profiles.

The eleven clinical scales assess the following: Somatic Complaints, Anxiety, Anxiety-Related Disorders, Depression, Mania, Paranoia, Schizophrenia, Borderline Features, Antisocial Features, Alcohol Problems, and Drug Problems. The Treatment Consideration Scales assess constructs such as attitudes and behaviors about treatment, death and suicide, aggressiveness, life stressors, and social support. The Interpersonal Scales assess levels of dominance and warmth in relationships with others.

The psychometric properties of individual scales of the PAI have been widely researched, as well as the possible relationships between patterns of scores on multiple scales. One area of research evaluates the validity scales of the PAI, particularly the NIM and the PIM scales. In addition, the following scales and indices have been widely researched: RXR, TPI, ANT, AGG, VPI, ALC, and DRG. A more thorough evaluation of this research is outlined in the next sections.

Negative impression scale. The NIM is the primary validity scale used to detect over-reporting of psychological symptoms or malingering (Edens, Cruise, & Buffington-

Vollum, 2001). Studies of convergent validity have found correlations ranging between .32 and .52 between the NIM and other inventories such as the Structured Interview of Reported Symptoms by Rogers, Bagby, and Dickens (1992) (Wang, Rogers, Giles, Diamond, Herrington-Wang, & Taylor, 1997). Overall, studies of the NIM scale have yielded mixed findings, indicating that this scale is better at identifying attempts to feign particular disorders over others, depending on the cut score. For example, one study instructed naïve and sophisticated feigners to feign either schizophrenia, major depression, or generalized anxiety disorder. Results from this study concluded that for naïve and sophisticated test takers, the NIM scale is unsuccessful at recognizing feigned generalized anxiety disorders, modestly successful for recognizing feigned depression, and moderately successful in recognizing feigned schizophrenia (Rogers, Ornduff, & Sewell, 1993). Another study by Rogers, Sewell, Morey, and Ustad (1996) used the previous methodology and included a clinical comparison group which had been diagnosed with these disorders. Rogers et al. (1996) found differing results from the previous study, finding the NIM scale to be most successful in recognizing attempts to feign major depression versus schizophrenia or generalized anxiety disorder. Additionally, they identified that sophisticated feigners went virtually undetected. Another study by Liljequist, Kinder, and Schinka (1998) examined the ability of the NIM to identify feigned PTSD. A clinical group, a group of college students instructed to feign PTSD, and a control group of college students were compared. The clinical group and the students instructed to feign the disorder had significantly higher NIM scores than the control group, with the malingering group having the highest scores. Calhoun, Earnst, Tucker, Kirby, and Beckham (2000) assessed the ability of individuals to

successfully feign PTSD symptoms and found that the NIM produced modest accuracy in detecting real PTSD versus those feigning the disorder. These findings, in addition to Boone's (1998) note of a large standard error of measurement, serve as a caution to clinicians to conclude malingering or exaggerated negative impressions based only on elevated scores. Furthermore, it is a warning against ruling out malingering in cases of extremely low scores. Overall, these findings suggest the importance of evaluating the NIM in context with other scales.

Positive impression scale. The Positive Impression Scale (PIM), is a validity scale used to assess underreporting of psychological symptoms and defensiveness (Edens et al. 2001). Morey's validation of the PIM scale compared college students who faked good and compared their test PIM scores to normal and clinical samples (Morey, 1991). Morey was able to identify 81.8% of fake good profiles with a cut score of 18 or above. Additionally, the PIM was found to moderately correlate with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) in community and clinical samples. After Morey's original validation, other simulation studies have confirmed the usefulness of this scale, with a cut score of 18 or above as providing the best estimate of separating fake good or defensive test profiles from the honest profiles (Cashel, Rogers, Sewell, & Martini-Cannici, 1995; Fals-Stewart, 1996; Peebles & Moore, 1998;). However, seven years after his original suggestion to use a cut off score of 18 or above, Morey and Lanier (1998) found that a PIM cut score of 20 or above optimizes sensitivity and specificity and is superior over the originally suggested score of 18. Since that discovery, research suggests the PIM has continued to provide good estimates of fake good response profiles at a cut score set to 20 (Edens et al., 2001).

Treatment rejection scale and treatment process index. The PAI Treatment Rejection Scale (RXR) often is analyzed to understand readiness for treatment or treatment outcomes, because the scale was designed to measure treatment motivation, or attitudes or attributes associated with change (Morey, 1991). The RXR scale is comprised of eight items related to treatment motivation, such as treatment expectations and openness. High RXR scores are associated with individuals who are unmotivated for treatment, while low RXR scores are associated with the opposite. Morey (1991) found that the RXR has satisfactory reliability, with internal consistency =.72, and test-retest reliability after 24 days =.83.

The RXR can accurately identify individuals who are motivated for treatment. For example, in studies of patients receiving treatment, where one would expect motivation for treatment to be present, as well as in samples comparing clinical and community test takers, lower scores were exhibited by the clinical samples and the sample of patients receiving treatment. This suggests that the RXR will differentiate those participating in or wanting treatment from those uninterested or not needing treatment (Alterman et al., 1995; Boyel & Lennon, 1994; Cherepon & Prinzhor, 1994). Additionally, the RXR scale also has been used to predict length of treatment, completion of treatment, and behaviors during treatment. For example, Everson (1999) found that the RXR scale predicted treatment length in an outpatient psychotherapy sample, with longer treatment associated with lower RXR scores; Edens and Ruiz (2005) showed that the RXR scale predicted treatment completion in a forensic setting, with treatment completers having lower RXR scores than non-completers. Likewise, Karlin et al., (2005) found it useful in predicting outcomes with chronic pain patients, and Keeley,

Smith, and Miller (2000) found similar results in family medicine, accurately predicting patients willing to complete prescribed treatment versus those unwilling to complete treatment.

Using a different approach, additional examples of predicting treatment completion with the RXR, were demonstrated in a study conducted with chronic pain patients (Hopwood, Creech, Clark, Meagher, & Morey, 2008). The RXR scale predicted successful completion of treatment by using the Mean Clinical Elevation (MCE) score on the PAI in conjunction with the RXR scale. It was determined that a significant prediction of successful program completion was possible for patients who scored above 39T and below 50T on the RXR scale, along with lower general symptom severity as measured on the MCE. However, this study further indicated that the MCE was not a predictor of program completion for those patients either resistant to treatment (RXR>50) or hyper motivated (RXR<39T), and program completion in these cases was more likely related to external or other treatment factors (i.e., treatment completion as alternative to incarceration) rather than a true motivation for change. This study lends new utility to using the RXR in conjunction with the MCE for patients who are neither resistant nor hypermotivated for treatment. This finding replicates other studies which indicate poorer outcomes associated with greater numbers of or magnitude of symptoms upon entering treatment (McLellan, Luborsky, O'Brien, & Barr, 1986).

The RXR scale correlates with other behaviors and scales. For example, Caperton, Edens, and Johnson (2004), found that the RXR scale positively correlated with treatment noncompliance and nonaggressive infractions such as gambling, lying, or stealing. The RXR scale has positively correlated with measures of problem

minimization (Hopwood, Ambwani, & Morey, 1994), while negative correlations also

have been demonstrated by Baity (2004) and Blais et al., (2003) with several measures of

treatment alliance. Finally, the RXR scale is modestly negatively correlated with the

Beck Depression Inventory, strongly negatively correlated with Wiggens' (1966) "Poor

Morale" scale on the MMPI, and positively correlated with perceived social support

(Morey, 1991).

The Treatment Process Index (TPI), a measure of 12 scale elevations of problems

associated with treatment amenability, predicts outcomes of treatment. The raw score for

the TPI is 0-12, with one point added for each feature present. The following twelve

features are used to calculate the TPI and are presented in Table 1 (Morey, 2007).

Table 1.

Features Used to Calculate the TPI

Scales	Score
NIM or BOR or ANT or ALC or DRG	>70T
PIM or RXR	>60T
SOM or BOR-S or ANT-A or ANT-E	>70T
PAR	>70T
BOR or ANT	>70T
BOR or ANT or ALC or DRG	>70T
AGG or BOR-S or ANT-A or ANT-S	>70T
STR or NON	>70T
NON or ARD-T	>70T

Table 1. (continued)

Features Used to Calculate the TPI

Scales	Score
DOM or MAN-G or ANT-E	>70T
WRM	<30T
PAR-R	>70T
AGG-A	>70T
ANT-E	>70T

Scales = PAI Subscales; Score = T Scores on PAI Subscale

For the TPI, higher scores are associated with less amenability for treatment (Morey, 1991). The TPI may be a more accurate predictor of treatment completions than the RXR scale, at least in some instances, as evidenced by Hopwood, Ambwani, and Morey's (2007) research, which found the TPI to be the best predictor of outcomes for therapy. Specifically, the results indicated that for clients who are motivated for treatment, amenability for treatment is a predictor of nonmutual therapy termination, while for those unmotivated for treatment, the TPI is not indicative of predicting termination. Because the TPI has been found clinically useful in predicting outcomes, some research (i.e., Hopwood, Creech, Clark, Meagher, & Morey, 2008) suggests evaluating the RXR and TPI in conjunction, because RXR has been found to moderate the TPI. Other research (i.e., Hopwood, Baker, & Morey, 2008), however, does not support this suggestion, given the contradictory findings that RXR does not moderate effectiveness of TPI (Hopwood, Baker, & Morey, 2008). A possible explanation for the

incongruity in previous studies is the different treatment settings in which these variables are studied, such as inpatient versus outpatient (Hopwood, Baker, & Morey, 2008). Because motivation for treatment often is related to other factors, such as when treatment is an alternative to a more negative outcome (e.g., incarceration), patients attempting to avoid the perceived negative consequence may try to appear more motivated and amenable for treatment than those enrolled at free will. These differing motivations for treatment are likely the difference reflected in research outcomes.

Antisocial features, aggression, and violence potential index scales. Several other PAI indexes have been studied to understand institutional adjustment and behaviors. One example is a study of inmates conducted by Caperton, Edens, and Johnson (2004) in which the Antisocial Features Scale (ANT), the Aggression Scale (AGG), and the Violence Potential Index (VPI) were linked to the commitment of infractions while participating in a treatment program for sex offenders. Specifically, the ANT scale was predictive of acts of verbal and physical aggression, defiance, and nonaggressive infractions, such as gambling, lying, and stealing, while the AGG and VPI scales were predictive of verbal aggression and acts of defiance. Another study conducted by Magyar et al., (2012) demonstrated support for using the AGG scale as a predictor of general noncompliance and aggressive behavior. Further research suggests that disciplinary reports and staff ratings of treatment noncompliance are correlated with the ANT and AGG scales. (Buffington-Vollum, Edens, Johnson, & Johnson, 2002; Sanford, 2003; Walters, Duncan, & Geyer 2003; Walters & Geyer, 2005).

Alcohol problems and drug problems scales. There are two scales on the PAI that are useful for assessing individuals with drug and/or alcohol related problems. Both

the Alcohol Problems (ALC) and the Drug Problems (DRG) scales are indicators of individuals with alcohol or drug problems (Fals-Stewart, 1996; Parker, Daleiden, & Simpson, 1999). With similar findings, a study by Kellogg, et al. (2002), found the DRG scale was significantly correlated with the Addiction Severity Index, indicating that the DRG scale has utility in identifying individuals with drug related problems. However, Fals-Stewart (1996) found that most individuals who were attempting to deny a problem or responding defensively were able to dissimulate. Thus clinicians should use caution when interpreting the ALC and DRG scales with individuals suspected of alcohol and/or drug problems, or who are motivated to deny such problems exist (Fals-Stewart & Lucente, 1997). Additionally, Fals-Stewart (1996) found that nonclinical samples often have clinically significant elevations on these scales, and when interviewed, indicate past, not current, recreational use of drugs.

The PAI in Substance Abusing Populations

Research with the PAI conducted with substance abusers has yielded meaningful contributions to the substance abuse literature. The PAI has been used to explore patients' symptoms and other personality factors to classify patients, make associations with treatment outcomes, and predict associations with drug of choice. For example, a study by Schinka (1995) involving alcohol-dependent patients found seven distinct groups of patients. These groups were: 1. Antisocial Acts, 2. Depressed, 3. Dysphoric, 4. Distressed, 5. Normal, 6. Personality disorders, and 7. Somatic concerns. Further analysis of these types revealed associations with age, length of stay in treatment, and numbers of previous treatments based on type. Additionally, Rosselli, Ardila, Lubomski. Murray, and King (2001) found that the primary personality profile of cocaine addicted

patients is a borderline or antisocial type, often with features of mania. However, this same study also noted that in 10% of cases, the addicted patients were able to produce a normal personality profile, supporting previous research (e.g., Martinotti, et al., 2009) indicating an inability to consistently identify a single typology of an addict. Other research with this population has indicated that common personality features of individuals engaging in drug abuse or combined drug and alcohol abuse, include hypervigilance and suspiciousness (Schinka, Curtiss, & Mulloy, 1994). In addition, antisocial characteristics are associated with individuals who engage in illegal drug use, while those with fewer antisocial characteristics are more likely to limit drug use to the spectrum of legal drugs (Schinka, Curtiss, & Mulloy, 1994).

In addition to the PAI revealing general information concerning substance abusing individuals, specific scales also have been reviewed to provide indicators for treatment. These scales include: STR, NON, RXR, DOM, ANT, and BOR. A more detailed examination of these scales in regard to substance abuse treatment is outlined below.

Stress Scale

The STR scale of the PAI is used to identify the degree to which an individual is experiencing current stressors. Individuals with high scores on the STR scale of the PAI indicate that they are experiencing crises and feel a lack of power in the ability to control events happening around them; these individuals often view themselves as dependent, ineffective, and often are vulnerable to other psychological symptoms and/or disorders (Morey, 2007). Several studies have used the STR scale to investigate the relationship of stress to substance abuse treatment, with results indicating that high levels of stress are

associated with lower treatment response rates and less improvements from treatment, and have been associated with higher rates of drug and alcohol relapse (D'Andrea & D'Andrea, 1996; Tate, Brown, Glasner, Unrod, & McQuiad, 2006). Additionally, other studies tapping into similar constructs as measured by the STR scale, such as self-efficacy or the belief in his or her ability to be successful, have shown that self-efficacy is a significant variable in the ability of humans to regulate their own behaviors, specifically for substance abuse treatment outcomes (Magura et al., 2003). In other words, one's belief in his or her ability to have personal power to control events around them are associated with better outcomes. Although within a twelve-step drug and alcohol addiction treatment program, an initial admission of powerlessness over the addiction is part of treatment, the lack of powerlessness over the addiction should not be confused with a lack of ability to take personal responsibility, which is more associated with one's self-efficacy or internal locus of control.

Nonsupport Scale

The NON scale of the PAI measures a perceived lack of social support, as well as the availability and quality of social relationships; high scores are associated with a perceived lack of support and possible dissatisfaction with social relationships (Morey, 2007). Previous examinations of social support in relation to drug and alcohol treatment indicate that higher perceived levels of social support upon intake are associated with better treatment outcomes (Dobkin, De Civita, Paraherakis, & Gill, 2002; Huselid, Self, & Gutierres, 1991; Westreich, Heitner, Cooper, Galanter, & Gued, 1997). Specifically, the greater the social support one believes he or she has, the more likely more days will

be spent in treatment and there will be higher rates of treatment completion, both of which are associated with more positive outcomes.

Treatment Rejection Scale

The RXR scale of the PAI measures an interest in a psychological or emotional, personal change, with lower scores reflecting a high motivation for engaging in treatment (Morey, 2007). Although the concept of motivation has been related to successful outcomes of substance abusing populations (e.g., Conners, Donovan, & DiClemente, 2001), there also are situational specifics that influence the role motivation plays in treatment outcomes. Moreover, the motivation to participate in treatment for substance dependent populations is associated with initial treatment entry motivation and treatment completion, but not been associated with overall long-term treatment outcomes (Rapp, Siegal, & DeLiberty, 2003). Additionally, high motivation is associated with severity of alcohol and drug use, and/or significant life stressors associated with the use of substances, such as involvement with the court system (Breda, & Heflinger, 2007). All of these factors suggest that high levels of motivation are extrinsically based, not intrinsically based. Given that substance abuse treatment is often associated with some ambivalence, and extremely high levels of motivation for treatment may signify a lack of ambivalence about treatment, the possibility exists that treatment participation is associated with secondary gain rather than a true desire for personal change.

Dominance Scale

The DOM scale of the PAI measures the likelihood to be submissive, autonomous, or controlling within interpersonal relationships (Morey, 2007). Low scores are associated with individuals who lack confidence within interpersonal

relationships. These individuals also are likely to have difficulty asserting themselves and having their needs met (Morey, 2007). Average scores indicate that one is able to adapt to different situations and both exert and relinquish control within interpersonal relationships. High scores on this scale are associated with individuals who are confident, forceful, and controlling. These individuals usually are domineering and have difficulty interacting with others when others disagree or fail to treat them with respect.

Prior research indicates that a high percentage of the substance addicted population have difficulty within interpersonal relationships. For example, Calsyn, Roszell, and Anderson (1988) found that at least half of the addicts in their sample were selective about friendships, often felt uncomfortable in social situations, especially with non-users, had at least some difficulty with authority, and had an unwillingness to take personal responsibility. Additionally, other common characteristics of the sample included difficulty expressing oneself within interpersonal relationship as well as difficulty having emotional needs met. Although all of these characteristics could potentially inhibit outcomes of treatment, the most pronounced result was that the worst treatment outcomes were associated with those individuals who were unwilling to take personal responsibility for problems and those individuals who had problems with authority (Calsyn, Roszell, & Anderson, 1988).

Because most drug and alcohol treatments rely on 12-step or psychotherapy groups as the primary form of treatment, the process of treatment and recovery depends largely on interpersonal interactions with others. In a study by Doumas, Blasey, and Thacker (2005), interpersonal styles described as vindictive and domineering were positively associated with treatment attrition. The scale used in this particular study was

the Domineering and Vindictive Scales of the Inventory of Interpersonal Problems, which also has been shown to detect Cluster B personality styles in the substance abuse population (Doumas, Blasey, & Thacker, 2005). Therefore, this finding is consistent with other studies of interpersonal and personality functioning, which have found that antisocial or borderline traits, and personality characteristics common to these disorders, also are associated with poor treatment outcomes (Booth, Cook, & Blow, 1992; Haller, Miles, & Dawson, 2002).

Borderline Features Scale

The BOR scale on the PAI measures hallmark elements related to Axis II personality disorders (Morey, 2007). Average scores on the BOR scale indicate that the individual is emotionally and interpersonally stable. Moderate elevations are associated with individuals considered moody and uncertain about certain aspects of one's life. High elevations on the BOR scale are associated with dissatisfaction in interpersonal relationships, often accompanied by symptoms of feeling misunderstood, angry, anxious, impulsive, and emotional, as well as being ambivalent about interactions with others. These symptoms increase in frequency and magnitude as the score on the BOR scale increases. Extremely high scores on the BOR scale suggest Borderline Personality Disorder, while moderate and other high scores can be associated with other personality disorders.

Research suggests both short and long-term treatment outcomes are worse for individuals with personality disorders compared to those without them (Herbeck et al., 2005). Moreover, problems early on with treatment compliance have been noted for individuals with Axis II disorders, often exhibited behaviorally in not attending

appointments, not completing homework, and having interpersonal problems with other patients (Herbeck et al., 2005). Long term, Axis II personality disorders also are associated with higher relapse and rehospitalization rates (Pettinati, Pierce, Belden, & Meyers, 1999). Because much of substance abuse treatment is interpersonal in nature and patients with personality disorders have intractable difficulties in establishing and maintaining relationships with others, these patients usually have difficulty engaging in treatment (Lehman, 1996). In fact, a patient's social functioning is strongly associated with treatment compliance, in that as social functioning deteriorates, problems with treatment compliance increase (Herbeck, Fitek, Svikis et al., 2005).

Antisocial Features Scale

The ANT scale on the PAI measures personality and behavioral features related to antisocial personality disorder and psychopathology (Morey, 2007). Average scores on the ANT scale indicate the individual is warm and considerate in relationships with others. Moderate scores are associated with individuals who are self-centered, uninhibited, and unsentimental in interpersonal relationships. High scores are associated with individuals who are reckless, impulsive, and callous in their relationships. These individuals may engage in antisocial acts. These characteristics become even more evident and pronounced with increasing elevated scores on this scale.

Research indicates that a high proportion of patients being treated for substance abuse problems also have a co-occurring Cluster B personality disorder, which are associated with poor behavioral control and impulsivity (Taylor, 2005). Further, these individuals often have difficulties with executive cognitive functioning, such as planning, judgment, and impulsivity (Taylor, 2005). Research has identified that for individuals

participating in substance abuse treatment, antisocial personality disorder or

characteristics of the disorder are associated with shorter treatment stays, violation of

program rules, and poor participation in treatment (Fals-Stewart, & Lucente, 1997).

Summary of the PAI in Substance Abusing Populations

Although the PAI has proven a valid measure for assessment in inpatient

substance abuse settings, researchers suggest a need for future research with the PAI in

the inpatient substance abuse setting (Hopwood, Baker, & Morey, 2008; Schinka, 1995).

Justification for further research in this area has been outlined by Schinka (1995) in

suggesting that understanding interpersonal styles and underlying psychological

dysfunction identified with the PAI may be beneficial for treatment programs when

examining suitability of patients for programs. For example, his particular study used

factor analysis to demonstrate that high positive loadings on the Nonsupport, Paranoia,

Schizophrenia, and Infrequency scales, and high negative loadings on the Warmth scale,

uncover severe personality pathology or dysfunction, often displayed interpersonally with

a mistrust of others, social distancing, and interpersonal coolness (Schinka, 1995). From

this, Schinka (1995) proposes that such information can be useful to inform treatment

based on these personality variables. Additionally, there also is support for risk

assessment with the PAI in substance abuse settings as proposed by Hopwood, Baker,

and Morey (2008). Their research demonstrated that an elevated SUI scale and the SPI

(Suicide Potential Index) are correlates with individuals with a suicidal attempt in their

past. Such knowledge can inform treatment and provide clinicians with information

useful in determining precautionary safety measures for patients. In summary, the PAI is

useful in not only making predictions about patient characteristics and other treatment

related factors, but it also can be used to provide better quality care for patients while in substance abuse treatment. The potential for better patient care combined with the PAI's demonstrated strong psychometric properties makes it an ideal choice for use within the SUD population.

Treatment Process Measure

The Treatment Process Measure (TPM) is a counselor-rated index of a patient participating in substance abuse treatment, and is comprised of 14 items divided into three scales: 1. Counseling Rapport 2. Motivation 3. Self-confidence (Joe, Simpson, Greener, & Rowan-Szal, 2004). Counseling Rapport consists of five items: (a) easy to talk to; (b) warm and caring; (c) honest and sincere; (d) not hostile nor aggressive; and (e) not in denial about problems. Motivation consists of four items: (a) motivation for treatment; (b) being cooperative; (c) being responsible; and (d) keeping session appointments. Self-confidence consists of five items: (a) being self-confident; (b) freely expresses wishes; (c) not being depressed; (d) not being nervous or anxious; and (e) being motivated. The three scales on the TPM are a measure of treatment engagement (Joe, Simpson, Greener, & Rowan-Szal, 2004). According to Drieschner and Verschuur (2010), treatment engagement is a concept associated with behaviors demonstrated by the patient such as "dealing with the content of therapy between sessions," openness," "session attendance," and "constructive use of therapy session," and further have demonstrated through research that positive treatment outcomes are associated with these behavior changes of the patient. Additionally, in a study by Joe, Simpson, and Broome (1998) the concepts of treatment related confidence, counseling rapport, and engagement in treatment were demonstrated as being predictors of pre-treatment motivation, which

was found to be the most important predictor of drug abuse treatment retention and outcomes.

The Treatment Process Measure was developed by researchers at Texas Christian University as a shorter version of a more comprehensive assessment, The Counselor Rating Form (Texas Christian University, Institute of Behavioral Research, n.d.). Time for completion of the TPM is very brief; in most cases, it can be completed in 3 minutes or less. Each statement, about the patient, is rated by the counselor on a 7 point, Likert-type scale, anchored by 1: strongly disagree, and 7: strongly agree. The Treatment Process Measure has good psychometric properties, described in the following paragraph

The normative sample consisted of a sample of 547 clients enrolled in an outpatient methadone treatment clinic in Texas. The sample was 70% male, with the average age being 38 years old, and in regard to race, 22% were Euro-American and 67% were Hispanic. Coefficient alphas reliabilities were calculated for each scale across three month treatment intervals. Coefficient alpha ranges for the Counseling Rapport Scale were .79-.83, for the Motivation Scale, .84-.87, and .77-.79 for the Self-Confidence Scale.

Hypotheses

The literature suggests that patient characteristics can influence treatment process and outcomes for substance abuse treatment. Additionally, the literature also suggests the utility of the PAI with the substance addicted population (e.g., Fals-Steart, 1996; Hopwood, Baker, & Morey, 2008; Parker, Daleiden, & Simpson, 1999; Schinka, 1995; Schinka, Curtiss, & Mulloy, 1994; Tolisano, 1998). However, there is no research that examines the ability of the PAI to predict patient treatment participation progress in

substance abuse treatment settings. The objective of this study was to further understanding of and contribute to the best practices for treatment of individuals with substance use disorders. This study examined how personality and interpersonal factors, as measured by the PAI, are related to treatment participation as measured by weekly counselor ratings of patient treatment progress.

Hypothesis One

There will be a significant relationship between scores on the stress (STR) scale of the PAI and treatment participation. Individuals with high scores on the STR scale of the PAI indicate that they are experiencing crises and feel a lack of power in the ability to control events happening around them; these individuals often view themselves as dependent, ineffective, and will often times be vulnerable to other psychological symptoms and/or disorders (Morey, 2007). Previous investigations of stress and its relationship to substance abuse treatment, have shown that high levels of stress are associated with lower treatment response rates and less improvements from treatment, and further also have been associated with higher rates of drug and alcohol relapse (D'Andrea, & D'Andrea, 1996; Tate, Brown, Glasner, Unrod, & McQuiad, 2006). It is hypothesized that higher scores on the STR scale will be associated with poorer treatment participation scores on the Treatment Process Measure.

Hypothesis Two

There will be a significant relationship between scores on the nonsupport (NON) scale of the PAI and treatment participation. The NON scale of the PAI measures a perceived lack of social support, as well as the availability and quality of social relationships, with high scores associated with a perceived lack of support and possible

dissatisfaction with social relationships (Morey, 2007). Previous examinations of social support in relation to drug and alcohol treatment indicate that higher perceived levels of social support upon intake are associated with better treatment outcomes (Dobkin, De Civita, Paraherakis, & Gill, 2002; Huselid, Self, & Gutierres, 1991; Westreich, Heitner, Cooper, Galanter, & Gued, 1997). Specifically, the greater the social support one believes he or she has, the more likely more days will be spent in treatment and there will be higher rates of treatment completion, both of which are associated with more positive outcomes. Higher scores on the NON scale will be associated with poorer treatment participation scores on the Treatment Process Measure.

Hypothesis Three

There will be a significant relationship between scores on the treatment rejection (RXR) scale on the PAI and treatment participation. The RXR scale of the PAI measures an interest in a psychological or emotional, personal change, with lower scores reflecting a high motivation for engaging in treatment (Morey, 2007). The concept of motivation has been related to successful outcomes of substance abusing populations (Conners, Donovan, & DiClemente, 2001). Additionally, high motivation is associated with severity of alcohol and drug use, and/or significant life stressors associated with the use of substances, such as involvement with the court system (Breda, & Heflinger, 2007). All of these factors suggest that high levels of motivation could be extrinsically based, not intrinsically based. Given that substance abuse treatment is often associated with some ambivalence, and extremely high levels of motivation for treatment may signify a lack of ambivalence about treatment, the possibility exists that extremely high levels of treatment acceptance could be associated with secondary gain rather than a true desire for

personal change. It is hypothesized that moderate scores on the RXR scale of the PAI will be associated with better treatment participation scores on the Treatment Process Measure.

Hypothesis Four

There will be a significant relationship between the dominance (DOM) scale of the PAI and treatment participation. Because it is known that the substance abuse population has high rates of cluster B personality styles (e.g., Barnes, 1983; Martin & Sher, 1994), which is associated with being dominating, vindictive, and controlling, in addition to having difficult interpersonal relationships, it is hypothesized that individuals with high scores on the DOM scale will have poorer treatment participation scores on the Treatment Process Measure, than those individuals with moderate or low scores on the DOM scale.

Hypothesis Five

There will be a significant relationship between the borderline features (BOR) scale of the PAI and treatment participation. Because much of substance abuse treatment is interpersonal in nature, and patients with personality disorders have intractable difficulties in establishing and maintaining relationships with others, these patients usually have difficulty engaging in treatment (Lehman, 1996). High elevations on the BOR scale are associated with dissatisfaction in interpersonal relationships, often accompanied by symptoms of feeling misunderstood, angry, anxious, impulsive, and emotional, as well as being ambivalent about interactions with others. Research suggests both short and long-term treatment outcomes are worse for individuals with personality disorders compared to those without them (Herbeck et al., 2005). Moreover, problems

early on with treatment compliance have been noted for individuals with Axis II disorders, often exhibited behaviorally in not attending appointments, not completing homework, and having interpersonal problems with other patients (Herbeck et al., 2005). It is hypothesized that individuals with high scores on the BOR scale will have poorer treatment participation scores on the Treatment Process Measure, than those individuals with low scores on the BOR scale.

Hypothesis Six

There will be a significant relationship between the antisocial features (ANT) scale of the PAI and treatment participation. Research indicates that a high proportion of patients being treated for substance abuse problems also have a co-occurring Cluster B personality disorder, which are associated with poor behavioral control and impulsivity (Taylor, 2005). Further, these individuals often have difficulties with executive cognitive functioning, such as to planning, judgment, and impulsivity (Taylor, 2005). Research has identified that for individuals participating in substance abuse treatment, antisocial personality disorder or characteristics of the disorder are associated with shorter treatment stays, violation of program rules, and poor participation in treatment (Fals-Stewart & Lucente, 1997). Because participation in substance abuse treatment requires adhering to treatment program guidelines, it is hypothesized that individuals with high scores on the ANT scale will have poorer treatment participation scores on the Treatment Process Measure, than those individuals with low scores on the ANT scale.

Hypothesis Seven

It is hypothesized that the PAI scales (STR, NON, RXR, DOM, BOR, and ANT) will be predictive of treatment participation as measured from the onset and at

completion of treatment. Specifically, individuals with higher scores on each of the six PAI scales will be expected to be predictive of poorer treatment participation as measured by the TPM. Previous support for use of the PAI in substance abusing populations and the previous research which suggests certain patient characteristics are indicators of treatment behaviors and outcomes, substantiate this hypothesis.

The PAI has proven a valid measure for assessment in inpatient substance abuse settings, yet researchers suggest a need for future research with the PAI in the inpatient substance abuse setting (Hopwood, Baker, & Morey, 2008; Schinka, 1995). Several studies have used the Stress scale to investigate the relationship of stress to substance abuse treatment, with results indicating that high levels of stress are associated with lower treatment response rates and less improvements from treatment (D'Andrea & D'Andrea, 1996). For the Nonsupport scale, previous examinations of social support in relation to drug and alcohol treatment indicate that higher perceived levels of social support upon intake are associated with better treatment outcomes (Dobkin, De Civita, Paraherakis, & Gill, 2002; Huselid, Self, & Gutierres, 1991; Westreich, Heitner, Cooper, Galanter, & Gued, 1997). For the Treatment Rejection scale, a related yet opposing concept to treatment rejection, motivation, has been related to successful outcomes of treatment in substance abusing populations (Conners, Donovan, & DiClemente, 2001). For the Dominance scale, similar concepts related to interpersonal relationships, have been shown to be related to treatment outcomes; specifically, worse treatment outcomes are associated with those individuals who are unwilling to take personal responsibility for problems and those individuals who have problems with authority (Calsyn, Roszell, & Anderson, 1988). Additionally, for the Borderline and Antisocial scales, research

suggests both short and long-term treatment outcomes are worse for individuals with personality disorders compared to those without them (Herbeck et al., 2005). Moreover, problems early on with treatment compliance have been noted for individuals with Axis II disorders, often exhibited behaviorally in not attending appointments, not completing homework, and having interpersonal problems with other patients (Herbeck et al., 2005). Long term, Axis II personality disorders also are associated with higher relapse and rehospitalization rates (Pettinati, Pierce, Belden, & Meyers, 1999). Research indicates that a high proportion of patients being treated for substance abuse problems also have a co-occurring Cluster B personality disorder, which are associated with poor behavioral control and impulsivity (Taylor, 2005).

CHAPTER TWO

METHOD

The purpose of this study was to assess the influence that pre-existing personality and interpersonal variables, as measured by subscales of the PAI, have on substance abuse treatment participation. Personality and interpersonal variables were assessed using the Personality Assessment Inventory (Morey, 1991). Substance abuse treatment participation was assessed weekly, using the Treatment Process Measure (TPM). Positive treatment participation was defined by higher scores on the TPM.

Participants

The participants were inpatients at a large publically funded state hospital. This hospital is the largest psychiatric inpatient facility in the United States, and provides short and long-term care for patients with a wide variety of psychiatric illnesses. The facility includes 915 licensed psychiatric beds and 418 licensed nursing home beds. The chemical dependency units consist of separate male and female units, comprised of 40 beds each, or a total of 80 beds.

Patients admitted to SUD treatment are treated from a multidisciplinary approach. Complete medical care and detoxification are supervised by medical doctors and other medical professionals. Additionally, patients participate in individual and group therapy, as well as optional family treatment and aftercare treatment or housing arrangements,

with therapists. Psychologists are available for psychological assessment if determined to be vital for treatment, or if the cognitive stability of a patient is in question. A unit psychologist also supervises and oversees the treatment plans for therapy for each patient. Additionally, patients also work in conjunction with social workers and educators to address and overcome anticipated stressors in daily living upon discharge. For example, patients have the opportunity to complete a GED program while in treatment. Patients also have access to a chaplain to discuss spiritual issues that may surface during treatment. Treatment is highly structured, and patients attend group therapy daily, individual therapy at least once weekly, a treatment team evaluation meeting once weekly, and participate in other various treatment groups or trainings based on an individualized approach to the patient's treatment needs.

The primary theoretical orientation for treatment is centered around the 12-step approach, but an integration of empirically supported techniques and approaches are also part of treatment. For example, patients have opportunities to participate in individual biofeedback training sessions, stress reduction groups, art, physical activities, psychoeducational groups such as relapse prevention, and specific group therapy, centered on topics such as trauma, male issues, and grief. The average length of stay for patients enrolled in SUD treatment at this facility is about one month.

Individuals committed to the chemical dependency unit are deemed by the courts as being an imminent danger to self or others, and judged to be in need of an aggressive approach to chemical dependency treatment beyond what is possible at other less intensive facilities. This means that the individuals undergoing treatment at this facility are the most severe of all patients seeking treatment for substance use disorders, and

therefore a qualifying requirement before admission for treatment is a clearly delineated diagnosis of substance dependence. The dependency diagnosis is important to note, as the previous review of the literature combined studies of substance use, abuse, and dependency for continuity purposes. It is also important to note that although comprehensive assessment will likely reveal additional psychiatric comorbidity, the problem for treatment is initially judged to be primarily for chemical dependency versus other psychiatric problems.

A commitment to the chemical dependency treatment unit was the criteria for participation in this study. Additionally, the participants met the following criteria: (a) DSM-IV-TR diagnostic criteria for at least one of the following: Alcohol Abuse, Alcohol Dependence, Drug Abuse, Drug Dependence, Polysubstance Dependence; (b) the legal authority and mental capacity to provide informed consent; (c) a minimum of a fourth-grade reading level in English as indicated by participant's score on the Wide Range Achievement Test, Fourth Edition; and (d) the ability to complete a demographic research questionnaire in a meaningful way. Consultations with the hospital treatment team also assisted in the determination of whether prospective participants met the inclusion criteria. Specifically, each participant was medically and cognitively stable as evidenced by the participants' ability to participate in the mandatory patient programming on the unit. Patients unable to participate in the general treatment program, due to a need for special medical care for detoxification or other cognitive impairment requiring assistance, were not be qualified to participate in this study until the attending physician released the patient into the general treatment program. This criterion ensured

that each patient was stable enough to make a choice about participation and capable of providing informed consent. The informed consent is presented in Appendix A.

All research materials used were pre-approved by the institutional review boards at both the affiliated university and hospital. Each participant in the study received a consent form, explaining the nature of the study, a demographics questionnaire, and PAI. The principle researcher met with each participant, to discuss the informed consent. Additionally, participants were asked to read and sign the consent form prior to completing the demographic questionnaire and the PAI. All collected data were held in confidence, specifically, the results of the WRAT-4, PAI, TPM, or demographic form, did not affect treatment, and was not disclosed to the treatment team at the hospital.

Participation in the study was completely voluntary. All participants were treated in accordance with the ethical guidelines established by the American Psychological Association (APA, 2002). All participants were guaranteed anonymity, in that each participant was assigned a number to be used for identification, rather than their name. The assigned number was attached to all research materials. This system ensured that patient information obtained from the PAI, TPM, and demographic form would not be attached to any patient name and patient names were not available to the researcher.

Instrumentation

WRAT-4

The Wide Range Achievement Test (WRAT-4; Wilkinson & Robertson, 2006) is a clinician administered achievement test for individuals aged 5 to 94 years of age. The WRAT-4 contains four subtests: Word Reading, Sentence Comprehension, Spelling, and Math Computation. Additionally, a Reading Composite Score is calculated, which is a

combination score based on the Word Reading and Sentence Comprehension subtests, and can be used to determine an individual's reading grade equivalent. The WRAT-4 was standardized on a national sample of 3,021 individuals. Validity of the WRAT-4 is considered moderate, ranging from .40 to .70, while reliability of the WRAT-4 is deemed excellent, with corrected alpha reliability coefficients ranging from .87-.93 for age and .83-.93 for grade level (Hoff, Swerdlik, Sabers, & Olson, 2006). The Reading Composite reliability coefficient is .95-.96 (Hoff, Swerdlik, Sabers, & Olson, 2006). Assessment to determine the Reading Composite Score takes about 10-15 minutes.

PAI

The Personality Assessment Inventory (PAI; Morey, 1991) is a self-administered, objective personality measure for adults, consisting of 344 items and requires a fourth grade reading level. The PAI is intended for individuals 18 years of age and older. Each question is answered by the examinee on a Likert-type scale: (F) totally false, (ST) slightly true, (MT) mainly true, and (VT) very true. The examinee marks his or her answers on an answer sheet which is then hand or computer scored, based on preference of the clinician. Internal consistency alphas for the normative population is .81, for a college sample it is .82, and for a clinical sample, .86; for all three samples, the test retest reliability was .83, after an interval of three to four weeks (Morey, n.d.).

The instrument's 22 scales, listed with each corresponding acronym and number of items for that scale, are as follows: Inconsistency (ICN/10), Infrequency (INF/8), Negative Impression (NIM/9), Positive Impression (PIM/9), Somatic Complaints (SOM/24), Anxiety (ANX/24), Anxiety-Related Disorder (ARD/24), Depression (DEP/24), Mania (MAN/24), Paranoia (PAR/24), Schizophrenia (SCZ/24), Borderline

Features (BOR/24), Antisocial Features (ANT/24), Alcohol Problems (ALC/12), Drug

Problems (DRG/12), Aggression (AGG/18), Suicidal Ideation (SUI/12), Stress (STR/8),

Nonsupport (NON/8), Treatment Rejection (RXR/8), Dominance (DOM/12), Warmth

(WRM/12). Of these 22 scales, four are validity scales, eleven are clinical scales, five are

treatment scales, and two are interpersonal scales. The scores on each scale are presented

as linear T scores with a mean of 50T and a standard deviation of 10T.

The PAI also allows calculating supplemental indexes which provide additional

treatment or validity information. There are nine supplemental indexes, which include

the following: Malingering Index (MAL), Rogers Discriminant Function (RDF),

Defensiveness Index (DEF), Cashel Discriminant Function (CDF), Estimated Alcohol

and Drug Scores (ALC Est) and (DRG Est), Suicide Potential Index (SPI), Violence

Potential Index (VPI), and Treatment Process Index (TPI). This study used the STR,

NON, RXR, DOM, BOR, and ANT scales.

Treatment Process Measure

The Treatment Process Measure (TPM), see Appendix C, is a counselor-rated

index of a patient participating in substance abuse treatment, and is comprised 14 items

divided into three scales: 1. Counseling rapport 2. Motivation 3. Self-confidence (Joe,

Simpson, Greener, & Rowan-Szal, 2004). The Treatment Process Measure was

developed by researchers at Texas Christian University, as a shorter version of a more

comprehensive assessment, The Counselor Rating Form (Texas Christian University,

Institute of Behavioral Research, n.d.), Time for completion of the TPM is very brief,

and in most cases, can be completed in three minutes or less. Each statement, about the

patient, is rated by the counselor on a seven point, Likert-type scale, anchored by 1:

strongly disagree, and 7: strongly agree. High scores are associated with better treatment participation on ten of the items, and low scores are associated with better treatment participation for four of the items. The Treatment Process Measure has good psychometric properties, described in the following paragraph (Joe, Simpson, Greener, & Rowan-Szal, 2004).

The normative sample consisted of a sample of 547 clients enrolled in an outpatient methadone treatment clinic in Texas. The sample was 70% male, with the average age being 38 years old, and in regard to race, 22% were Euro-American and 67% were Hispanic. Coefficient alphas reliabilities were calculated for each scale across three month treatment intervals. Coefficient alpha ranges for the Counseling Rapport Scale were .79-.83, for the Motivation Scale, .84-.87, and .77-.79 for the Self-Confidence Scale.

Demographic Questionnaire

The demographic questionnaire, see Appendix B, was designed to elicit standard demographic information and other information deemed important to this study. Standard information included age, gender, ethnicity, and education level. Additionally, frequency and history as well as type of substances used were asked because of the particular relevance to this study.

Procedure

The Institutional Review Boards for the affiliated university and hospital approved the study prior to any collection of data; see Appendices D and E. Participants were civilly committed inpatients participating in a court-ordered substance abuse treatment program. A convenience sample from the substance abuse unit was utilized.

Each patient upon admission to the unit, was informed by their assigned therapist of the opportunity to voluntarily participate in a research study. Patients interested in participating in the study were assigned a time to meet directly with the researcher.

Each patient was treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 2002). The principal researcher directly provided each interested participant with the informed consent and discussed with each, administration procedures for the study. Each patient was guaranteed anonymity, with each participant assigned a number for identification rather than using their name. Participants were assured results would be reported on an aggregate basis rather than for each individual.

Before any research began, the researcher in-serviced each participating therapist on the research study and procedures to be used. Additionally, each therapist was given the contact information of the researcher, and asked to contact the researcher with questions or concerns during the research process. Next, the researcher created a folder for each participant, and assigned each participant a number. This number was included on all forms inside the folder, including the informed consent form, demographic form, PAI, and TPM.

Once the research process began, potential participants received and signed the informed consent form, which verified voluntary participation in the study and also notified participants that there were minimal risks to involvement in the study. Patients choosing to participate were informed that results of the PAI, demographic form, and TPM would not be shared with the treatment team or affect their treatment in any way. Additionally, participants were informed that they were free to withdraw from

participation in the study at any time, and would not suffer penalty or influence on treatment services if they decided to withdraw. Participants also were informed that due to the nature of certain questions on the PAI, there would be a potential for evoking emotional distress. Participants were directed to discuss any questions or issues that arose with their assigned individual therapist or treatment team. The informed consent form also provided the participants with information to contact the researcher with any questions or concerns. Each participant was informed they could contact the researcher at the conclusion of the study to request debriefing information that would summarize the research findings.

Once the informed consent form was signed by the participant, the principal researcher removed the consent form from the packet of information, and placed it in a separate folder for signed informed consent forms, thus separating the participants' names from the research materials used. The researcher then gave participants the WRAT, PAI and demographic form, with only an assigned number for identification, and assessed during a single administration. Upon completion of the WRAT, PAI and demographic form, the principal researcher filed these instruments in folders specific to each document. Next, the researcher wrote the participant's name on the top tab of the folder, and gave the folder to the patient's individual therapist. The folder included a TPM for each week the patient was enrolled in treatment, as well as envelopes to seal the TPM in upon completion, so that other therapists or patients would not have access to the information. Each participant's therapist then completed one of the treatment participation rating forms on a weekly basis according to a specified day and time,

predetermined with the unit supervising psychologist, and placed the TPM in a sealed envelope provided by the researcher.

Data Analysis

There were several analyses used to understand the data. First, descriptive statistics including frequency and percentages of the following demographic variables: age, gender, ethnicity, sexual orientation, socioeconomic status, legal charge status, and drug of choice were calculated. Next, hypotheses one through six were analyzed using Pearson Correlations, a statistical technique used to measure the degree and direction of a linear relationship between two variables (Gravetter & Wallnau, 2004). Also, where appropriate, Analysis of Variance (ANOVA) was used, a statistical technique used to compare two or more means to see if there are non-linear differences (Tabachnik & Fidell, 2001). Hypothesis 7 was analyzed using a multiple regression analysis, a statistical technique used to examine and predict relationships between one dependent variable, or criterion variable, and several independent variables, or predictor variables (Tabachnik & Fidell, 2001). The six predictor variables in the regression analysis were PAI subscales as follows: STR, NON, RXR, DOM, BOR, and ANT scales. All of the predictor variables were continuous. The criterion variable was the substance abuse treatment participation score, based on the TPM.

CHAPTER THREE

RESULTS

The purpose of this study was to examine how personality and interpersonal variables are related to behaviors exhibited during treatment in an intensive inpatient substance abuse treatment program. Personality and interpersonal variables were assessed using the Personality Assessment Inventory (Morey, 1991). Substance abuse treatment behaviors were assessed using the Treatment Process Measure (TPM), (Joe, Simpson, Greener, & Rowan-Szal, 2004), a brief rating scale for examining various aspects of counselor-rated treatment participation, completed weekly. Treatment participation was assessed based on scores on the TPM. The purpose of this chapter is to present the results of the study. First, sample characteristics, standard deviations, and means are presented. Next, correlations between variables are provided. Finally, where applicable, results of the ANOVA, Tukey's HSD post hoc test, and multiple regression analyses are reported.

Participants

Participants consisted of inpatients at a large publically funded state hospital, hospitalized for chemical dependency treatment. The participants consisted of males (N=61) and females (N=45) ranging in age from 18-61 years old, who were chancery-court committed for chemical dependency treatment. Each participant was screened prior

to data collection to ensure a minimum of a fourth grade reading level with the WRAT-4. All participants of the study met the fourth grade reading requirements. The mean age of the participants was 35.2 years with a standard deviation of 10.76. In terms of ethnicity, the overall sample consisted of 75 Caucasian Americans (70.8%), 28 African Americans (26.4%), 1 American Indian (0.9%), 1 Biracial (0.9%), and 1 that did not indicate ethnicity (0.9%). Demographic information of the study sample is displayed in Table 2.

Table 2.

Descriptive Statistics of the Sample

Variables	Frequency	Percentage
Gender		
Males	61	57.5
Females	45	42.5
Ethnicity		
Caucasian	75	70.8
African-American	28	26.4
American-Indian	1	.9
Biracial	1	.9
Other	1	.9
Sexual Orientation		
Heterosexual	92	86.8
Homosexual	4	3.8
Bisexual	6	5.7

Table 2. (continued)

Descriptive Statistics of the Sample

Variables	Frequency	Percentage
Other	4	3.8
Socioeconomic Status		
Lower	40	37.7
Middle	56	52.8
High	5	4.7
Current legal charges		
Yes	26	24.5
No	77	72.6
Drug of Choice		
Alcohol	29	27.4
Marijuana	18	17.0
Opiates	14	13.2
Crack Cocaine	16	15.1
Cocaine	10	9.4
Methamphetamines	5	4.7
Benzodiazepines	4	3.8
Hallucinogens	1	0.9
Other prescriptions	5	4.7

Data Analysis

The TPM is composed of 14, counselor-rated items designed to measure patient participation in substance abuse treatment (Joe, Simpson, Greener, & Rowan-Szal, 2004). Each statement about the patient is rated by the counselor on a seven point, Likert-type scale, anchored by 1: strongly disagree, and 7: strongly agree. Four of the items on the TPM are reverse scored. For each patient, a weekly TPM was completed by the individual therapist assigned to the patient. Of the 106 participants, 94 had six consecutive weeks of TPM scores completed by their therapist, however, 12 of the participants were discharged from treatment early due to medical illness, violence on the unit, or a quick treatment due to previous, multiple admissions on the unit. These discharged patients were missing TPM scores for the last one through three weeks of treatment. For the missing data, mean replacement for each TPM item for each individual was used to fill in missing data points.

For hypotheses one through seven mean scores were calculated for the available TPM ratings for each participant, and missing data points were filled in with the mean score for each person. Next, rather than use each of the fourteen ratings, collected over the course of the six weeks, a mean was calculated for each of the fourteen item ratings for each participant. These 14 means were used for the first phase of statistical analyses. The means and standard deviations for the fourteen TPM ratings and the six PAI variables assessed for this project are presented in Table 3. Additional analyses were conducted by taking out each of the participants that did not have six total weekly ratings. Then, the mean of the first two and last two TPM ratings were calculated and data analysis was conducted for each of the fourteen ratings for each participant. Next, the

three subscales of the TPM were analyzed. Subscale scores were calculated by using the mean of the first two weekly ratings and the mean of the final two weekly ratings. These first and last means were used for the next phase of statistical analyses. The means and standard deviations for the first and final weekly ratings for each of the three subscales on the TPM and the six PAI variables assessed for this project are presented in Table 4.

Table 3.

Means and Standard Deviations of the Variables

Variables	N	Mean	SD	Min	Max
Age	106	35.18	10.76	18.00	61.00
Years of Education	106	12.00	2.18	6.00	20.00
TPM					
Easy to talk to	106	5.64	1.22	1.00	7.00
Warm and caring	106	5.29	1.31	1.00	7.00
Honest and sincere	106	4.52	1.10	1.00	6.00
Hostile or aggressive	106	1.94	1.05	1.00	5.17
In denial about problems	106	3.26	1.49	1.00	9.33
Motivated to recovery	106	5.00	1.24	1.50	6.83
Cooperative	106	5.41	1.09	1.00	7.00
Responsible	106	5.09	1.20	1.00	7.00
Consistently keeps session appointments	106	5.42	1.22	1.00	7.00
Self-confident	106	4.83	1.03	2.67	7.00
Freely expresses wishes	106	5.29	1.06	2.00	7.00

Table 3. (continued)

Means and Standard Deviations of the Variables

Variables	N	Mean	SD	Min	Max
Depressed	106	2.90	1.19	1.00	6.17
Nervous or anxious	106	3.50	1.37	1.00	7.00
Motivated	106	4.99	1.23	1.00	7.00
PAI scales					
Borderline	106	70.90	12.80	39	104
Antisocial	106	68.44	13.95	40	106
Stress	106	68.50	13.28	37	91
Nonsupport	106	59.33	12.22	37	91
Treatment rejection	106	33.92	9.11	20	63
Dominance	106	48.04	12.55	20	78

TPM means and standard deviations were calculated using the average of six consecutive weekly ratings. *Note:* N = Number of Participants; SD = Standard Deviation; Min = Minimum; Max = Maximum

Table 4.

Means and Standard Deviations of the Variables for TPM Subscales

Variables	N	Mean	SD
TPM			
Counseling Rapport (First)	106	25.10	4.91
Motivation (First)	106	19.46	4.48

Table 4. (continued)

Means and Standard Deviations of the Variables for TPM Subscales

Variables	N	Mean	SD
Self-Confidence (First)	106	22.88	4.24
Counseling Rapport (Final)	106	27.78	5.56
Motivation (Final)	106	21.83	5.15
Self-Confidence (Final)	106	26.24	4.15

TPM means and standard deviations were calculated using the mean of the
first two weekly ratings (first) and the mean of the last two weekly ratings (final).
Note: TPM = Treatment Process Measure; *N* = Number of Participants; *SD* = Standard Deviation

For Hypothesis 7 a multiple regression analysis was conducted to examine the relationship between TPM subscale scores and the six PAI predictor variables. Also, a change score for the TPM subscales was calculated by subtracting the score of week 6 rating from the score of the week one rating and regression analyses were conducted to examine the relationship between the TPM subscale change scores and the PAI predictors. For the hypothesis testing the alpha level of .05 was used to determine significance.

Results of Hypotheses

Hypothesis One

The first hypothesis stated that scores on the stress (STR) scale of the PAI would be associated with treatment participation; a significant negative correlation was predicted between scores on the Stress scale of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean

for each of the 14 TPM item ratings and the Stress scores (higher scores indicating higher

levels of stress and inability to control events around them) were conducted to test for

linear relationships. Further analyses were conducted to determine whether higher scores

on the STR scale were related to treatment process early and/or late over the course of

treatment. Accordingly, Pearson correlations between the mean of the first two TPM

ratings and the STR scale were conducted. Next Pearson correlations between the mean

of the final two TPM ratings and the STR scale was conducted. Finally subscales were

analyzed, again using Pearson correlations, looking at the mean of the first two and the

mean of the final two subscale TPM ratings.

Results showed no significant relationships between the STR scale and the grand

mean TPM ratings. These results do not support the hypothesis. Pearson Correlations

are presented in Table 5.

Table 5.

Pearson Correlations Between STR Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	.079	.421
Warm and caring	106	.101	.303
Honest and sincere	106	.073	.457
Hostile and aggressive	106	.054	.582
In denial about problems	106	-.049	.616
Motivated to recovery	106	.106	.280
Cooperative	106	.069	.480

Table 5. (continued)

Pearson Correlations Between STR Scale and TPM Items (Grand Mean)

Variables	N	r	p
Responsible	106	.102	.297
Consistently keeps session appointments	106	.096	.327
Self-confident	106	.037	.709
Freely expresses wishes	106	.096	.325
Depressed	106	-.031	.749
Nervous or anxious	106	.067	.494
Motivated	106	.094	.337

Note: STR = Stress Scale on PAI; *TPM* = Treatment Process Measure; N = Number of Participants; r = Pearson Correlation Value; p = Probability; * $p < .05$. ** $p < .01$.

Results showed five significant relationships between the STR scale and the mean of the first two weekly TPM ratings : "honest and sincere" (*r (87)* = .260, $p < .01$), "in denial about problems" (r (87) = -.256, $p < .01$), "motivated to recovery" (r (87) = .237, $p < .05$), "responsible" (r (87) = .231, $p < .05$), and "motivated" (r (87) = .229, $p < .05$). These results provide some partial support for this hypothesis. Pearson correlations are presented in Table 6.

Table 6.

Pearson Correlations Between STR Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Easy to talk to	89	.128	.232

Table 6. (continued)

Pearson Correlations Between STR Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Warm and caring	89	.185	.083
Honest and sincere	89	-.260	.014*
Hostile and aggressive	89	-.008	.942
In denial about problems	89	-.256	.016*
Motivated to recovery	89	-.237	.025*
Cooperative	89	.134	.211
Responsible	89	-.231	.029*
Consistently keeps session appointments	89	.194	.069
Self-confident	89	.031	.773
Freely expresses wishes	89	.123	.253
Depressed	89	-.156	.144
Nervous or Anxious	89	.133	.214
Motivated	89	-.229	.031*

Note: STR = Stress Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* < .01.

Results showed no significant relationships between the STR scale and the mean of the last two weekly TPM ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 7.

Table 7.

Pearson Correlations Between STR Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Easy to talk to	89	.035	.741
Warm and caring	89	.059	.586
Honest and sincere	89	.033	.757
Hostile and aggressive	89	-.079	.461
In denial about problems	89	.080	.458
Motivated to recovery	89	.087	.419
Cooperative	89	.079	.462
Responsible	89	.076	.480
Consistently keeps session appointments	89	.083	.440
Self-confident	89	-.016	.882
Freely expresses wishes	89	.040	.713
Depressed	89	.058	.589
Nervous or Anxious	89	.123	.250
Motivated	89	.114	.286

Note: STR = Stress Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the STR scale and the mean of the first two weekly TPM subscale ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 8.

Table 8.

Pearson Correlations Between STR Scale and TPM Subscales (Mean of First Two Weeks)

Subscales	N	r	p
Self-confidence	89	.180	.065
Motivation	89	.149	.129
Counseling Rapport	89	.150	.124

Note: STR = Stress Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. **$p < .01$.

Results showed no significant relationships between the STR scale and the mean of the last two weekly TPM subscale ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 9.

Table 9.

Pearson Correlations Between STR Scale and TPM Subscales (Mean of Last Two Weeks)

Subscales	N	r	p
Self-confidence	89	-.038	.697
Motivation	89	.053	.587
Counseling Rapport	89	-.007	.942

Note: STR = Stress Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. **$p < .01$.

Hypothesis Two

The second hypothesis stated that the scores on the nonsupport (NON) scale of the PAI would be associated with treatment participation; a significant negative correlation was predicated between scores on the NON scale of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean for each of the 14 TPM ratings and the NON scores (higher scores indicating a perceived lack of social support and dissatisfaction with social relationships) were conducted to test for linear relationships. Further analyses were conducted to determine whether higher scores on the NON scale were related to treatment process early and/or late over the course of treatment. Accordingly, Pearson correlations between the mean of the first two TPM ratings and the NON scale were conducted. Next Pearson correlations between the mean of the final two TPM ratings and the NON were conducted. Finally subscales were analyzed, again using Pearson correlations, looking at the mean of the first two and the mean of the final two subscale TPM ratings.

Results showed no significant relationships between the NON scale and the grand mean TPM ratings. These results do not support the hypothesis. Pearson Correlations are presented in Table 10.

Table 10.

Pearson Correlations Between NON Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	-.104	.287

Table 10. (continued)

Pearson Correlations Between NON Scale and TPM Items (Grand Mean)

Variables	N	r	p
Warm and caring	106	-.130	.183
Honest and sincere	106	-.153	.118
Hostile and aggressive	106	.142	.146
In denial about problems	106	-.070	.475
Motivated to recovery	106	-.093	.344
Cooperative	106	-.104	.289
Responsible	106	-.128	.192
Consistently keeps session appointments	106	-.094	.335
Self-confident	106	-.082	.405
Freely expresses wishes	106	-.043	.662
Depressed	106	.094	.336
Nervous or anxious	106	.000	.997
Motivated	106	-.126	.199

Note: NON = Nonsupport Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. **$p < .01$.

Results showed no significant relationships between the NON scale and the mean of the first two weekly TPM ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 11.

Table 11.

Pearson Correlations Between NON Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.087	.420
Warm and caring	106	-.054	.616
Honest and sincere	106	.043	.688
Hostile and aggressive	106	.010	.926
In denial about problems	106	.007	.945
Motivated to recovery	106	.047	.659
Cooperative	106	.009	.936
Responsible	106	-.011	.915
Consistently keeps session appointments	106	-.035	.744
Self-confident	106	-.054	.617
Freely expresses wishes	106	-.092	.394
Depressed	106	-.015	.885
Nervous or anxious	106	-.058	.588
Motivated	106	.016	.882

Note: NON = Nonsupport Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed one significant relationships between the NON scale and the mean of the last two weekly TPM ratings: "depressed" (r (87) = .220, *p* < .05). These results do not support the hypothesis. Pearson correlations are presented in Table 12.

Table 12.

Pearson Correlations Between NON Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.174	.104
Warm and caring	106	-.126	.238
Honest and sincere	106	-.141	.187
Hostile and aggressive	106	-.068	.528
In denial about problems	106	.089	.405
Motivated to recovery	106	-039	.718
Cooperative	106	-.122	.254
Responsible	106	-.126	.238
Consistently keeps session appointments	106	-.089	.406
Self-confident	106	-.151	.158
Freely expresses wishes	106	-.144	.177
Depressed	106	.220*	.038
Nervous or anxious	106	.046	.669
Motivated	106	-.099	.355

Note: NON = Nonsupport Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the NON scale and the mean of the first two weekly TPM subscale rating. These results do not support the hypothesis. Pearson correlations are presented in Table 13.

Table 13.

Pearson Correlations Between NON Scale and TPM Subscales (Mean of First Two

Weeks)

Subscales	N	r	p
Self-confidence	89	.022	.822
Motivation	89	-.038	.702
Counseling Rapport	89	-.108	.269

Note: NON = Nonsupport Scale on PAI; *TPM* = Treatment Process Measure; *N* =
Number of Participants; *r* = Pearson Correlation Value; *p* = Probability

Results showed no significant relationships between the NON scale and the mean

of the last two weekly TPM subscale ratings. These results do not support the

hypothesis. Pearson correlations are presented in Table 14.

Table 14.

Pearson Correlations Between NON Scale and TPM Subscales (Mean of Last Two

Weeks)

Subscales	N	r	p
Self-confidence	89	-.188	.054
Motivation	89	-.120	.220
Counseling Rapport	89	-.179	.067

Note: NON = Nonsupport Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants;
r = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Hypothesis Three

The third hypothesis stated that the scores on the treatment rejection (RXR) scale of the PAI would be associated with treatment participation; a significant correlation was predicted between moderate scores on the RXR scale (moderate scores associated with differing levels of motivation toward treatment, not particularly low or high) of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean for each of the 14 TPM ratings and RXR scores were conducted to test for linear relationships. Further analyses were conducted to determine whether moderate scores on the RXR scale were related to treatment process early and/or late over the course of treatment. Accordingly, Pearson correlations between the mean of the first two TPM ratings and the RXR scale were conducted. Next Pearson correlations between the mean of the final two TPM ratings and the RXR scale was conducted. Finally subscales were analyzed, again using Pearson correlations, looking at the mean of the first two and the mean of the final two subscale TPM ratings.

Results showed ten significant relationships between the RXR scale and the mean of the TPM ratings: "easy to talk to" (r (104) = -.347, $p \leq .000$), "warm and caring" (r (104) = -.325, $p < .01$), "honest and sincere" (r (104) = -.261, $p < .01$), "motivated to recovery" (r (104) = -.330, $p < .01$), "cooperative" (r (104) = -.290, $p < .01$), "responsible" (r (104) = -.327, $p < .01$), "consistently keeps session appointments" (r (104) = -.399, $p \leq .000$), "freely expresses wishes" (r (104) = -.274, $p < .01$), "nervous or anxious" (r (104) = -.210, $p < .05$), and "motivated" (r (104) = -.343, $p \leq .000$). Specifically, for the ten statistically significant treatment ratings and the RXR, it appears that a negative correlation exists; higher scores on the RXR scale are associated with lower scores on

the TPM rating of "consistently keeps appointments," "easy to talk to," "motivated," "motivated to recovery," "responsible," "warm and caring," "cooperative," "freely expresses wishes," "honest and sincere," and "nervous or anxious." Pearson Correlations are presented in Table 15.

Table 15.

Pearson Correlations Between RXR Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	-.347	.000**
Warm and caring	106	-.325	.001**
Honest and sincere	106	-.261	.007**
Hostile and aggressive	106	.057	.564
In denial about problems	106	.168	.085
Motivated to recovery	106	-.330	.001**
Cooperative	106	-.290	.003**
Responsible	106	-.327	.001**
Consistently keeps session appointments	106	-.399	.000**
Self-confident	106	-.120	.221
Freely expresses wishes	106	-.274	.004**
Depressed	106	-.066	.503
Nervous or anxious	106	-.210	.031*
Motivated	106	-.343	.000**

Note: RXR = Treatment Rejection Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Treatment rejection was broken into three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. Next a One-Way ANOVA was conducted to compare group means in treatment ratings to test for non-linear differences. In the case of a significant overall model, Tukey's HSD was used to determine which means were significant.

Results of the One-Way ANOVA indicated two significant differences, with the TPM variables, "consistently keeps session appointments," and "nervous or anxious." The ANOVA results are presented in Table 16.

Table 16.

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
Easy to talk to				2.777	.067
Low	34	5.85	.85		
Middle	27	5.90	1.12		
High	45	5.32	1.44		
Warm and caring				2.233	.112
Low	34	5.52	1.00		
Middle	27	5.52	1.28		
High	45	4.99	1.48		
Honest and sincere				1.843	.164
Low	34	4.57	.84		

Table 16. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
Middle	27	4.81	1.05		
High	45	4.31	1.26		
Hostile and aggressive				.012	.988
Low	34	1.96	1.14		
Middle	27	1.91	.84		
High	45	1.93	1.11		
In denial about problems				.716	.491
Low	34	3.09	1.26		
Middle	27	3.13	1.43		
High	45	3.46	1.68		
Motivated to recovery				2.201	.116
Low	34	5.12	.90		
Middle	27	5.11	1.15		
High	45	4.61	1.45		
Cooperative				1.841	.164
Low	34	5.61	.79		
Middle	27	5.56	1.18		
High	45	5.18	1.21		

Table 16. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
Responsible				1.761	.177
Low	34	5.29	.87		
Middle	27	5.27	1.25		
High	45	4.84	1.36		
Consistently keeps session appointments				3.706	.028*
Low	34	5.80	.76		
Middle	27	5.51	1.25		
High	45	5.08	1.40		
Self-confident				.529	.591
Low	34	4.77	1.05		
Middle	27	5.01	1.02		
High	45	4.77	1.04		
Freely expresses wishes				1.772	.175
Low	34	5.46	.85		
Middle	27	5.44	1.20		
High	45	5.06	1.11		
Depressed				.188	.829
Low	34	2.97	1.13		
Middle	27	2.78	1.10		

Table 16. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
High	45	2.93	1.30		
Nervous or anxious				3.471	.035*
Low	34	3.99	1.23		
Middle	27	3.39	1.39		
High	45	3.20	1.39		
Motivated				2.507	.086
Low	34	5.26	.92		
Middle	27	5.15	1.17		
High	45	4.69	1.42		

Note: RXR = Treatment Rejection Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F ratio of ANOVA; p = Probability; * $p < .05$.

A subsequent Tukey HSD was performed to compare each variable between groups in order to find the variables with the greatest amount of variance. The results of the Tukey HSD are presented in Table 17. Tukey post-hoc comparisons of the three groups for "consistently keeps session appointments," indicate that the low group (M = 5.80, 95% CI [5.54, 6.07]) and the high group (M = 5.08, 95% CI [5.02, 6.01]), p = .029 are significantly different. Comparisons between the middle group (M = 5.51, 95% CI [4.66, 5.50]) and the other two groups were not statistically significant at $p < .05$. Tukey

post-hoc comparisons of the three groups for "nervous or anxious," indicate that the low

group (M = 3.99, 95% CI [3.56, 4.41]) and the high group (M = 3.20, 95% CI [2.84,

3.94]), p = .029 are statistically significant compared to the middle group. Comparisons

between the middle group (M = 3.39, 95% CI [2.84, 3.94]) and the other two groups were

not statistically significant at p < .05. These results provide additional information to the

Pearson correlations that indicated significant differences in RXR and TPM ratings;

however, overall, Hypothesis 3 was not supported.

Table 17.

Group Score Differences for RXR Levels on the TPM with Tukey HSD Comparison

(Grand Mean)

Item	Low Mean [CI]	Middle Mean [CI]	High Mean [CI]
Consistently keeps session appointments	5.80 [5.54, 6.07]*	5.51 [5.02, 6.01]	5.08 [4.66, 5.50]*
Nervous or anxious	3.99 [3.56, 4.41]*	3.39 [2.84, 3.94	3.20 [2.78, 3.61]*

Note: Groups were determined based on three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. CI = Confidence Interval; numbers in brackets are 95% confidence intervals of the means. *p < .05

Results showed ten significant relationships between the RXR scale and the mean

of the first two weekly TPM ratings : "easy to talk to" (r (87) = -.256, p < .05), "warm

and caring" (r (87) = -.329, p < .01), "honest and sincere" (r (87) = -.310, p < .01), "in

denial about problems" (r (87) = .227, p < .05), "motivated to recovery" (r (87) = -.428, p

≤ .000), "cooperative" (r (87) = -.278, p < .01), "responsible" (r (87) = -.308, p < .05),

"consistently keeps session appointments" (r (87) = -.459, p ≤ .000), "freely expresses

wishes" (r (87) = -.298, $p < .01$), and "motivated" (r (87) = -.404, $p \leq .000$). Pearson

correlations are presented in Table 18.

Table 18.

Pearson Correlations Between RXR Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Easy to talk to	89	-.256	.016*
Warm and caring	89	-.329	.002**
Honest and sincere	89	-.310	.003**
Hostile and aggressive	89	.056	.602
In denial about problems	89	.227	.032*
Motivated to recovery	89	-.428	.000**
Cooperative	89	-.278	.008**
Responsible	89	-.308	.003**
Consistently keeps session appointments	89	-.459	.000**
Self-confident	89	-.162	.129
Freely expresses wishes	89	-.298	.005**
Depressed	89	.026	.807
Nervous or anxious	89	-.103	.335
Motivated	89	-.404	.000**

Note: RXR = Treatment Rejection Scale on PAI; *TPM* = Treatment Process Measure; N = Number of Participants; r = Pearson Correlation Value; p = Probability; * $p < .05$. ** $p < .01$.

Treatment rejection was broken into three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. Next a One-Way ANOVA was conducted to compare group means in treatment ratings to test for non-linear differences. In the case of a significant overall model, Tukey's HSD was used to determine which means were significant.

Results of the One-Way ANOVA indicated five significant differences, with the TPM variables, "warm and caring," "motivated to recovery," "consistently keeps session appointments," and "freely expresses wishes," and "motivated." The ANOVA results are presented in Table 19.

Table 19.

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
Easy to talk to				1.79	.173
Low	29	5.66	1.12		
Middle	33	5.55	1.24		
High	27	5.06	1.42		
Warm and caring				3.27	.043*
Low	29	5.29	1.16		
Middle	33	5.27	1.17		
High	27	4.52	1.57		
Honest and sincere				1.90	.156

Table 19. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
Low	29	4.71	1.28		
Middle	33	4.70	1.45		
High	27	4.07	1.45		
Hostile and aggressive				.130	.879
Low	29	2.22	1.61		
Middle	33	2.09	1.33		
High	27	2.28	1.51		
In denial about problems				.977	.381
Low	29	3.28	1.41		
Middle	33	3.80	1.68		
High	27	3.74	1.65		
Motivated to recovery				5.344	.006**
Low	29	4.91	1.00		
Middle	33	4.67	1.39		
High	27	3.83	1.44		
Cooperative				2.814	.066
Low	29	5.48	5.48		
Middle	33	5.42	5.42		
High	27	4.85	5.27		

Table 19. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
Responsible				2.689	.074
Low	29	4.90	0.91		
Middle	33	5.06	1.31		
High	27	4.37	1.27		
Consistently keeps session appointments				7.077	.001**
Low	29	5.48	0.86		
Middle	33	5.41	1.35		
High	27	4.39	1.36		
Self-confident				.685	.507
Low	29	4.45	1.25		
Middle	33	4.45	1.36		
High	27	4.11	1.15		
Freely expresses wishes				3.996	.022*
Low	29	5.09	1.07		
Middle	33	5.20	1.32		
High	27	4.35	1.26		
Depressed				.912	.406
Low	29	3.03	1.29		
Middle	33	3.45	1.37		

Table 19. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
High	27	3.07	1.42		
Nervous or anxious				1.989	.143
Low	29	3.80	1.50		
Middle	33	3.74	1.50		
High	27	3.13	1.09		
Motivated				4.922	.009**
Low	29	4.88	1.01		
Middle	33	4.94	1.26		
High	27	4.02	1.41		

Note: RXR = Treatment Rejection Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F ratio of ANOVA; p= Probability; * $p < .05$. **$p < .01$.

A subsequent Tukey HSD was run to compare each variable between groups in order to find the variables with the greatest amount of variance. The results of the Tukey HSD are presented in Table 20. Tukey post-hoc comparisons of the three groups for "warm and caring," indicate that the low group (M=5.29, 95% CI [4.86, 5.73]) and the high group (M=4.52, 95% CI [3.90,5.14]) are not significantly different at $p < .05$. Comparisons between the middle group (M=5.27, 95% CI [4.86, 5.69]) and the low and high groups were not significantly different at $p < .05$. Tukey post-hoc comparisons of

the three groups for "motivated to recovery," indicate that the low group (M=4.91, 95%

CI [4.53, 5.29]) and the high group (M=3.83, 95% CI [3.26, 4.40]) are significantly

different, p =.007. Comparisons between the middle group (M=4.67, 95% CI [4.17,

5.16]) and the high group (M=3.83, 95% CI [3.26, 4.40]) are significantly different, p =

.039. Comparisons of the low group and the middle group were not statistically

significant at p < .05. Tukey post-hoc comparisons of the three groups for "consistently

keeps session appointments," indicate that the low group (M=5.48, 95% CI [5.16, 5.81])

and the high group (M=4.39, 95% CI [3.85, 4.93]) are significantly different, p =.003.

Comparisons between the middle group (M=5.41, 95% CI [4.93, 5.89]) and the high

group are significantly different, p = .005. Comparisons of the low group and the middle

group were not statistically significant at p < .05. Tukey post-hoc comparisons of the

three groups for "freely expresses wishes," indicate that the middle group (M=5.20, 95%

CI [4.73, 5.67]) and the high group (M=4.35, 95% CI [3.85, 4.85]) are statistically

significant, p = .025. Comparisons between the low group (M=5.09, 95% CI [4.68,

5.49]) to the middle and high group were not statistically significant at p < .05. Tukey

post-hoc comparisons of the three groups for "motivated," indicate that the low group (M

= 4.88, 95% CI [4.49, 5.27]) and the high group (M=4.02, 95% CI [3.46, 4.58]) are

statistically significant different, p = .029. Comparisons of the middle group (M= 4.94,

95% CI [4.49, 5.39]) and high group were significantly different, p = .014. Comparisons

between the low group and the high group were not statistically significant at p < .05.

These results provide additional information to the Pearson correlation that indicated

significant differences in RXR and TPM ratings; however, overall, Hypothesis 3 was not

supported. Tukey's post-hoc comparison information is presented in Table 20.

Table 20.

Group Score Differences for RXR Levels on the TPM with Tukey HSD Comparison

(Mean of first Two Weeks)

Item	Low Mean [CI]	Middle Mean [CI]	High Mean [CI]
Warm and caring	5.29 [4.86, 5.73]	5.27 [4.86, 5.69]	4.52 [3.90, 5.14]
Motivated to recovery	4.91 [4.53, 5.29]*	4.67 [4.17, 5.16]*	3.83 [3.26, 4.40]*
Consistently keeps session Appointments	5.48 [5.16, 5.81]*	5.41 [4.93, 5.89]*	4.39 [3.85, 4.93]
Freely expresses wishes	5.09 [4.68, 5.49]	5.20 [4.73, 5.67]*	4.35 [3.85, 4.85]*
Motivated	4.88 [4.49, 5.27]	4.94 [4.49, 5.39]*	4.02 [3.46, 4.58]*

Note: Groups were determined based on three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. *CI* = Confidence Interval; numbers in brackets are 95% confidence intervals of the means. *$p < .05$

Results showed ten significant relationships between the RXR scale and the mean of the last two weekly TPM ratings : "easy to talk to" (r (87) = -.352, $p < .01$), "warm and caring" (r (87) = -.312, $p < .01$), "honest and sincere" (r (87) = -.239, $p < .05$), "motivated to recovery" (r (87) = -.235, $p < .05$), "cooperative" (r (87) = -.307, $p = .01$), "responsible" (r (87) = -.345, $p < .01$), "consistently keeps session appointments" (r (87) = -.390, $p \leq .000$), "freely expresses wishes" (r (87) = -.379, $p \leq .000$), "nervous or anxious" (r (87) = -.232, $p < .05$), and "motivated" (r (87) = -.307, $p <= .01$). Pearson correlations are presented in Table 21.

Table 21.

Pearson Correlations Between RXR Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Easy to talk to	89	-.352	.001**
Warm and caring	89	-.312	.003**
Honest and sincere	89	-.239	.024*
Hostile and aggressive	89	.104	.333
In denial about problems	89	-.026	.809
Motivated to recovery	89	-.235	.027*
Cooperative	89	-.307	.003**
Responsible	89	-.345	.001**
Consistently keeps session appointments	89	-.390	.000**
Self-confident	89	-.170	.111
Freely expresses wishes	89	-.379	.000**
Depressed	89	-.124	.246
Nervous and anxious	89	-.232	.029*
Motivated	89	-.307	.003**

Note: RXR = Treatment Rejection Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Treatment rejection was broken into three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. Next a One-Way ANOVA was conducted to compare group means in treatment ratings to test for non-

linear differences. In the case of a significant overall model, Tukey's HSD was used to determine which means were significant.

Results of the One-Way ANOVA indicated three significant differences, with the TPM variables, "consistently keeps session appointments," "freely expresses wishes," and "nervous or anxious." The ANOVA results are presented in Table 22.

Table 22.

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
Easy to talk to				2.626	.078
Low	29	5.98	1.00		
Middle	33	5.92	1.24		
High	27	5.24	1.75		
Warm and caring				2.355	.101
Low	29	5.71	1.24		
Middle	33	5.73	1.47		
High	27	4.94	1.90		
Honest and sincere				1.598	.208
Low	29	5.19	1.40		
Middle	33	5.48	1.56		
High	27	4.74	1.85		
Hostile and aggressive				.046	.955

Table 22. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
Low	29	1.67	1.11		
Middle	33	1.76	1.17		
High	27	1.74	1.16		
In denial about problems				1.035	.360
Low	29	3.14	1.86		
Middle	33	2.95	1.88		
High	27	2.46	1.66		
Motivated to recovery				1.513	.226
Low	29	5.31	1.39		
Middle	33	5.47	1.46		
High	27	4.80	1.76		
Cooperative				2.118	.127
Low	29	5.78	1.11		
Middle	33	5.67	1.32		
High	27	5.07	1.66		
Responsible				2.992	.055
Low	29	5.69	1.09		
Middle	33	5.64	1.40		
High	27	4.85	1.81		

Table 22. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
Consistently keeps session appointments				3.575	.032*
Low	29	6.09	.96		
Middle	33	5.73	1.31		
High	27	5.07	1.93		
Self-confident				1.131	.327
Low	29	5.31	1.22		
Middle	33	5.56	.90		
High	27	5.11	1.36		
Freely expresses wishes				4.192	.018*
Low	29	5.98	.77		
Middle	33	5.64	1.23		
High	27	5.07	1.45		
Depressed				.871	.422
Low	29	2.79	1.51		
Middle	33	2.73	1.65		
High	27	2.28	1.59		
Nervous or anxious				3.191	.046*
Low	29	4.02	1.82		
Middle	33	3.45	1.78		

Table 22. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
High	27	2.81	1.74		
Motivated				1.302	.277
Low	29	5.55	1.14		
Middle	33	5.36	1.49		
High	27	4.93	1.79		

Note: RXR = Treatment Rejection Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F Ratio of ANOVA; p = Probability; $* p < .05$.

A subsequent Tukey HSD was run to compare each variable between groups in order to find the variables with the greatest amount of variance. Tukey post-hoc comparisons of the three groups for "consistently keeps session appointments," indicate that the low group (M=6.09, 95% CI [5.73, 6.45]) and the high group (M=5.07, 95% CI [4.31, 5.84]) are significantly different, $p = .026$. Comparisons between the middle group (M=5.73, 95% CI [5.26, 6.19]) and the other two groups were not statistically significant at $p < .05$. Tukey post-hoc comparisons of the three groups for "freely expresses wishes," indicate that the low group (M=5.98, 95% CI [5.69,6.28]) and the high group (M=5.07, 95% CI [4.50, 5.65]) are statistically different, p=.014. Comparisons between the middle group middle group (M= 5.64, 95% CI [5.20, 6.07]) and the other two groups were not statistically significant at $p < .05$. Tukey post-hoc comparisons of the three groups for "nervous and anxious," indicate that the low group (M= 4.02, 95%

CI [3.33, 4.71]) and the high group (*M* =2.81, 95% *CI* [2.12, 3.50]) are statistically

significant, *p* = .035. Comparisons between the middle group (*M* = 3.45, 95% *CI* [2.82,

4.09]) and the other two groups were not statistically significant at *p* < .05. These results

provide additional information to the Pearson correlations that indicated significant

differences in RXR and TPM ratings, however, overall, Hypothesis 3 was not supported.

Tukey's post-hoc comparison information is presented in Table 23.

Table 23.

Group Score Differences for RXR Levels on the TPM with Tukey HSD Comparison

(Subscale Mean of Last Two Weeks)

Item	Low Mean [CI]	Middle Mean [CI]	High Mean [CI]
Consistently keeps session Appointments	6.09 [5.73, 6.45]*	5.73 [5.26, 6.19]	5.07 [4.31, 5.84]
Freely expresses wishes	5.98 [5.69, 6.28]*	5.64 [5.20, 6.07]	5.07 [4.50, 5.65]*
Nervous or anxious	4.02 [3.33, 4.71]*	3.45 [2.82, 4.09]	2.81 [2.12, 3.50]*

Note: Groups were determined based on three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. *CI* = Confidence Interval; numbers in brackets are 95% confidence intervals of the means. **p* < .05

Results showed two significant relationships between the RXR scale and the

mean of the first two weekly TPM subscale ratings: "motivation" (r (104) = -.342, *p* ≤

.000), and "counseling rapport" (r (104) = -.289, *p* < .01). Pearson correlations are

presented in Table 24.

Table 24.

Pearson Correlations Between RXR Scale and TPM Subscale Items (Mean of First Two Weeks)

Variables	N	r	p
Self-confidence	106	-.175	.073
Motivation	106	-.342	.000**
Counseling rapport	106	-.289	.003**

Note: RXR = Treatment Rejection Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* < .01.

Treatment rejection was broken into three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. Next a One-Way ANOVA was conducted to compare group means in treatment ratings to test for non-linear differences. In the case of a significant overall model, Tukey's HSD was used to determine which means were significant.

Results of the One-Way ANOVA indicated one significant difference, with the TPM subscale variable, "motivated." The ANOVA results are presented in Table 25.

Table 25.

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Subscales, Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
Self-confidence				.403	.669
Low	34	4.62	.97		

Table 25. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Subscales, Mean of First Two Weeks)

Variables	N	Mean	SD	F	p
Middle	40	4.63	.81		
High	32	4.46	.77		
Motivation				3.309	.040*
Low	34	5.11	.75		
Middle	40	4.98	1.24		
High	42	4.46	1.21		
Counseling rapport				1.49	.233
Low	34	5.17	.92		
Middle	40	5.09	1.01		
High	32	4.78	1.00		

Note: RXR = Treatment Rejection Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F Ratio of ANOVA; p = Probability; * $p < .05$.

A subsequent Tukey HSD was run to compare each variable between groups in order to find the variables with the greatest amount of variance. Tukey post-hoc comparisons of the three groups for "motivated," indicate that the low group (M =5.11, 95% CI [4.85, 5.37]) and the high group (M = 4.46, 95% CI [4.02, 4.89]) are significantly different, p = .045. Comparisons between the middle group (M = 4.98, 95% CI [4.59, 5.38]) and the other two groups were not statistically significant at $p < .05$. These results provide additional information to the Pearson correlations that indicated significant

differences in RXR and TPM ratings, however, overall, Hypothesis 3 was not supported.

Tukey's post-hoc comparison information is presented in Table 26.

Table 26.

Group Score Differences for RXR Levels on the TPM with Tukey HSD Comparison

(Subscale Mean of First Two Weeks)

Item	Low Mean [CI]	Middle Mean [CI]	High Mean [CI]
Motivation	5.11 [4.85, 5.37]*	4.98 [4.59, 5.38]	4.46 [4.02, 4.89]*

Note: Groups were determined based on three groups: low scorers, middle scorers, and high scorers, each group approximately a third of the sample. *CI* = Confidence Interval; numbers in brackets are 95% confidence intervals of the means. *$p < .05$

Results showed two significant relationships between the RXR scale and the

mean of the last two weekly TPM subscale ratings: "motivation" (r *(104)* = -.301, $p <$

.01), and "counseling rapport" (r (104) = -.208, $p < .05$). Pearson correlations are

presented in Table 27.

Treatment rejection was broken into three groups: low scorers, middle scorers,

and high scorers, each group approximately a third of the sample. Next a One-Way

ANOVA was conducted to compare group means in treatment ratings to test for non-

linear differences. In the case of a significant overall model, Tukey's HSD was used to

determine which means were significant.

Table 27.

Pearson Correlations Between RXR Scale and TPM Subscale Items (Mean of Last Two Weeks)

Variables	N	r	p
Self-confidence	106	-.102	.298
Motivation	106	-.301	.002**
Counseling Rapport	106	-.208	.033*

Note: *RXR* = Treatment Rejection Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. **$p < .01$.

Results of the One-Way ANOVA indicated no significant difference, with the TPM subscale variables. The ANOVA results are presented in Table 28.

Table 28.

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High Scorers (Subscales, Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
Self-confidence				.076	.927
Low	28	5.19	.84		
Middle	33	5.28	.93		
High	27	5.20	.94		
Motivation				2.59	.081
Low	28	5.71	.97		
Middle	33	5.63	1.32		

Table 28. (continued)

Analysis of Variance (ANOVA) for RXR of Low Scorers, Middle Scorers, and High

Scorers (Subscales, Mean of Last Two Weeks)

Variables	N	Mean	SD	F	p
High	27	4.95	1.74		
Counseling rapport				.618	.542
Low	28	5.60	.98		
Middle	33	5.68	1.23		
High	27	5.34	1.39		

Note: RXR = Treatment Rejection Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F Ratio of ANOVA; p = Probability; * $p < .05$.

Hypothesis Four

The fourth hypothesis stated that the scores on the dominance (DOM) scale of the PAI would be associated with treatment participation; a significant relationship was predicated between moderate scores on the DOM (moderate scores indicating an ability to adapt to different situations with the ability to both exert and relinquish control in interpersonal relationships) of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean for each of the 14 TPM ratings and DOM scores were conducted to test for linear relationships. Further analyses were conducted to determine whether moderate scores on the DOM scale were related to treatment process early and/or late over the course of treatment. Accordingly, Pearson correlations between the mean of the first two TPM ratings and the

DOM scale were conducted. Next, Pearson correlations between the mean of the final two TPM ratings and the RXR scale was conducted. Finally subscales were analyzed, again using Pearson correlations, looking at the mean of the first two and the mean of the final two subscale TPM ratings. Next, a One-Way ANOVA was then used to compare group means with treatment ratings, to test for non-linear relationships. Also, Pearson correlations between the mean of the first two and the mean of the final two subscale TPM ratings were calculated.

Results showed one significant correlation between the DOM scale and the individual mean TPM ratings: "motivated to recovery" $(r \ (104) = -.191, p < .05)$. It appears that a negative correlation exists; higher scores on the DOM scale is associated with lower scores on "motivated to recovery." Pearson correlations are presented in Table 29.

Table 29.

Pearson Correlations Between DOM Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	-.156	.110
Warm and caring	106	-.176	.072
Honest and sincere	106	-.122	.214
Hostile and aggressive	106	.134	.170
In denial about problems	106	.071	.472
Motivated to recovery	106	-.191	.049*
Cooperative	106	-.144	.142

Table 29. (continued)

Pearson Correlations Between DOM Scale and TPM Items (Grand Mean)

Variables	N	r	p
Responsible	106	-.143	.143
Consistently keeps session appointments	106	-.132	.177
Self-confident	106	.070	.479
Freely expresses wishes	106	-.015	.878
Depressed	106	-.066	.503
Nervous or anxious	106	-.032	.748
Motivated	106	-.160	.102

Note: *DOM* = Dominance Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. ** $p < .01$.

Next, the DOM scores were broken into three groups: low scorers, middle scorers, and high scorers, each group approximately one-third of the sample. A One-Way ANOVA was then used to compare group means with treatment ratings, to test for non-linear relationships. Results of the One-Way ANOVA indicated no significant differences, with the TPM variables. This result does not support Hypothesis 4. Results are presented in Table 30.

Table 30.

Analysis of Variance (ANOVA) for DOM of Low Scorers, Middle Scorers, and High Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
Easy to talk to				.658	.520
Low	32	5.84	.86		
Middle	34	5.59	1.37		
High	40	5.52	1.33		
Warm and caring				.825	.441
Low	32	5.48	1.12		
Middle	34	5.35	1.36		
High	40	5.10	1.40		
Honest and sincere				.004	.996
Low	32	4.51	.84		
Middle	34	4.53	1.33		
High	40	4.52	1.09		
Hostile and aggressive				1.584	.210
Low	32	1.66	.94		
Middle	34	2.04	1.11		
High	40	2.06	1.07		

Table 30. (continued)

Analysis of Variance (ANOVA) for DOM of Low Scorers, Middle Scorers, and High Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
In denial about problems				.734	.482
Low	32	3.04	1.31		
Middle	34	3.49	1.67		
High	40	3.24	1.47		
Motivated to recovery				.571	.567
Low	32	5.09	1.13		
Middle	34	4.87	1.21		
High	40	4.78	1.35		
Cooperative				.351	.705
Low	32	5.55	.97		
Middle	34	5.34	1.22		
High	40	5.37	1.09		
Responsible				.228	.796
Low	32	5.21	1.05		
Middle	34	5.02	1.27		
High	40	5.06	1.28		
Consistently keeps session appointments				.295	.745
Low	32	5.51	1.10		
Middle	34	5.48	1.11		

Table 30. (continued)

Analysis of Variance (ANOVA) for DOM of Low Scorers, Middle Scorers, and High

Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
High	40	5.30	1.41		
Self-confident				.516	.598
Low	32	4.71	1.13		
Middle	34	4.80	1.03		
High	40	4.96	.97		
Freely expresses wishes				.740	.479
Low	32	5.19	1.04		
Middle	34	5.47	1.02		
High	40	5.21	1.12		
Depressed				.684	.507
Low	32	2.99	1.10		
Middle	34	3.02	1.10		
High	40	2.73	1.33		
Nervous or anxious				.790	.457
Low	32	3.74	1.39		
Middle	34	3.47	1.44		
High	40	3.33	1.30		
Motivated				.390	.678
Low	32	5.15	1.07		

Table 30. (continued)

Analysis of Variance (ANOVA) for DOM of Low Scorers, Middle Scorers, and High

Scorers (Grand Mean)

Variables	N	Mean	SD	F	p
Middle	34	4.96	1.26		
High	40	4.89	1.35		

Note: DOM = Dominance Scale on PAI; N = Number in Group; M = Mean; SD = Standard Deviation; F = F ratio of ANOVA; p = Probability; * $p < .05$.

Results showed no significant relationships between the DOM scale and the mean of the

first two weekly TPM ratings. These results show no support for this hypothesis. Pearson

correlations are presented in Table 31.

Table 31.

Pearson Correlations Between DOM Scale and TPM Items (Mean of First Two

Weeks)

Variables	N	r	p
Easy to talk to	106	-.090	.110
Warm and caring	106	-.138	.072
Honest and sincere	106	-.018	.214
Hostile and aggressive	106	.110	.170
In denial about problems	106	-.014	.472
Motivated to recovery	106	-.107	.049
Cooperative	106	-.008	.142

Table 31. (continued)

Pearson Correlations Between DOM Scale and TPM Items (Mean of First Two

Weeks)

Variables	N	r	p
Responsible	106	.024	.143
Consistently keeps session appointments	106	-.062	.177
Self-confident	106	.125	.479
Freely expresses wishes	106	.006	.878
Depressed	106	-.050	.503
Nervous or anxious	106	-.031	.748
Motivated	106	-.110	.102

Note: DOM = Dominance Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the DOM scale and the mean of the last two weekly TPM ratings. These results show no support for this hypothesis. Pearson correlations are presented in Table 32.

Table 32.

Pearson Correlations Between DOM Scale and TPM Items (Mean of Last Two

Weeks)

Variables	N	r	p
Easy to talk to	106	-.140	.192
Warm and caring	106	-.122	.255

Table 32. (continued)

Pearson Correlations Between DOM Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Honest and sincere	106	-.129	.229
Hostile and aggressive	106	.011	.921
In denial about problems	106	.058	.589
Motivated to recovery	106	-.177	.096
Cooperative	106	-.164	.124
Responsible	106	-.144	.177
Consistently keeps session appointments	106	-.115	.282
Self-confident	106	.040	.711
Freely expresses wishes	106	-.082	.443
Depressed	106	.006	.959
Nervous or anxious	106	.000	1.00
Motivated	106	-.070	.513

Note: DOM = Dominance Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the DOM scale and the mean of the first two weekly TPM subscale ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 33.

Table 33.

Pearson Correlations Between DOM Scale and TPM Subscale Variables (Mean of First

Two Weeks)

Variables	N	r	p
Self-confidence	106	.028	.775
Motivation	106	-.152	.121
Counseling Rapport	106	-.159	.104

Note: DOM = Dominance Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. **p <.01.

Results showed no significant relationships between the DOM scale and the mean

of the last two weekly TPM subscale ratings. These results do not support the

hypothesis. Pearson correlations are presented in Table 34.

Table 34.

Pearson Correlations Between DOM Scale and TPM Subscale Variables (Mean of Last

Two Weeks)

Variables	N	r	p
Self-confidence	106	-.019	.850
Motivation	106	-.149	.126
Counseling Rapport	106	-.113	.249

Note: DOM = Dominance Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. **p <.01.

Hypothesis Five

The fifth hypothesis stated that the scores on the borderline (BOR) scale of the PAI would be associated with treatment participation; a significant negative correlation was predicted between scores on the Borderline scale of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean for each of the 14 TPM ratings and the BOR scores (high scores indicating emotional instability ranging from being moody to angry and impulsive) were conducted to test for linear relationships. Further analyses were conducted to determine whether higher scores on the BOR scale were related to treatment process early and/or late over the course of treatment. Accordingly, Pearson correlations between the mean of the first two TPM ratings and the BOR scale were conducted. Next, Pearson correlations between the mean of the final two TPM rating and the BOR scale was conducted. Finally subscales were analyzed, again using Pearson correlations, looking at the mean of the first two and the mean of the final two subscale TPM ratings.

Results showed no significant relationships between the BOR scale and the grand mean TPM ratings. These reports do not support this hypothesis. Pearson correlations are presented in Table 35.

Table 35.

Pearson Correlations Between BOR Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	.017	.862
Warm and caring	106	.058	.557

Table 35. (continued)

Pearson Correlations Between BOR Scale and TPM Items (Grand Mean)

Variables	N	r	p
Honest and sincere	106	-.071	.471
Hostile and aggressive	106	-.006	.953
In denial about problems	106	-.026	.794
Motivated to recovery	106	.067	.498
Cooperative	106	-.019	.848
Responsible	106	-.006	.948
Consistently keeps session appointments	106	.060	.543
Self-confident	106	-.066	.502
Freely expresses wishes	106	.078	.424
Depressed	106	-.004	.967
Nervous or anxious	106	.134	.171
Motivated	106	.029	.767

Note: BOR = Borderline Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p*= Probability; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the BOR scale and the mean of the first two weekly TPM ratings. These results do not support this hypothesis. Pearson correlations are presented in Table 36.

Table 36.

Pearson Correlations Between BOR Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.002	.983
Warm and caring	106	.068	.524
Honest and sincere	106	.083	.442
Hostile and aggressive	106	-.059	.583
In denial about problems	106	-.123	.251
Motivated to recovery	106	.173	.105
Cooperative	106	.061	.572
Responsible	106	.035	.747
Consistently keeps session appointments	106	.137	.201
Self-confident	106	-.001	.994
Freely expresses wishes	106	.134	.210
Depressed	106	-.090	.402
Nervous or anxious	106	.002	.982
Motivated	106	.116	.280

Note: BOR = Borderline Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p*= Probability; * *p* < .05. **p* <.01.

Results showed no significant relationships between the BOR scale and the mean of the last two weekly TPM ratings. These results do not support this hypothesis. Pearson correlations are presented in Table 37.

Table 37.

Pearson Correlations Between BOR Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.015	.891
Warm and caring	106	-.014	.893
Honest and sincere	106	-.152	.156
Hostile and aggressive	106	-.061	.567
In denial about problems	106	.091	.397
Motivated to recovery	106	-.020	.853
Cooperative	106	-.063	.560
Responsible	106	-.058	.588
Consistently keeps session appointments	106	.000	.998
Self-confident	106	-.049	.647
Freely expresses wishes	106	.001	.996
Depressed	106	.023	.834
Nervous or anxious	106	.115	.282
Motivated	106	-.041	.701

Note: BOR = Borderline Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability ; * *p* < .05. ** *p* <.01.

Results showed no significant relationships between the BOR scale and the mean of the first two weekly TPM subscale ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 38.

Table 38.

Pearson Correlations Between BOR Scale and TPM Subscale Variables (Mean of First Two Weeks)

Variables	N	r	p
Self-confidence	106	.061	.537
Motivation	106	.100	.308
Counseling Rapport	106	.081	.409

Note: BOR = Borderline Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. ** $p < .01$.

Results showed no significant relationships between the BOR scale and the mean of the last two weekly TPM subscale ratings. These results do not support the hypothesis. Pearson correlations are presented in Table 39.

Table 39.

Pearson Correlations Between BOR Scale and TPM Subscale Variables (Mean of Last Two Weeks)

Variables	N	r	p
Self-confidence	106	-.072	.466
Motivation	106	-.044	.656
Counseling Rapport	106	-.082	.404

Note: BOR = Borderline Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. ** $p < .01$.

Hypothesis Six

The sixth hypothesis stated that scores on the antisocial (ANT) scale of the PAI would be associated with treatment participation; a significant negative correlation was predicted between scores on the Antisocial scale of the PAI and individual and subscale rating scores on the Treatment Process Measure. Pearson correlations between the grand mean for each of the 14 TPM ratings and the ANT scores (higher scores indicating higher levels of impulsiveness, recklessness, and callousness within interpersonal relationships) were conducted to test for linear relationships. Further analyses were conducted to determine whether higher scores on the ANT scale were related to treatment process early and/or late over the course of treatment. Accordingly, Pearson correlations between the mean of the first two TPM ratings and the ANT scale were conducted. Next Pearson correlations between the mean of the final two TPM ratings and the ANT scale was conducted. Finally subscales were analyzed, again using Pearson correlations, looking at the mean of the first two and the mean of the final two subscale TPM ratings.

Results showed three significant relationships between the ANT scale and the grand mean TPM ratings: "cooperative" (r (104) = -.226, p < .05), "consistently keeps session appointments" (r (104) = -.194, p < .05), and "motivated" (r (104) = -.257, p < .01). The three statistically significant correlations with the ANT scale, which indicate a linear relationships, and the TPM items "cooperative," "consistently keeps session appointments," and "motivated," are all negative correlations with the ANT scale. These results provide some support for Hypothesis 6. Pearson correlations are presented in Table 40.

Table 40.

Pearson Correlations Between ANT Scale and TPM Items (Grand Mean)

Variables	N	r	p
Easy to talk to	106	-.159	.103
Warm and caring	106	-.181	.064
Honest and sincere	106	-.132	.176
Hostile and aggressive	106	.140	.153
In denial about problems	106	.091	.353
Motivated to recovery	106	-.187	.055
Cooperative	106	-.226	.020*
Responsible	106	-.182	.062
Consistently keeps session appointments	106	-.194	.047*
Self-confident	106	-.036	.717
Freely expresses wishes	106	-.104	.287
Depressed	106	-.023	.811
Nervous or anxious	106	.046	.641
Motivated	106	-.257	.008*

Note: ANT = Antisocial Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* <.01.

Results showed one significant relationship between the ANT scale and the mean of the first two weekly TPM ratings: "easy to talk to" (r (87) = -.219, *p* < .05). These results do not offer much support for this hypothesis. Pearson correlations are presented in Table 41.

Table 41.

Pearson Correlations Between ANT Scale and TPM Items (Mean of First Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.219	.040*
Warm and caring	106	-.206	.053
Honest and sincere	106	-.151	.157
Hostile and aggressive	106	.093	.384
In denial about problems	106	.012	.910
Motivated to recovery	106	-.134	.209
Cooperative	106	-.109	.307
Responsible	106	-.137	.199
Consistently keeps session appointments	106	-.130	.225
Self-confident	106	-.007	.949
Freely expresses wishes	106	-.126	.238
Depressed	106	-.020	.849
Nervous or anxious	106	-.067	.534
Motivated	106	-.196	.065

Note: ANT = Antisocial Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * $p < .05$. ** $p < .01$.

Results showed four significant relationships between the ANT scale and the mean of the last two weekly TPM ratings : "cooperative" (r (87) = -.258, $p < .01$), "consistently keeps session appointments" (r (87) = -.253, $p < .01$), "freely expresses wishes" *(r (87)* = -.251, $p < .01$), and "motivated" *(r (87)* = -.252, $p < .01$). These results

show partial support for this hypothesis. Significant Pearson correlations are presented in Table 42.

Table 42.

Pearson Correlations Between ANT Scale and TPM Items (Mean of Last Two Weeks)

Variables	N	r	p
Easy to talk to	106	-.183	.085
Warm and caring	106	-.174	.104
Honest and sincere	106	-.162	.130
Hostile and aggressive	106	.030	.779
In denial about problems	106	.028	.798
Motivated to recovery	106	-.202	.058
Cooperative	106	-.258	.015*
Responsible	106	-.190	.075
Consistently keeps session appointments	106	-.253	.017*
Self-confident	106	-.155	.148
Freely expresses wishes	106	-.251	.017*
Depressed	106	-.052	.631
Nervous or anxious	106	-.001	.991
Motivated	106	-.252	.017*

Note: ANT = Antisocial Scale on PAI; TPM = Treatment Process Measure; N = Number of Participants; r = Pearson Correlation Value; p = Probability; * $p < .05$. ** $p < .01$.

Results showed one significant relationships between the ANT scale and the mean of the first two weekly TPM subscale ratings: "counseling rapport" (r (104) = -.212, $p <$

.05). These results do not offer much support for this hypothesis. Pearson correlations are presented in Table 43.

Table 43.

Pearson Correlations Between ANT Scale and TPM Subscale Variables (Mean of First Two Weeks)

Variables	N	r	p
Self-confidence	106	-.043	.662
Motivation	106	-.157	.107
Counseling Rapport	106	-.212	.029*

Note: *ANT* = Antisocial Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * *p* < .05. ** *p* < .01.

Results showed one significant relationships between the ANT scale and the mean of the last two weekly TPM subscale ratings "motivation" (r (104) = -.221, *p* < .05). These results do not offer much support for this hypothesis. The Pearson correlations are presented in Table 44.

Table 44.

Pearson Correlations Between ANT Scale and TPM Subscale Variables (Mean of Last Two Weeks)

Variables	N	r	p
Self-confidence	106	-.151	.122
Motivation	106	-.221	.023*

Table 44. (continued)

Pearson Correlations Between ANT Scale and TPM Subscale Variables (Mean of Last

Two Weeks)

Variables	N	r	p
Counseling Rapport	106	-.155	.112

Note: *ANT* = Antisocial Scale on PAI; *TPM* = Treatment Process Measure; *N* = Number of Participants; *r* = Pearson Correlation Value; *p* = Probability; * p < .05. **p <.01.

Hypothesis Seven

The seventh hypothesis stated that scores on the stress, nonsupport, treatment rejection, dominance, borderline, and antisocial (STR, NON, RXR, DOM, BOR, and ANT) scale of the PAI would be associated with treatment participation as measured from the onset and at completion of treatment; specifically, individuals with higher scores on the PAI scales will be expected to have less differences in overall treatment participation. Multiple regression analyses were conducted to examine the relationship between TPM subscale scores and the six PAI predictor variables. Also, a change score for the TPM subscales was calculated by subtracting the score of week six rating from the score of the week one rating and regression analyses were conducted to examine the relationship between the TPM subscale change scores and the PAI predictors.

A stepwise multiple regression was conducted to examine the relationship between the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the initial ratings (mean of first two weeks) on the Counseling Rapport subscale of the TPM as the outcome variable. By utilizing a stepwise regression in analyzing the data, two models were produced, and both were

significant at $p < .01$; however, the second model was more comprehensive. The second

model produced an R square of .163, which was statistically significant, $[F(2, 103) =$

$10.038, p < .000]$. Treatment rejection and antisocial can account for 16.3 % of the

variance in initial Counseling Rapport subscale ratings. Treatment rejection had

significant negative regression weight ($B = -.352, t = -3.811, p < .000$). Antisocial had

significant negative regression weight ($B = -.289, t = -3.130, p < .005$). Borderline,

Stress, Nonsupport, and Dominance did not enter the model. The results of the

regression analysis are shown in Tables 45 and 46. These results indicate that the best

model for predicting initial ratings on the counseling rapport subscale of the TPM is to

use treatment rejection and antisocial scores from the PAI. Results of this regression

model provide partial support for the hypothesis.

Table 45.

Analysis of Variance (ANOVA) Table: Second Regression Model for Initial Counseling

Rapport Ratings

Model	R Square	df1	df2	F	p
2	.163	2	103	10.038	.000

Note: R Square = Amount of Variance in Initial Counseling Rapport Ratings Brought by Predictor Variables as a Whole; *df* = Degrees of Freedom; *p.*= Level of Significance

Table 46.

Coefficients for Model 2 Initial Counseling Rapport Ratings

Variables	Unstandardized Coefficients	Standardized Coefficients Beta	t	p
Treatment Rejection	-.190	-.352	-3.811	.000

Table 46. (continued)

Coefficients for Model 2 Initial Counseling Rapport Ratings

Variables	Unstandardized Coefficients	Standardized Coefficients Beta	t	p
Antisocial	-.102	-.289	-3.130	.002

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship

between with the following PAI subscale scores as predictor variables: BOR, ANT, STR,

NON, RXR, and DOM, with the initial ratings (mean of first two weeks) on the

Motivation subscale of the TPM as the outcome variable. By utilizing a stepwise

regression in analyzing the data, two models were produced, and both were significant at

p <.000; however, the second model was more comprehensive. The second model

produced an R square of .174, which was statistically significant, [F (2, 103) = 10.819, p

< .000]. Treatment rejection and antisocial can account for 17.4 % of the variance in

initial Motivation subscale ratings. Treatment rejection had significant negative

regression weight (B = -.395, t = -4.308, p < .01). Antisocial had significant negative

regression weight (B = -.243, t = -2.651, p < .005). Borderline, Stress, Nonsupport, and

Dominance did not enter the model. The results of the regression analysis are shown in

Tables 47 and 48. These results indicate that the best model for predicting initial ratings

on the Motivation subscale of the TPM is to use treatment rejection and antisocial scores

from the PAI. Results of this regression model provide partial support for the hypothesis.

Table 47.

Analysis of Variance (ANOVA) Table: Second Regression Model for Initial Motivation

Ratings

Model	R Square	df1	df2	F	p
2	.174	2	103	10.819	.000

Note: R Square = Amount of Variance in Initial Motivation Ratings Brought by Predictor Variables as a Whole; *df* = Degrees of Freedom; *p* = Level of Significance

Table 48.

Coefficients for Model 2 Initial Motivation Ratings

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Treatment Rejection	-.194	-.395	-4.308	.000
Antisocial	-.078	-.243	-2.651	.009

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the initial ratings (mean of first two weeks) on the Self-Confidence subscale of the TPM as the outcome variable. None of the six predictor variables entered the model. Results of this analysis do not provide support for the hypothesis.

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR,

NON, RXR, and DOM, with the final ratings (mean of last two weeks) on the Counseling

Rapport subscale of the TPM as the outcome variable. By utilizing a stepwise regression

in analyzing the data, two models were produced, and both were significant at $p < .05$;

however, the second model was more comprehensive. The second model produced an R

square of .111, which was statistically significant, $[F(2, 103) = 6.413, p < .005]$.

Treatment rejection and borderline can account for 11.1 %of the variance in final

Counseling Rapport subscale ratings. Treatment rejection had significant negative

regression weight $(B = -.405, t = -3.471, p < .001)$. Borderline had significant negative

regression weight $(B = -.326, t = -2.799, p < .01)$. Antisocial, Stress, Nonsupport, and

Dominance did not enter the model. The results of the regression analysis are shown in

Tables 49 and 50. These results indicate that the best model for predicting initial ratings

on the Counseling Rapport subscale of the TPM is to use RXR and BOR scores from the

PAI. Results of this regression model provide partial support for the hypothesis.

Table 49.

Analysis of Variance (ANOVA) Table: Second Regression Model for Final Counseling

Rapport Ratings

Model	R Square	df1	df2	F	p
2	.111	2	103	6.413	.002

Note: R Square = Amount of Variance in Final Counseling Rapport Ratings Brought by
Predictor Variables as a Whole; *df* = Degrees of Freedom; *p*= Level of Significance

Table 50.

Coefficients for Model 2 Final Counseling Rapport Ratings

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Treatment Rejection	-.247	-.405	-3.471	.001
Borderline	-.142	-.326	-2.799	.006

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the final ratings (mean of last two weeks) on the Motivation subscale of the TPM as the outcome variable. By utilizing a stepwise regression in analyzing the data, two models were produced, and both were significant at $p < .005$; however, the second model was more comprehensive. The second model produced an R square of .176, which was statistically significant, $[F (2, 103) = 11.036, p < .000]$. Treatment rejection and antisocial can account for 17.6 % of the variance in final Motivation subscale ratings. Treatment rejection had significant negative regression weight $(B = -.366, t = -3.995, p < .000)$. Antisocial had significant negative regression weight $(B = -.301, t = -3.283, p < .001)$. Borderline, Stress, Nonsupport, and Dominance did not enter the model. The results of the regression analysis are shown in Tables 51 and 52. These results indicate that the best model for predicting final ratings on the Motivation subscale of the TPM is to use RXR and ANT scores from the PAI. Results of this regression model provide partial support for the hypothesis.

Table 51.

Analysis of Variance (ANOVA) Table: Second Regression Model for Final Motivation

Ratings

Model	R Square	df1	df2	F	p
2	.176	2	103	11.036	.000

Note: R Square = Amount of Variance in Final Motivation Ratings Brought by Predictor Variables as a Whole; *df* = Degrees of Freedom; *p* = Level of Significance

Table 52.

Coefficients for Model 2 Final Motivation Ratings

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Treatment Rejection	-.207	-.366	-3.995	.000
Antisocial	-.111	-.301	-2.283	.001

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the final ratings (mean of last two weeks) on the Self-Confidence subscale of the TPM as the outcome variable. None of the six predictor variables entered the model. Results of this analysis do not provide support for the hypothesis.

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the difference scores between the final and initial scores on

the Counseling Rapport subscale of the TPM as the outcome variable. By utilizing a

stepwise regression in analyzing the data, two models were produced, and both were

significant at $p < .05$; however, the second model was more comprehensive. The second

model produced an R square of .082, which was statistically significant, $[F (2, 103) =$

$4.593, p < .05]$. Borderline and antisocial can account for 8.2 % of the variance in the

difference scores on the Counseling Rapport subscale ratings. Borderline had significant

negative regression weight $(B = -.366, t = -3.995, p < .000)$. Antisocial had significant

positive regression weight $(B = .222, t = 1.994, p < .05)$. Treatment Rejection, Stress,

Nonsupport, and Dominance did not enter the model. The results of the regression

analysis are shown in Tables 53 and 54. These results indicate that the best model for

predicting change score ratings on the Counseling Rapport subscale of the TPM is to use

ANT and BOR scores from the PAI. Results of this regression model provide partial

support for the hypothesis.

Table 53.

Analysis of Variance (ANOVA) Table: Second Regression Model for Change Scores for

Counseling Rapport Ratings (Last Week Minus First Week Scores)

Model	R Square	df1	df2	F	p
2	.082	2	103	4.593	.012

Note: R Square = Amount of Variance in Change Scores for Counseling Rapport Ratings Brought by
Predictor Variables as a Whole; *df* = Degrees of Freedom; *p* = Level of Significance

Table 54.

Coefficients for Model 2 Change Scores for Counseling Rapport Ratings (Last Week Minus First Week Scores)

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Borderline	-.103	-.333	-2.992	.003
Antisocial	-.063	-.222	-1.994	.049

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the difference scores between the final and initial scores on the Motivation subscale of the TPM as the outcome variable. By utilizing a stepwise regression in analyzing the data, one model were produced, and was significant at p <.05. The model produced an R square of .037, which was statistically significant, [F (1, 104) = 3.949, p < .05]. Borderline can account for 3.7 % of the variance in the difference scores on the Motivation subscale ratings. Borderline had significant negative regression weight (B = -.191, t = -1.987, p < .05). Antisocial, Treatment Rejection, Stress, Nonsupport, and Dominance did not enter the model. The results of the regression analysis are shown in Tables 55 and 56. These results indicate that the best model for predicting change score ratings on the Motivation subscale of the TPM is to use BOR scores from the PAI. Results of this regression model provide partial support for the hypothesis.

Table 55.

Analysis of Variance (ANOVA) Table: Regression Model for Change Scores for

Motivation Ratings (Last Week Minus First Week Scores)

Model	R Square	df1	df2	F	p
1	.037	1	104	3.949	.050

Note: R Square = Amount of Variance in Change Scores for Motivation Ratings Brought by Predictor Variables as a Whole; *df* = Degrees of Freedom; *p* = Level of Significance

Table 56.

Coefficients for Regression Model with Change Scores for Motivation Ratings (Last Week Minus First Week Scores)

Variable	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Borderline	-.053	-.191	-1.987	.050

Note: p = level of significance

A stepwise multiple regression was conducted to examine the relationship between with the following PAI subscale scores as predictor variables: BOR, ANT, STR, NON, RXR, and DOM, with the difference scores between the final and initial scores on the Self-Confidence subscale of the TPM as the outcome variable. By utilizing a stepwise regression in analyzing the data, one model were produced, and was significant at $p < .05$. The model produced an R square of .052, which was statistically significant, $[F (1, 104) = 5.730, p < .05]$. Stress can account for 5.2% of the variance in the difference scores on the Self-Confidence subscale ratings. Stress had significant negative regression weight ($B = -.229$, $t = -2.394$, $p < .05$). Borderline, Antisocial, Treatment

Rejection, Nonsupport, and Dominance did not enter the model. The results of the

regression analysis are shown in Tables 57 and 58. These results indicate that the best

model for predicting change score ratings on the Self-Confidence subscale of the TPM is

to use STR scores from the PAI. Results of this regression model provide partial support

for the hypothesis.

Table 57.

Analysis of Variance (ANOVA) Table: Second Regression Model for Change Scores for

Self-Confidence Ratings (Last Week Minus First Week Scores)

Model	R Square	df1	df2	F	p
1	.052	1	104	5.730	.018

Note: R Square = Amount of Variance in Change Scores for Self-Confidence Ratings Brought by Predictor Variables as a Whole; *df* = Degrees of Freedom; *p*= Level of Significance

Table 58.

Coefficients for Model 2 Change Scores for Self-Confidence Ratings (Last Week Minus First Week Scores)

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t	p
Stress	-.070	-.229	-2.394	.018

Note: p = level of significance

CHAPTER FOUR

DISCUSSION

Findings and Implications

The purpose of this study was to assess the influence that pre-existing personality and interpersonal variables, as measured by subscales of the PAI, have on substance abuse treatment participation. Personality and interpersonal variables were assessed using the Personality Assessment Inventory (Morey, 1991). Substance abuse treatment participation was assessed weekly from admission to discharge, for each patient, using the Treatment Process Measure (TPM). Demographics were also a measure of interest. Positive treatment participation was defined as high treatment participation scores.

Although the literature suggested the utility of the Personality Assessment Inventory (PAI), (Morey, 1991), with the substance addicted population (e.g., Fals-Steart, 1996; Hopwood, Baker, & Morey, 2008; Parker, Daleiden, & Simpson, 1999; Schinka, 1995; Schinka, Curtiss, & Mulloy, 1994; Tolisano, 1998), there was no research that examined the relationship of scores on the PAI with patient treatment participation in substance abuse treatment settings. After a thorough review of the current literature regarding the PAI and substance abuse treatment, seven hypotheses were derived for investigation within the current study.

Hypothesis 1 stated higher scores on the STR scale (higher scores indicating higher levels of stress and inability to control events around them) would be associated with significantly lower scores on the Treatment Process Measure. Although literature suggested high scores on the STR scale of the PAI were associated with lower treatment response rates and less improvements from treatment, and further were also associated with higher rates of drug and alcohol relapse (D'Andrea, & D'Andrea, 1996; Tate, Brown, Glasner, Unrod, & McQuiad, 2006), this study yielded mixed findings with partial support for the hypothesis. The support for this hypothesis was in the analysis conducted which used the first two weeks of treatment ratings. This analysis indicated that higher scores on the STR scale were associated with lower scores on TPM ratings of the following: (a) honest and sincere; (b) in denial about problems; (c) motivated to recovery; (d) responsible; and (e) motivated. In other words, high levels of stress were associated with a decreased observance of honesty, motivation for recovery, responsibility, general motivation, and less denial about problems, at least initially, for the first two weeks of treatment.

Overall, there was partial support for Hypothesis 1 with this study. A possible reason that the current study did not show greater support for this hypothesis could be due to the treatment program itself. In other words, although the individuals were be initially experiencing high perceived rates of stress, given the comprehensive structure of this particular treatment program, with an interdisciplinary treatment focus, individuals perhaps began to immediately feel a stress reduction, having a team of individuals begin to assist them in getting their life back on track; Individuals received services ranging from medical and dental evaluations, to help for completion of high school education,

and housing placement options upon discharge from the program. Perhaps the reduction in stress allowed individuals to focus on treatment and more effectively participate.

Hypothesis 2 stated higher scores on the NON scale (higher scores indicating a perceived lack of social support and dissatisfaction with social relationships) would be associated with significantly lower scores on the Treatment Process Measure. Although literature suggested higher perceived levels of social support upon intake were associated with better treatment participation and outcomes (Dobkin, De Civita, Paraherakis, & Gill, 2002; Huselid, Self, & Gutierres, 1991; Westreich, Heitner, Cooper, Galanter, & Gued, 1997), this study did not yield similar findings. Hypothesis 2 was not supported.

Again, perhaps the seemingly contradictory findings could be due to the treatment program itself. Perhaps the comprehensive structure of this particular treatment program, with an interdisciplinary treatment focus, allowed individuals with a perceived lack of social support to immediately begin to feel connected to others within the group treatment dynamics. Also, since this program emphasized family support and healing through visitation and family therapy, perhaps this emphasis allowed many individuals to immediately begin to reconnect with a social network, primarily the family, for which they had previously been disconnected during their time spent living in addiction. Perhaps this re-connectedness to a lost social support system is what was reflected in improvements in treatment. In other words, although initially, the patient may have had a high perceived lack of social support, treatment may have done a good job of aiding in facilitating increased social support, which allowed the person to better focus on treatment and ultimately have positive treatment participation.

Hypothesis 3 stated moderate scores on the RXR scale (moderate scores associated with differing levels of motivation toward treatment), as opposed to low or high scores, would be associated with significantly higher scores on the Treatment Process Measure. The literature did not specifically address treatment rejection, but rather focused on a similar concept, treatment motivation. Previous research suggested initial treatment motivation was related to treatment completion, but not associated with overall long-term treatment outcomes, such as relapse (Rapp, Siegal, & DeLiberty, 2003). High motivation was also shown to be associated with severity of alcohol and drug use, and/or significant life stressors associated with the use of substances, such as involvement with the court system (Breda, & Heflinger, 2007). Further, high levels of motivation may be extrinsically based rather than intrinsically based. Additionally, substance abuse treatment was often associated with some ambivalence, and extremely high levels of motivation for treatment may signify a lack of ambivalence about treatment, therefore, the possibility existed that treatment participation, for individuals with high motivation, was associated with secondary gain rather than a true desire for personal change. It is plausible given these findings that moderate scores on the RXR scale were more likely associated with those individuals ambivalent about treatment, yet contemplating change, and therefore scoring higher scores for treatment participation. However, this finding was not demonstrated in the current study, as Hypothesis 3 was not supported.

Yet, there were other interesting findings when investigating Hypothesis 3, specifically linear relationships, evidenced in that higher scores on the RXR scale were associated with lower scores on TPM ratings of the following: (a) consistently keeps

appointments; (b) easy to talk to; (c) motivated; (d) motivated to recovery; (e) responsible; (f) warm and caring; (g) cooperative; (h) freely expresses wishes; (i) honest and sincere; and (j) nervous or anxious. In other words, the more likely one was to reject treatment, as evidenced by the RXR score, the more likely the patient would not keep appointments, be easy to talk to, be motivated, be motivated to recovery, be responsible, be warm and caring, be cooperative, freely express wishes, be honest or sincere, and would not be nervous or anxious. For the first two weeks of TPM ratings, higher scores on the RXR scale were associated with lower scores on TPM ratings of the following: (a) easy to talk to; (b) warm and caring; (c) honest and sincere; (d) in denial about problems; (e) motivated to recovery; (f) cooperative; (g) responsible; (h) consistently keeps session appointments; (i) freely expresses wishes; and (j) motivated. In other words, the more likely one was to reject treatment, as evidenced by the RXR score, the more likely the patient would not be easy to talk to, be warm and caring, be honest and sincere, would be in denial about problems, would not be motivated to recovery, cooperative, responsible, and would not consistently keep session appointments. For the last two weeks of TPM ratings, higher scores on the RXR scale were associated with lower scores on TPM ratings of the following: (a) easy to talk to; (b) warm and caring; (c) honest and sincere; (d) motivated; (e) cooperative; (f) responsible; (g) consistently keeps session appointments; (h) freely express wishes; (i) nervous and anxious; and (j) motivated. In other words, the more likely one was to reject treatment, as evidenced by the RXR score, the more likely the patient would not be easy to talk to, be warm and caring, be honest and sincere, motivated, cooperative, responsible, consistently keep session appointments, freely express wishes, be nervous and anxious, and motivated. If an individual was not

caring about treatment or outright rejecting treatment, it could be perhaps sensible to conclude a lack of these previous behaviors, but the present study also gave solid evidence of the relationship between these behaviors and the RXR scale. Of these statistically significant findings, surprisingly, however, the low and high scorers of the RXR indicated significant differences for the nervous or anxious and the consistently keeps session appointments variables on the TPM. There was no support for the moderate scores of the RXR being associated with higher TPM ratings.

In attempting to understand these uncanny results, several ideas were postulated. Perhaps the high treatment rejection scores associated with consistently keeps session appointments was related to an underlying personality pattern, such as antisocial, in that the person was rejecting of treatment, yet outwardly behaving in a way that benefited him or herself. For these individuals, regularly attending the session appointments may have been a strategy to complete treatment quicker, or in essence, serve the time and get out. Also for the high treatment rejection scores in relation to the high TPM rating of anxiety, perhaps treatment was rejected due to high levels of anxiety or nervousness. Perhaps, the low treatment rejection scores, associated with consistently keeping session appointments, identified the small segment of the treatment population which had moved beyond the ambivalence regarding treatment, and was fully committed to engaging in the treatment process, thereby attending appointments in the hope of gaining tools to recovery. Additionally, the high levels of anxiety associated with low treatment rejection may have been associated with fears related to the prospect of change.

Hypothesis 4 stated high scores on the DOM scale (moderate scores indicating an ability to adapt to different situations and both exert and relinquish control in

interpersonal relationships) would have statistically poorer treatment participation scores on the Treatment Process Measure, than those individuals with moderate or low scores on the DOM scale. Previous research indicated the worst treatment outcomes were associated with those individuals who were unwilling to take personal responsibility for problems and those individuals who had problems with authority (Calsyn, Roszell, & Anderson, 1988). Additionally, because most drug and alcohol treatments relied on 12-step or psychotherapy groups as the primary form of treatment, the process of treatment and recovery depended largely on interpersonal interactions with others. In a study by Doumas, Blasey, and Thacker (2005), it was found that interpersonal styles, described as vindictive and domineering, were positively associated with treatment attrition. However, in the current study, it did not appear that high scores on the DOM score were associated with poorer treatment participation, because Hypothesis 4 was not supported. Perhaps these results were again due to specific differences within the treatment program. In other words, it is possible that the individuals with high scores, which indicated that they were dominant and needed control within interpersonal relationships were able to use these qualities in a productive way within this program. This program used peer group leaders, and it would be interesting to determine if the individuals which scored high on the DOM score, were the ones who in this treatment program ultimately became the group leaders. Also, it would be interesting to compare between program types to see if this results still occurs, with comparisons occurring between treatment programs using peer group leaders and those who do not use peer leadership.

Hypothesis 5 stated a significant relationship would exist between high scores on the BOR (high scores indicating emotional instability ranging from being moody to angry

and impulsive) of the PAI and low rating scores on the Treatment Process Measure. Previous research suggested both short and long-term treatment outcomes were worse for individuals with personality disorders compared to those without them (Herbeck et al., 2005). Moreover, problems early on with treatment compliance were noted for individuals with Axis II disorders, often exhibited behaviorally in not attending appointments, not completing homework, and having interpersonal problems with other patients (Herbeck et al., 2005). Long term, Axis II personality disorders also were associated with higher relapse and re-hospitalization rates (Pettinati, Pierce, Belden, & Meyers, 1999). Because much of substance abuse treatment is interpersonal in nature, and patients with personality disorders have intractable difficulties in establishing and maintaining relationships with others, these patients usually have difficulty engaging in treatment (Lehman, 1996). In fact, a patient's social functioning was strongly associated with treatment compliance, in that as social functioning deteriorated, problems with treatment compliance increased (Herbeck, Fitek, Svikis et al., 2005). Although personality disorders were associated with poorer treatment ratings, this study did not yield similar findings, as Hypothesis 5 was not supported. Perhaps these findings were again due to specific program strengths in managing certain personality styles. Specifically, perhaps this program provided enough structure and boundaries so that the instability was contained, while also modeling and offering outlets for appropriate emotional expression, thereby allowing the individuals to effectively focus on treatment. Again it would be interesting to look at differences in this finding with other less structured treatment programs.

Hypothesis 6 stated a significant relationship would exist the ANT scale (higher scores indicating higher levels of impulsiveness, recklessness, and callousness within interpersonal relationships) of the PAI and lower rating scores on the Treatment Process Measure. Research indicated that a high proportion of patients being treated for substance abuse problems also had a co-occurring Cluster B personality disorder, which was associated with poor behavioral control and impulsivity (Taylor, 2005). Further, these individuals often had difficulties with executive cognitive functioning, such as planning, judgment, and impulsivity (Taylor, 2005). Research identified that for individuals participating in substance abuse treatment, antisocial personality disorder or characteristics of the disorder were associated with shorter treatment stays, violation of program rules, and poor participation in treatment (Fals-Stewart, & Lucente, 1997). Hypothesis 6 was slightly supported, in that three TPM ratings were statistically significant for treatment participation scores.

The three statistically significant ratings which were associated with higher TPM scores, were: (a) cooperative; (b) consistently keeps session appointments; and (c) motivated. Each of these variables was shown to have a negative linear relationship with higher scores on the ANT scale. In other words, it appeared that these three variables were in fact associated with antisocial personality characteristics and poorer treatment participation, specifically, in cooperativeness, consistently with keeping session appointments and motivation. Additionally, when evaluating the first two weeks of TPM ratings, higher, scores on the ANT were significantly associated with higher TPM ratings on the following: (a) easy to talk to. This variable was shown to have a negative linear relationship with higher scores on the ANT. Also, when evaluating the last two weeks of

TPM ratings, higher scores on the ANT were significantly associated with higher TPM ratings on the following: (a) cooperative; (b) consistently keeps session appointments; (c) freely expresses wishes; and (d) motivated. In other words, a negative linear relationship existed between these variables and the ANT scale.

When evaluating the subscales, one significant difference emerged for the first mean of subscales and the final mean of subscales. For the first two weeks of treatment it appeared that the Counseling Rapport subscale was significantly related to the ANT scale, in that higher scores on the ANT scale were associated with poorer scores on initial Counseling Rapport. Additionally, for the last two weeks of treatment, it appeared that the Motivation subscale was significantly related to the ANT scale, in that higher scores on the ANT scale were associated with poorer scores on final Motivation. These results may infer that although the counseling relationship or rapport may improve, it is possibly as a function of the personality disorder, in that the patient is geared toward making the relationship work as a means to completing the program, while at the end of treatment, motivation for treatment declines. In other words, although the person wants to outwardly do what it takes to complete the program by building rapport, internally the person is not motivated for true change.

These finding from the current study provided additional support for previous research, which indicated persons with antisocial characteristics have poorer treatment participation and often violate program rules. An implication of this finding for treatment programs was a consideration and/or awareness that those patients scoring high on the ANT scale may not be suitable for treatment. Additionally, if decisions for treatment

placement must be made within a limited availability of treatment spaces, individuals with high scores on the ANT would be the less suitable candidate for treatment.

Hypothesis 7 stated that there would be a significant relationship between the PAI scales (STR, NON, RXR, DOM, BOR, and ANT) and treatment participation. It was hypothesized that the PAI scales (STR, NON, RXR, DOM, BOR, and ANT) would be predictive of treatment participation as measured from the onset and at completion of treatment; specifically, individuals with higher scores on the PAI scales were expected to have less differences in overall treatment participation. The PAI has proven a valid measure for assessment in inpatient substance abuse settings, yet researchers suggested a need for future research with the PAI in the inpatient substance abuse setting (Hopwood, Baker, & Morey, 2008; Schinka, 1995). In particular, high scores on these specified scales or on measures of similar constructs were shown to be associated with worse outcomes, specifically lower treatment response rates and less overall improvements from treatment, higher relapse and higher hospitalization rates (Calsyn, Roszell, & Anderson, 1988; D'Andrea & D'Andrea, 1996; Dobkin, De Civita, Paraherakis, & Gill, 2002; Herbeck et al., 2005; Huselid, Self, & Gutierres, 1991; Pettinati, Pierce, Belden, & Meyers, 1999; Westreich, Heitner, Cooper, Galanter, & Gued, 1997).

For the Counseling Rapport subscale, the PAI scales that appeared to predict treatment participation were the Treatment Rejection and Antisocial scales for initial treatment response, and for the final treatment ratings the Treatment Rejection and Borderline scales appeared to predict treatment participation. This study lended support for using the RXR scale of the PAI to predict treatment; specifically, high scores on the RXR scale were predictive of poorer treatment participation both at the beginning and at

the end of treatment. Additionally this study showed support for using the Antisocial scale to predict poorer treatment participation at the beginning of treatment, and the Borderline scale to predict poorer treatment participation towards the end of treatment. This finding was not surprising, in that it was likely a function of each personality disorder. Particularly for individuals with high Antisocial scores, initially the individual may have appeared resistant to treatment, but over time the motivation to comply with treatment served a selfish purpose toward being released from the program. For individuals with high Borderline scores, it may take being in an environment and developing some interpersonal relationships within the treatment program before the dynamics of the personality disorder such as emotional lability and instability within interpersonal relationships begins to emerge. In summary, it appeared that Counseling Rapport can be predicted by the Treatment Rejection Scale at the beginning and end of treatment. Further, Counseling Rapport at the beginning of treatment can be predicted by the Antisocial scale and at the end of treatment with the Borderline scale.

This project does not find any support for using the PAI scales examined in this study to predict treatment participation related to the Self-Confidence subscale in treatment. For the Motivation subscale, this study lended support to using the Treatment Rejection and Antisocial PAI scales for initial and final treatment response. In other words, The RXR scale and ANT scale were predictive of poorer motivation in treatment.

When evaluating changes over time in treatment, this study showed support that the Antisocial and Borderline scale were predictive of poorer treatment participation related to Counseling Rapport. There was also support for using the Borderline scale to predict poorer treatment participation for Motivation and for using the Stress scale to

predict poorer treatment participation in terms of Self-Confidence over the course of treatment. For the outcomes predicted by the Borderline scale, this was likely a function of the personality disorder, in that since treatment is interpersonal in nature, it was likely that the inherent difficulties with interpersonal relationships associated with Cluster B personality disorders was being displayed here. Also for the Antisocial scale being related to poorer Counseling Rapport, this was also consistent with the typical characteristics of interpersonal difficulties associated with the personality disorder. Lastly, for the Stress scale, since it is a measure of the perceived difficulties being experienced at the current time, it is likely that this also affected one's ability to have confidence in their own skills needed to effectively participate in treatment, or it could be said that the person had limited leftover resources for fully participating in treatment due to all of the other difficulties being experienced.

In summary, the RXR, ANT, and BOR scales were most predictive of treatment participation, in that higher scores were associated with poorer treatment participation, and were most consistently found in the regression models. This was an interesting finding, as there is not yet a body of literature to support use of the Treatment Rejection scale at predicting treatment participation and also lended support to show that traits associated with Cluster B personality disorders may not fare as well in traditional substance abuse treatment approaches. These findings could be evidence to support screening of patients prior to treatment to determine if the potential participant is open to or rejecting of treatment and also to screen for high levels of Cluster B personality disorders, shown to have difficulty with treatment participation. Also, these findings can

serve as inspiration to seek new strategies for engaging certain participants in treatment, particularly those who are rejecting of treatment or those with personality disorders.

Limitations of the Current Study

There were several limitations to consider in the present study. First, the participants were inpatients, court ordered for substance abuse treatment. In other words, all of the participants were forced to participate in the treatment program. These individuals may have believed that participating and showing "good" behaviors in treatment would lessen the amount of time hospitalized. This may have prevented individuals from fully engaging in the treatment process of actually examining and changing behaviors.

A second limitation was the number and type of participants. Although there were 106 participants, the sample was predominately Caucasian and from only one state in the southern part of the United States. Future research could look at differences according to greater ethnic diversity. Additionally, it is possible that the findings of this particular study varied from previous reporting's of this paper, as a direct reflection of the severity of the population being studied rather than a problem with methodology.

Third, although the study used a Likert-type scale for rating the participants on treatment participation, and therapists were trained prior to beginning the study, a standard protocol was not followed. There was likely subjective variation in the way treatment participation was evaluated according to each individual therapist.

A fourth limitation was related to the TPM, itself. Although in the current literature, the TPM was found to be the best scale for rating treatment participation, it is possible that these fourteen treatment related items are not sensitive enough to pick up on

the differences in how individuals receive and respond to treatment. Additionally, the TPM is a counselor-rated scale. It is possible that counselors were not able to identify covert treatment related processes, such as those related to internal processes of the stages of change.

Fifth, a possible limitation could have been the counselors' social desirability bias in relation to providing treatment for the participants. It is possible that the individual counselors wanted to rate all participants as showing improvements over the course of treatment, due to the idea of how poor response to treatment could be interpreted as a reflection of competency or lack thereof the counselor.

Suggestions for Future Research

Based on the limitations considered, a revised replication of this study would be warranted. Ideas for improvement in this study would be to use a more diverse population, in terms of ethnicity as well as incorporate individuals who are not forced to attend treatment to see if the results as evidenced in this study are similar. Also, replicating the study with a different, more objective way to rate treatment participation would be interesting. As mentioned earlier, it would also be useful to integrate counselor's objective behavior ratings of each participant and participants' own internal treatment related processes to see how those are similar or dissimilar.

Additionally, the nonsignificant results suggest several other interesting research ideas regarding the utility of the Personality Assessment Inventory in relating to treatment participation. Perhaps an interesting investigation would be to examine how individuals vary between types of treatment programs, comparing programs with a comprehensive approach to treatment like the current one, as compared to a program

strictly focused on substance abuse treatment. Also, it would be interesting to see how individuals score on the PAI scales as pre- and posttests following treatment, to indicate if the treatment program has effectively treated or lessened the identified problems as identified by the PAI. Specifically, perhaps an interesting investigation would be to examine how individuals with high STR scores vary in treatment participation between programs, comparing programs with a comprehensive approach to treatment like the current one, as compared to a program strictly focused on substance abuse treatment. The STR scale could be used as a post-test following treatment. High treatment participation scores with lower post-test scores could indicate that the substance abuse treatment was also effective in reducing one's overall stress level. Another interesting investigation would be to examine the relationship between scores on the RXR scale and where the individual falls on the stages of change continuum as hypothesized by Prochaska and DiClemente (1993) to see if high and low scores of RXR are associated with specific stages of change. Future research could create additional ways to measure treatment participation and further, an integration between counselor's objective behavior ratings of each participant and participants' own internal treatment related processes.

Overall, although there was not strong support for the hypotheses as theorized, this fact is also not surprising. The substance abuse literature was mixed in its findings, and since there are so many other variables within this study that could have influenced these results, it is difficult to know if these hypotheses were not supported because the relationships did not exist, or if there were other variables confounding the results. Further investigation of the PAI is needed to better understand how its scales are related to substance abuse treatment participation.

APPENDIX A

CONSENT FORM

HUMAN SUBJECTS CONSENT FORM

You are being asked to participate in a research study between Louisiana Tech University and Mississippi State Hospital (MSH). This study is part of a dissertation project being completed by Annese Hutchins. Ms. Hutchins is enrolled at Louisiana Tech University, in Ruston, Louisiana, and also recently completed her psychology internship at MSH, in Whitfield, Mississippi. You were identified as a potential subject by the psychology staff.

This study involves an assessment phase, which will gather information about you, your issues, and concerns. This phase takes about an hour and involves you answering two questionnaires. After the initial assessment phase today, you are not required to fill out any future paperwork, nor will you be contacted by the researcher. However, your assigned individual therapist will be asked to rate your progress in treatment on a weekly basis, and this information will be given to the researcher.

Your participation in this study is completely voluntary. All information collected will remain confidential. Information obtained from the answers you provide will be used for research purposes only; this information will not be used to evaluate you for treatment, it will not be shared with the staff of MSH, nor will it impact your treatment at MSH. At any time during participation, you may withdraw, and you will not suffer penalty, and your withdrawal from this study will have no impact on your treatment at MSH. You will be guaranteed anonymity in this study, as your name will not be attached to any of the questionnaires you or your therapist will complete, rather you will be assigned an identification number by the researcher to be used for identification purposes. Also, in summarizing the findings of this study, the results will be based on group analysis rather than your individual results.

The following is a brief description of the research project in which you are being asked to participate. Please read this information before signing the statement below.

TITLE: Predicting substance abuse treatment process and outcomes with the Personality Assessment Inventory: An investigation of how personality and interpersonal factors affect treatment

PURPOSE: To investigate personality, demographic, and relationship factors that may be related to substance abuse treatment outcomes. These factors may contribute to the formulation of treatments, designed to address individuals in substance abuse treatment, within the context of specific factors unique to each individual.

PROCEDURES: One-time completion of the survey packet by participants and weekly completion of the weekly rating forms by each participant's individual therapist.

INSTRUMENTS: The Personality Assessment Inventory (PAI), Treatment Process Measure (TPM), and a Demographic Form.

RISKS/ALTERNATIVE TREATMENTS: Some of the questions asked on the PAI and the demographic form may be personal and sensitive in nature. Therefore it is possible that you may experience some discomfort in responding to such questions. If you have emotions, questions, or issues that arise from items on the inventories, you are encouraged to discuss these with your assigned individual therapist. There are no alternative treatments. Louisiana Tech University is not able to offer financial compensation nor to absorb costs of medical treatment associated with injury or participation in this research.

BENEFITS/COMPENSATION: The major benefit for participating in this research study is that you are helping advance the field for substance abuse treatment. Answers you provide may help those providing treatment find better ways to treat chemical dependency, and improve treatment programs. Your participation is voluntary and you will not receive any monetary payment or reward for choosing to participate.

CONTACT INFORMATION: If you have any questions about any aspect of this research, participants' rights, or related matters, you can direct your questions to the following individuals:
The Institutional Research Review Board Chair at Mississippi State Hospital:
      Dr. Shazia Frothingham (601) 351-8315

The principal experimenters at Louisiana Tech University:
      Dr. Donna Thomas (318) 257-4040
      Dr. Tony Young (318) 257-4315
      Dr. Jeffrey J. Walczyk (318) 257-3004
      Annese Hutchins, M.Ed., LPC (601) 519-1559

The Human Subjects Committee of Louisiana Tech University also may be contacted if a problem cannot be discussed with the experimenters:
      Dr. Les Guice (318) 257-3056
      Dr. Mary Livingston (318) 257-4315 or (318) 257-2292

I _____ ,attest with my signature below, that I have read and understood the above description of the study, "Predicting substance abuse treatment process and outcomes with the Personality Assessment Inventory: An investigation of how personality and interpersonal factors affect treatment", its purposes and methods, and volunteer to participate in the study. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University, Mississippi State Hospital, or my treatment at MSH. I understand this form does not deny me of any rights and responsibilities I have as a patient at Mississippi State Hospital. Instead, it explains an additional agreement to participate in a specific study being conducted at Mississippi State Hospital. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty, and withdrawal will not affect my treatment at Mississippi State Hospital. Upon completion of this study, I understand that the results will be freely

available to me upon my request. I understand that the results of my questionnaires will be completely anonymous and confidential, accessible to only the principal investigators, myself, or a legally appointed representative appointed only by me. From this point on, I understand that I will be assigned a number which will be used instead of my name to identify any information provided about myself. All information collected will be kept in a locked file cabinet, only accessible to the researchers involved in conducting this study. I have not requested to waive, nor do I waive any of my rights related to participating in this study.

You will be offered a copy of this consent form to keep.

_____   _____
Signature of Participant   Date

_____   _____
Signature of Investigator   Date

_____   _____
Witness   Date

APPENDIX B

DEMOGRAPHIC FORM

BRIEF SURVEY OF DEMOGRAPHIC INFORMATION
Instructions: Please fill in or circle the answer that best describes you.

(1.) Age:_____   **(2.) Gender:**   Male   Female

(3.) With which ethnic group do you most identify? (please circle one):

African American/Black (non-Hispanic)

Asian/Asian American/Pacific Islander

Biracial/Multiracial

Caucasian/European American/White (non-Hispanic)

Hispanic/Latino/Latina

Middle Eastern/Arab

Native American/American Indian/Alaska Native

South Asian/Asian Indian

Other (please specify):_____

(4.) With which group do you most identify? (please circle one)

Heterosexual

Homosexual

Bisexual

Other (please specify):_____

(5.) What is your current relationship status? (please circle one)

Single, never married

In a relationship, not living with partner

Living with partner

Married

Separated

Divorced

Widowed

(6.) Which would describe your current socioeconomic status?

Lower class

Middle class

Upper class

(7.) What is your highest education level?

No diploma; If no diploma, please specify highest grade level completed:_____

High school diploma/GED

Associate Degree/Vocational Training

Bachelor Degree

Master Degree

Doctorate Degree

**(8.) What was the <u>AGE</u> you first used: Alcohol? _____years   Drugs?
_____years**

**(9.) What was the <u>AGE</u> you first noticed usage was a problem:
Alcohol? _____years   Drugs? _____years**

(10.) Do you have a family history of alcoholism?   YES   NO

(11.) Do you have a family history of drug abuse?   YES   NO

**(12.) What is your main drug of
choice?_____**

**(13.) How many times have you attempted to quit alcohol or
substances?_____**

**(14.) How many times, including currently, have you been admitted for substance
abuse treatment?   Inpatient_____
Outpatient_____**

**(15.) Do you have a family history of mental disorders (for example, depression,
bipolar disorder, personality disorders, PTSD, ADHD, etc.) other than drug abuse?
YES   NO**

**(16.) Have you ever been diagnosed with one or more mental health disorders (for
example, depression, bipolar disorder, PTSD, ADHD, etc.)?   YES   NO**

(17.) How many times have you been treated for mental health issues other than substance abuse treatment (for example depression, bipolar disorder, personality disorders, PTSD, ADHD, etc.)?
 Inpatient_____   Outpatient_____

(18.) Do you have a history of taking medications for mental illness?   YES   NO

(19.) Are you currently taking medications for a mental illness?   YES   NO

(20.) Do you have a history of taking medications for a chronic physical illness, such as diabetes, arthritis, high blood pressure?   YES   NO

(21.) Are you currently taking medications for a physical illness?   YES   NO

(22.) How often do you *think about* injuring yourself?
        Never   Occasionally   Frequently   Constantly

(23.) How many times have you actually *injured yourself*, or placed yourself in harm's way, with the intent to die, even if you changed your mind before any serious self-harm was inflicted. (For example, you took pills but did not die, pulled the trigger but gun didn't fire, cut wrists but decided to call 911 for help, overdosed but was discovered by friends or family and rushed to emergency room).

        # of times: _____

(24.) Are you currently (or expect in the near future to be) involved in legal proceedings, such as child custody, child abuse/neglect charges, domestic violence, divorce, or other civil or criminal charges?   YES   NO

APPENDIX C

TREATMENT PROCESS MEASURE

TREATMENT PROCESS MEASURE

(To be completed by counselor each week)

Counselor: This form will be used to track your patient's progress during treatment. This form is _for research purposes only_, and will be given to the principle researcher upon your completion. Please keep these ratings confidential. Upon completion of this form, please place it in the envelope provided to you, and seal the envelope to ensure confidentiality. Next, place the individual envelope in the larger envelope provided to you, with all of the weekly TPM forms. The researcher will collect the large envelope containing the completed forms from you each week of the research. Thank you again for your participation.

DIRECTIONS: Please indicate how much you DISAGREE or AGREE with each item, based on your interactions with this patient **during the last week**, by circling the number that corresponds to your answer.

1=Disagree   **4=Not Sure,**

7=Agree

Strongly

Strongly

Easy to talk to	1	2	3	4	5	6	7
Warm and caring	1	2	3	4	5	6	7
Honest and sincere	1	2	3	4	5	6	7
Hostile or aggressive	1	2	3	4	5	6	7
In denial about problems	1	2	3	4	5	6	7
Motivated to recovery	1	2	3	4	5	6	7
Cooperative	1	2	3	4	5	6	7
Responsible	1	2	3	4	5	6	7
Consistently keeps session appointments	1	2	3	4	5	6	7
Self-confident	1	2	3	4	5	6	7
Freely expresses wishes	1	2	3	4	5	6	7
Depressed	1	2	3	4	5	6	7
Nervous or anxious	1	2	3	4	5	6	7
Motivated	1	2	3	4	5	6	7

APPENDIX D

MISSISSIPPI STATE HOSPITAL IRB APPROVAL LETTER

MISSISSIPPI STATE HOSPITAL

P.O. BOX 157-A, WHITFIELD, MS 39193   (601) 351-8000   WWW.MSH.STATE.MS.US

James G. Chastain, Director

Shazia M. Frothingham, Ph.D.   Telephone: (601) 351-8010
Chair   Telecopier: (601) 351-8086
Institutional Review Board   Electronic email: sfrothingham@msh.state.ms.us
Building 51
Mississippi State Hospital
Whitfield, MS 39193

September 21, 2011

Annese Baum Hutchins, M.Ed., LPC
Department of Psychology and Behavioral Sciences
Louisiana Tech University
Ruston, LA 71272

Dear Ms. Baum-Hutchins:

On September 15, 2011, the Mississippi State Hospital Institutional Review Board approved
your submitted research protocol **"Predicting substance abuse treatment process and
outcomes with the Personality Assessment Inventory: An investigation of how personality
and interpersonal factors affect treatment"** pending revisions. You have completed required
revisions and may begin data collection.

Please sign the enclosed confidentiality and data use agreement and send to me. Also, please
keep the Board updated on the progress of your research and inform me prior to any changes in
procedures. All ongoing research will be reviewed at least annually. Please send me information
of any papers, publications or presentations that result from this research.

Sincerely,

Shazia M. Frothingham, Ph.D.
Chair of MSH Institutional Review Board
Mississippi State Hospital
Whitfield, MS 39193

A FACILITY OF THE MISSISSIPPI DEPARTMENT OF MENTAL HEALTH

ACCREDITED BY THE JOINT COMMISSION ON ACCREDITATION OF HEALTHCARE ORGANIZATIONS

APPENDIX E

LOUISIANA TECH UNIVERSITY IRB APPROVAL LETTER

LOUISIANA TECH
U N I V E R S I T Y

MEMORANDUM

TO: Dr. Donna Thomas, Dr. Tony Young, Dr.Jeffrey Walczyk
           and Ms. Annese Hutchins

FROM: Barbara Talbot, University Research

SUBJECT: HUMAN USE COMMITTEE REVIEW

DATE: November 1, 2011

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

**"Predicting Substance Abuse Treatment Process and Outcomes with the
Personality Assessment Inventory: An Investigation of How Personality and Interpersonal Factors
Affect Treatment"**

HUC 902

The proposed study's revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on November 1, 2011 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond November 1, 2012.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Mary Livingston at 257-4315.

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