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Relationship between personality styles and drug/ alcohol use in prison inmates

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RELATIONSHIP BETWEEN PERSONALITY STYLES AND DRUG/ALCOHOL USE IN PRISON INMATES

by

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ABSTRACT

When assessing areas of clinical pathology and substance abuse, clinicians are not always provided with critical background information needed to assess properly and diagnosis their clients. For various reasons, full disclosure is not forthcoming during the initial intake or assessment process. Inadequate knowledge will, in turn, affect treatment planning. Valid and reliable assessment instruments are an invaluable resource for extracting additional facts. This study investigated that criterion validity between the Millon Clinical Multiaxial Inventory-III (MCMI-III) and the Substance Abuse Subtle Screening Inventory-3 (SASSI-3), as well as attempted to replicate psychopathology subgroup clusters as noted in a study by McMahon, Malow, and Penedo (1998). Finally, the current study predicted that a portion of the relationship between the MCMI-III and the SASSI-3 could be explained by a relatively large canonical dimension. All predictions were successful.

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> "*Is there any Remover of Difficulty, save God, say praise be God, He is God. All are His servants and all abide by His bidding.*" Bahai Prayer

CHAPTER 1

Introduction and Literature Review

Roughly one in every 10 people in the United States abuses alcohol and/or illegal drugs. In fact, substance abuse represents one of the most commonly occurring psychological disorders, exceeding even depression (Travis, Solomon, & Waul, 2001).

According to the Bureau of Justice statistics (August, 2001), the total number of prisoners under the jurisdiction of federal or state adult correctional authorities was 1,381,892 at the end of 2000. Of this number, The Urban Institute, in *From Prison to Home: The Dimensions and Consequences of Prisoner Reentry*, estimates that 600,000 inmates (which equates to roughly 1,600 per day) would be released from federal and state prisons by the end of 2001 (Travis, Solomon, & Waul, 2001).

Between 85% and 90% of these inmates will enter the system with a history of substance abuse. If these inmates are not accurately diagnosed and treated, they will leave the system with a high probability of further abuse and an increased likelihood of offending again. Further, the crimes they commit may be directly related to their drug addiction (e.g., being high on drugs while committing the crime) or indirectly (e.g., committing crimes such as robbery and purse snatching) as a means of attempting to support a very expensive habit. This increased recidivism is costly not only to taxpayers, but also to the victims both directly and indirectly.

Finally, recidivism is costly to the inmate who, without appropriate means of assessment and treatment, is left to suffer the life of an addict. This never-ending cycle has proven to be a tremendous problem for society (Travis, Solomon, & Waul, 2001).

Because of the increase of addictive behaviors, the early 1960s and 1970s saw the beginning of formalized substance abuse treatment planning, and, since that time, treatment planning has become a vital component of the health care system in the United States. Treatment plans are now important not only for physical health but also for mental health, child welfare, and substance abuse treatment programs (Bockian & Jongsma, 2001). It is likely that such programs as these will be implemented in the next decade.

The 1980s saw the implementation of the managed care system, and, as a result, treatment planning has taken on even more importance. The managed care systems strongly advocate rapid assessment of the problem and execution of therapy. The goal of most managed care companies is to expedite the treatment process by prompting the client and clinician to concentrate on identifying and changing behavioral patterns as soon as possible. Treatment plans need to be very specific and individualized in order to meet the needs of the client, yet, at the same time, they need to be measurable in terms of setting milestones that can be used to record client progress (Bockian & Jongsma, 2001).

Until the 1980s, however, there were few distinctions made between many different types of substance abusers. What might now appear to be obvious distinctions between drug addicts and alcoholics, male and female abusers, teenage substance abusers and older adults, or those who abused and those addicted were not made in earlier years. A great deal of work has been accomplished over the past decade to recognize and refine

the differences and similarities among many types of substance abusers (Bockian & Jongsma, 2001), and their characteristic similarities and differences have been through standard definitions.

Alcohol dependence is defined by a history of excessive drinking that has resulted in social problems, both at home and at work. The Millon Clinical Multiaxial Inventory-III (MCMI-III) has an alcohol dependence subscale designed specifically to assess items that deal with impulsivity and a lack of self-confidence and trust (Scale B, Alcohol Dependence). This scale can be affected in a lesser way by the person's reported desire to be sociable that is hampered by feelings of guilt or mood swings. This scale also evaluates how the person views authority (Choca & Van Denburg, 1997). Individuals scoring high on the Alcohol Dependence Scale are likely to display a history of problem drinking. They may have tried unsuccessfully to curb or discontinue their drinking. High scorers are also likely to be experiencing distress within the family, social, and/or occupational situations. The degree to which excessive drinking is problematic needs to be assessed in relation to other information on the client's level of functioning (Groth-Marnat, 1999).

Dependence on drugs is characterized by the length of time the drugs have been used. If there is a long history of drug use, then the clinician should explore the number of problems that have resulted both at home and at work. Drug Dependence (Scale T) on the MCMI-III evaluates the level of impulsivity experienced, whether or not there has been a tendency to hurt oneself or others, if there has been a desire to use others around them possibly by manipulation, a tendency towards a resentment of authority, and a strong disdain for being controlled (Millon, 1997). High scorers generally will have had

a recurring history of difficulties with drug abuse. Typically present will be a number of traits associated with drug-related difficulties: impulsiveness; self-indulgence; exploitiveness and difficulty conforming to mainstream standards of behavior; hedonism; and narcissistic personality characteristics. It is likely that high scorers will have difficulty managing activities associated with daily life and will experience family, social, legal, and/or occupational distress (Groth-Marnat, 1999).

Miller (1985) created the Substance Abuse Subtle Screening Inventory (SASSI) in response to a need for a brief, easy-to-administer screening measure that is easily scored and can identify individuals with a high probability of having a substance dependence disorder. It did not matter if these individuals admitted abuse or the symptoms that are often associated with abuse. The SASSI-3 has been tested in a number of clinical settings with a variety of respondents. The SASSI-3 decision rules identify substance dependence with an empirically tested accuracy of 94%. The SASSI-3 is also 93% accurate at identifying those who do not have a substance dependence disorder. This accuracy translates into a 7% probability that a client will be misclassified (Miller, et al., 1997).

There is no singular personality style that can be referred as an addictive personality, but there are common personality traits, symptoms, and psychodynamic factors that occur in clusters in addicted persons (Kaufman, 1994). The literature review reflects that, in the majority of studies of alcoholics and drug-dependent individuals, cluster types emerged encompassing members that would be described as dominating, manipulative, and exploitive (Millon, 1997). A second cluster emerged with evidence of rather severe personality pathology. Craig and Olson (1990) have described this type as

characterized by pessimistic attitudes, unstable moods, and erratic behavior. Paranoid features that involve feelings of being misunderstood, unappreciated, and exploited may be associated with irritability and interpersonal acting out. A third cluster was discovered to exist particularly among alcoholics, involving those who experience self-deprecatory conditions, excessive social dependence and/or avoidance, perceived failure in interpersonal relations, and high levels of depression and anxiety (Millon, 1997). The second and third cluster types may be associated with attempts to manage interpersonal anxieties, frustrations, and critical attitudes about self and others. A final cluster is referred to as a subclinical cluster found to be associated with relatively fewer substance abuse problems than those revealed in other clusters (Millon, 1997).

Statement of the Problem

Substance abuse is a significant social and individual problem because approximately 13% of adults have a lifetime history of alcohol dependence. When considering the abuse of other illegal substances, this percentage becomes higher. Although chemical dependency treatment programs serve the majority of individuals with substance abuse problems, inpatient and outpatient mental health organizations also provide services, with 8% of inpatient and outpatient clients receiving a substance use disorder diagnosis. Unfortunately, not all people report their substance abuse during assessment or early therapy. Because clients have a tendency to minimize or deny substance abuse, it is desirable to have an effective method for assessing whether a problem exists. (Stein, Graham, Ben-Porath, & McNulty, 1999).

As a result of the high degree of comorbidity between substance abuse and concerns related to physical and mental health, there tends to be a disproportionate

appearance of substance abusers in clinical settings (Schuckitt, 1995). The case becomes even more complex as a result of substance abuse disorders impersonating the signs and symptoms of an array of other mental health concerns (Schuckitt, 1995). In light of this occurrence, failure to diagnose substance abuse disorders becomes more prevalent. Consequently, it is important that means of identifying substance abuse disorders be improved (Gray, 2001).

For those who end up in prison as either a direct or indirect effect of substance abuse, the problem becomes worse. The growth of the general prison population has lessened the ability of correctional jurisdictions to adequately screen prisoners coming into the system for mental health concerns and related correctional problems. Prison officials want to know if the inmate is likely to become victimized while incarcerated, whether there is a potential for violence, and if there is a need for psychiatric, educational, and/or medical services. If the determination has been made that the prisoner has a low level of cognitive functioning, this needs to be documented (Jemelka, Wiegand, Walker, & Trupin, 1992).

Jemelka et al., (1992) also noted that between 10% and 15% of those incarcerated have been diagnosed with a mood disorder or major thought disorder and are in need of mental health services. These findings have been demonstrated in the context of a growing number of legal precedents establishing the rights to health and mental health treatment including the right to adequate assessment procedures. Traditional clinical evaluations involving a clinical interview, psychometric work-up, and formal written psychological reports are prohibitively expensive when considering the large number of new offenders coming into the prison system every day.

These budgetary constraints have led many prison administrators to use less expensive methods to move prisoners through processing centers (Jemelka, Wiegand, Walker, & Trupin, 1992).

Overall, there is controversy surrounding substance abuse clients diagnosed with personality disorders. One definition of dual diagnosis requires two Diagnostic and Statistical Manual-IV (DSM-IV) Axis I disorders, i.e., one psychiatric and one substance abuse; an Axis II personality disorder cannot be substituted for an Axis I psychiatric disorder. However, clinical experience clearly shows that substance abuse clients with an Axis II personality disorder present serious treatment challenges because they often demonstrate behaviors that are tenaciously combative, resistive, and manipulative (Ekleberry, 1996). The Metropolitan Washington Council of Governments Dual Diagnosis Subcommittee reported that untreated dual diagnosis conditions affect the individual, the family, and the community; there are increased hospitalizations, incarcerations, and use of emergency and social services, as well as interventions by the police (Ekleberry, 1996).

Consequently, as a public health problem, addiction stands alone in this country as a disease that is treatable, yet lacks the resources available to treat all those in need. The situation becomes particularly tragic as addicts are ready to enter treatment but delayed because treatment programs have long waiting lists. During the waiting period, the window of opportunity for the addict may, in fact, close with the possibility of never opening again. When this lost opportunity occurs, the substance abuser will often sink

deeper and deeper into his or her addiction, spiraling into problems related to social functioning, criminality, and/or death (Smith & Seymour, 2001).

Justification

Drug abuse problems, psychological problems, and their co-occurrence were found to be prevalent in correctional institutions and among probationers entering residential treatment programs. Overall, inmates and probationers with comorbidity tend to enter substance abuse treatment with the most severe levels of social dysfunctioning and criminal problems, which suggests that overall program effectiveness may be lacking. Correctional facilities may wish systematically to evaluate their strategies for meeting the challenges presented by comorbid offenders. The benefits of doing so would include fewer inmate management problems as well as better post-release outcomes (Hiller, Knight, & Simpson, 1996).

In an effort to determine whether the SASSI-3 is equally useful in various settings, the SASSI Institute (Renn, 1999) reported a list of five settings: addiction treatment centers, general psychiatric hospitals, vocational rehabilitation programs, sex offender treatment programs, and dual diagnosis hospitals in which clients have both substance abuse and psychiatric disturbances. In the current investigation, SASSI-3 data obtained from a correctional setting were used to test and extend the generalizability of this assessment instrument into another treatment-oriented setting.

Despite the SASSI's popularity, there has been very little independent research on the instrument (Gray, 2001). A review of the literature reveals no current studies that explore the relationship of the MCMI-III to those on the SASSI-3. Gaining greater insight into the dynamics of substance dependence, as well as the dynamics of personality

variables that are involved, may prove to be invaluable in this process. The more tools a clinician has to diagnosis a problem accurately, such as an accurate history (obtained by self-report and patient records), appropriate assessment instruments that are psychometrically sound (i.e., personality, intelligence, substance abuse, etc.), along with observance of overt behaviors, the better equipped the clinician will be to develop a treatment plan aimed at facilitating change. Should this study determine that Scale B (Alcohol) and Scale T (Drug Dependence) among others on the MCMI-III is able to predict the outcomes of the drug and alcohol dependence subscales on the SASSI-3, the information will benefit mental health professionals by helping them to devise more accurate and thorough treatment plans.

Because substance abusers are notorious for "faking good" on social desirability response sets (Myerholtz & Rosenberg, 1997), the better an instrument is able to predict the findings of another instrument, the more reliable a diagnosis becomes. The treatment plan will also be enhanced by knowledge of relevant personality clusters that stands out among the data.

Oftentimes, service providers are trying to diagnose what the personality disordered/substance abuse client is attempting to deny, minimize, or hide. Few addicted individuals come into an intake assessment prepared to make a full disclosure of their substance use patterns (Myerholtz & Rosenberg, 1997).

Similarly, few personality disordered individuals acknowledge their maladaptive and provocative behaviors. Both disorders are often misrepresented by client self-reports and involve the clients' insistence that the real problem lies elsewhere, usually in how others are treating them. Clients frequently use defenses to sustain a maladaptive pattern

of preferred behavior. In treatment, providers often attempt to encourage clients to switch from external to internal attributions for their problems, such as asking the clients to accept responsibility for their lives and their future, but these clients often prefer their illusions to reality.

In order to diagnose a condition better and facilitate treatment, it is helpful to have at least two assessment instruments to validate or invalidate the existence of a particular problem such as substance dependence. Convergent and discriminant validity are relevant, especially when self-report instruments are being used to evaluate psychological constructs. This study explored the degree to which the MCMI-III predicts substance abuse dependence when compared to the SASSI-3, while also investigating psychological constructs in an effort to determine the existence of clusters.

As mental health professionals are often left with only the client's self-report during the initial intake, the use of assessment instruments that are both valid and reliable is essential, particularly if the clinician is attempting to measure or rule out a specific concern such as substance dependence. The goal of this research is to validate the use of the SASSI-3 within an inmate population by comparing the direct and indirect scales to substance abuse scales of the MCMI-III. The outcome of this study will be useful to those who work with substance abusers, and the results will provide them with information on the concurrent validity between the MCMI-III and SASSI-3 and the ability of the MCMI-III to distinguish clustered symptoms related to substance dependence.

Review of Related Literature

Many clients receiving treatment for substance abuse have high rates of personality disorders (Flynn, Craddock, Luckey, Hubbard, & Dunteman, 1996). The importance of systematically evaluating coexisting psychiatric problems among substance abusers has been reflected in studies that demonstrate (1) increased relapse rates among dual diagnosis substance abusers, (2) those with certain forms of psychopathology profit from the addition of psychotherapy to the standard drug treatment package, and (3) that matching substance abusing patients with treatments tailored to address their particular needs may enhance treatment effects (Millon, 1997).

The original and revised versions of the MCMI were developed as measures of the basic constructs outlined in Millon's theory of personality and psychopathology. These efforts have continued to enhance correspondence between the personality and symptom scales of the instrument and various Axis I and Axis II syndromes that are outlined in the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association. MCMI profile interpretation involves the integration of characteristics measured by various personality and symptom scales along with other important life history and demographic information in order to put forth a meaningful clinical synthesis (Millon, 1997).

Many researchers view Millon's theory of personality and psychopathology as a framework that solidifies theoretically derived dimensions along with different substance dependence disorders. Certain studies that have explored MCMI-III scales gauge drug and alcohol dependence in a way that reveals their distinctive features along with aspects reflecting their congruency with personality disorder scales (Millon, 1997).

Comorbidity of Psychological Disorders and Substance Abuse

The DSM-IV has defined a personality disorder as an enduring pattern of inner experience and outward behavior that deviates markedly from the expectations of the individual's culture (American Psychiatric Association, 1994, p. 629). Further, the DSM-IV goes on to say that this pattern needs to remain stable over time and leads to impairment and distress to be a true personality disorder (Millon, 1997). The prevailing view is that personality acts, either directly or indirectly, as a predisposing factor for substance abuse (Flory, Lynam, Milich, Leukefeld, & Clayton, 2002).

It is imperative to determine which aspects of personality are associated with which forms of substance abuse before examining the specific nature of the personality-substance abuse relation. Although personality may relate to substance use generally, it is also possible that certain aspects of personality are associated with certain forms of substance abuse.

Robinet, Rowlett, and Bardo (1998) argued that novelty seeking and amphetamine self-administration are reflections of the mesolimbic dopamine reward system of the brain. Differential personality-substance abuse relations could be anticipated on the basis of a licit-illicit distinction. The use of some substances such as cocaine and marijuana is considered a criminal act, and this distinction may suggest a different personality configuration. For example, it is possible that those who use illicit substances are actually more daring and reckless than those who use legal ones.

Abuse relations may differ as a function of the context in which drugs are most often administered. For example, alcohol often serves as the centerpiece of many young adult

gatherings. Individuals who are more extroverted may tend to use alcohol but not marijuana (Flory, Lynam, Milich, Leukefeld, & Clayton, 2002).

A study conducted by Wills, Vaccaro, and McNamara (1994) examined the concurrent relationship between personality and substance abuse among a group of adolescents. They determined that substance abuse was particularly elevated for individuals who were high in sensation seeking, a trait typically known to be associated with impulsivity, anger, and poor behavioral control. Zuckerman (1994) emphasized the importance of sensation seeking as a personality trait that may predispose the individual to experiment with alcohol or drugs. In a recent study conducted by Finn, Sharkansky, Brandt, and Turcotte (2000), evidence supported the relation of excitement or pleasure seeking and social deviance proneness to alcohol use among young adult offspring of alcoholics.

Other investigations revealed that personality is related to substance abuse disorders. Krueger et al. (1966) reported that individuals who met criteria for any substance dependence disorder actually scored significantly lower on communion and constraint and scored higher on negative affectivity than did a group free from disorder. Trull and Sher (1994) investigated the relationship between personality and Axis I disorders in a nonclinical sample. They found that individuals who met the diagnostic criteria for any substance use disorder were more introverted, neurotic, and open to new experiences, but were less conscientious and agreeable than those without the diagnosis. Martin and Sher (1994) examined the connection between alcohol use and personality. Individuals with alcohol use disorders were found to be more anxiety-prone and less agreeable and

conscientious than those in groups without a diagnosis or those in remitted groups.

Chassin, Curran, Hussong, and Colder (1996) found that negative affectivity partially mediated the relationship between parent alcoholism and adolescent drug use. Shedler and Block (1990) explored personality differences between three groups of participants in particular: abstainers, experimenters, and frequent users. Shedler and Block stated that personalities of frequent drug users tended to show interpersonal alienation and distrust, self-devaluation and emotional distress, and poor impulse control and impetuousness. Milich, Lynam, Zimmerman, Logan, and Leukefeld (2000) were able partially to replicate Shedler and Block's study by incorporating a large longitudinal sample. They determined that frequent drug users scored higher on sensation seeking than experimenters or abstainers.

The Five-Factor Model of personality (FFM) has been useful in summarizing previous research on the personality-substance abuse relationship and offers a common language with which to integrate various systems and descriptions of personality. The FFM consists of five broad personality domains: Neuroticism, Extraversion, Conscientiousness, Agreeableness, and Openness to Experience generally assessed by the NEO (Costa & McCrae, 1992). Using the FFM, the personality factors most consistently related to substance abuse are high Neuroticism, low Conscientiousness, and low Agreeableness (Flory, Lynam, Milich, Leukefeld, & Clayton, 2002). Individuals who are high in Neuroticism appear to experience a variety of aversive emotional states, including tension, nervousness, anger, scorn, worry, a sense of rejection, guilt, and, oftentimes, sadness (Watson & Clark, 1984). Conscientiousness includes facets of social

conformity and impulse control. Individuals low in Conscientiousness often experience problems dealing with authority and are often described as impulsive, irresponsible, unreliable, and disinhibited (Hogan & Ones, 1997). Finally, the trait dimension of Agreeableness appears to relate more closely to an individual's style of interacting with others. Persons low in Agreeableness tend to be selfish, aggressive, experiencing difficulty trusting others, cold, uncooperative, and distant in their interpersonal interactions (Graziano & Eisenberg, 1997).

When a study on comorbidity among psychological disorders was done by Brown and Barlow (1992), this type of research was relatively new. Data from their research have proven to be significantly important for classification and therapeutic intervention. Anxiety disorders appear to be the most common. Data from the Epidemiologic Catchment Area project found that nearly 15% of the population suffer from an anxiety disorder at some point in their lives (Regier, Burke & Burke, 1990). Anxiety is a prominent concern for clinicians and has prompted an increased need for both medical and mental health services. Only recently have researchers explored comorbidity within various anxiety disorders (Brown & Barlow, 1992).

A number of studies have reported elevated rates of comorbidity among substance abuse and anxiety disorders (Brown & Barlow, 1992). Most of these studies have approached this relationship by examining the prevalence of anxiety disorders among alcoholic clients. The results seem to indicate that the lifetime prevalence of alcoholics with anxiety disorders is between 25% and 45%, with social phobia being one of the most frequently correlated diagnoses. The rates then increase to nearly 60% when milder forms of anxiety disorders are taken into account. Among Vietnam veterans diagnosed

with post-traumatic stress disorder, substance abuse has been prevalent. Given the possibility that substance abuse may reflect attempts to self-medicate excessive anxiety or may contribute to the etiology of the anxiety disorders, examination of the temporal sequence of disorders is important. Disturbances such as panic disorder, obsessive-compulsive disorder, and generalized anxiety disorder varied considerably among substance abusers. A potential factor contributing to these findings is the observation that the symptoms of panic disorder and generalized anxiety disorder are often difficult to differentiate from symptoms of alcohol withdrawal. Because of this factor, rates of comorbidity may have been inflated resulting from overlapping features although reactions to psychoactive substances may contribute to the etiology of anxiety disorders such as panic disorder (Brown & Barlow, 1992).

A research project conducted by Morgenstern, Langenbucher, Labouvie, and Miller (1997) investigated the prevalence and overlap among DSM-III-R personality disorders among a multi-site sample of 366 substance abusers receiving intervention. It was determined that those diagnosed with antisocial personality disorder repeatedly showed a strong influence on etiologic, clinically descriptive, and treatment variables. Koenigsberg, Kaplan, Gilmore, and Cooper (1995) report that alcohol frequently occurs with Axis I disorders but classifying those with alcohol dependence as having Axis I disorder significantly limits phenotypic heterogeneity or predicts treatment response.

Typology of Antisociality in Methodone Patients

A study by Alterman, McDermott, Cacciola, Rutherford, Boardman, McKay, and Cook (1998) examined antisocial behavior and methadone abuse. The authors used a multistage cluster analysis with replications to evaluate four continuous measures of

antisociality. Data from the revised Psychopathy Checklist and the Socialization Scale of the California Psychological Inventory were obtained from 252 men who reported abusing methadone. The analysis yielded six replicable and temporally stable cluster groups that varied in degree and pattern of antisociality. The groups were statistically compared on sets of external criterion variables. These variables included Addiction Severity Index measures of past and recent substance abuse and functioning along with lifetime criminal history; Axis I and II symptomatology, anxiety and depression, object relations and reality testing, hostility, and guilt; and Machiavellianism. The expression of antisociality in the six groups and differences found among them on the external variables supported the validity of a more complex conceptualization of antisociality than is provided by current antisocial personality disorder diagnostic criteria. The authors believed that the antisocial personality diagnosis offered a somewhat restricted system for assessing antisociality and that a more comprehensive examination of antisociality in substance abusers might be warranted and productive. Again, the primary objective of the study was to determine whether a meaningful integration could be obtained from the four measures of antisociality: Conduct Disorder, Adult Antisocial Personality Disorder, the Psychopathy Checklist-R, and the California Personality Inventory-So. To this end, an empirical typology was developed and validated as emergent among methadone maintenance (MM) patients. This typology was assessed for replicability, stability, and internal and external criterion validity (Alterman et al., 1998).

The authors' findings revealed an antisociality typology that was stable over a six-month period and highly replicable. The differentiation of the types in regard to external criterion variables supported the validity of the typology and argues for the use of several

measures to characterize antisociality and non-antisociality, as contrasted with sole reliance on the antisocial personality diagnosis. The following is a breakdown of the typologies discovered (Alterman et al., 1998).

Type One. This group of patients, constituting slightly over 10% of the sample, is high on all four measures of antisociality and is significantly higher on conduct disordered behaviors than all of the other types. Members of this cluster had relatively serious alcohol and drug problems and a significant history of criminal involvement. All had considerable hostility related to assaultiveness, indirect hostility, irritability, resentment, suspiciousness, and verbal hostility. Members of this cluster often experienced marked symptomatology in psychopathic deviate areas such as paranoia, borderline, and sadistic behaviors (Alterman et al., 1998).

Type Two. This group constituted approximately 12% of the sample. Members of this cluster were found to have only moderate levels of conduct disorder behaviors, although they were high on the other three measures of antisociality. Only 40% qualified as meeting the criteria for antisocial personality disorder. They were significantly higher in psychopathy than all but one of the other groups. These participants had relatively serious drug problems and a significant history of criminal involvement. Members were found to have more problems with family than any of the other types and suffered from high levels of anxiety and depression. Object relations were characterized by alienation and insecure attachment, and their reality testing was subject to distortion. As was found with the Type One group, they also displayed high levels of hostility. There was considerable manifestation of symptomatology related to psychopathic deviance in areas of histrionic, narcissistic, borderline, sadistic, and self-defeating behaviors.

Type II members were the most histrionic and narcissistic of all the typology groups (Alterman et al., 1998).

Type Three. Members of this cluster made up about 18% of the sample. They had relatively moderate psychopathy scores and had conduct disorder and adult antisocial personality-related behaviors. All members of this group reported severe asocialization. Severity of alcohol and drug problems was characterized as intermediate. History of criminal activity was not elevated as much as that found in the first two clusters. The same was true of interpersonal relationships with family members. As with the other clusters, this group experienced high levels of anxiety and depression. There were consistent problems in a number of spheres of object relations and reality testing (i.e., alienation, insecure attachment, social competence, reality distortion, and uncertainty of perception). Members were also found to portray considerable hostility as well as guilt. Of all the typology groups, they were the most dependent and avoidant (Alterman et al., 1998).

Type Four. Those in this category were approximately one in six of the study sample (16.7%). Except for a fairly high level of adult antisocial behaviors, this group was below the sample average in the other dimensions of antisociality. Family social problems were found to be low, and so were alcohol, drug, and lifetime criminal activities. Members of this group had low levels of anxiety and depression. Object relations, reality testing, hostility and guilt, and psychopathic deviate symptomatology were also low (Alterman et al., 1998).

Type Five. This group made up 15% of the sample. This cluster was found to be high in psychopathy, but below the sample average in conduct disorder and adult

antisocial personality disordered behaviors as well as asocialization. Their history of criminal involvement was similar to that of Types 1 and 2, although their alcohol, drug, and family social problems were relatively low. This group had the lowest anxiety levels of all the typology clusters. They also experienced the least amount of depression and guilt. They had few object relations or reality testing problems and very few hostility or psychopathic deviate concerns (Alterman et al., 1998).

Type Six. Finally, this cluster represented 28% of the study sample. They were lowest on all four dimensions of antisociality, and regularly showed very few concerns on the external criterion variables (Alterman et al., 1998).

Drug and alcohol problems and criminality were relatively moderate in Type Three while anxiety and depression were quite high, and they reported considerable object relations disturbances, relatively high levels of hostility and guilt, and psychopathic deviate symptomatology. Thus, this type is comprised of those whose antisocial behaviors and related substance dependence appear to be associated with psychopathology (Alterman et al., 1998).

Psychopathology, Substance Abuse, and Criminal Offenders

The rate of criminal offenders with psychological impairments has risen over the past twenty years. Part of this increased rate appears to be the result of deinstitutionalization that took place in the 1970s. A number of those suffering from mental illness at that time have since shown up in correctional systems because of the public's insistence that they be protected from those with mental illness. An overall lack of understanding concerning mental health issues has also been a culprit (Abram & Teplin, 1991). Law enforcement officers who try to locate mental health services for these individuals are

quick to realize that community-based psychiatric treatment beds are limited and that incarceration is the only option. When compared to the general population, there is an over-representation of psychologically ill persons in the correctional system (Palermo, Gumz, & Liska, 1992).

Guy, Platt, Zwerling, and Bulluck (1985) determined that one-third of newly incarcerated inmates displayed at least one mental health disorder and were recommended for psychiatric treatment; 11% needed immediate treatment. Another research project explored a stratified sample of maximum, medium, and minimum security correctional facilities and concluded that 33% of the inmates would benefit from mental health treatment programs (James, Gregory, Jones, & Rundell, 1980).

Hiller, Knight, and Simpson (1996) have noted that individuals with concurrent diagnoses of substance abuse and mental illness are being given increasing levels of attention. One reason for this attention is that comorbid inmates are a growing special needs group constituting an estimated 3% to 11% of general prison populations (Peters & Hill, 1993). Research further indicates that inmates who have been diagnosed with mental illness are particularly problematic for substance abuse treatment programs (Calsyn & Saxon, 1991; Craig, 1988; DeLeon, 1989; Ravndal & Vaglum, 1991; Regier et al., 1990; Rounsaville, Weissman, & Rosenberger, 1982). Research has focused very little on determining the prevalence of comorbidity within community-based substance abuse treatment programs for probationers, even though studies have demonstrated that there are sizable comorbid incarcerated subpopulations.

A study by Hiller, Knight, and Simpson (1996) had three objectives. The first objective was to assess psychological problems using the Millon Clinical Multiaxial Inventory-II (MCMI-II; Millon, 1987) in a Substance Abuse Treatment Facility (SATF) for probationers. The SATF was developed to house substance abuse offenders as an alternative to conventional imprisonment and was managed by the Tarrant County Texas Adult Probation Department. This four-month community-based program provided substance abuse treatment, together with life skills training, to 140 court-ordered offenders divided into four communities of 35 each. The second objective was to incorporate a drug use severity measure derived from self-reported drug history information to assess the prevalence of drug abuse problems by comparing the history with scores on the MCMI-II drug dependency scale. The final objective examined drug use and psychological problems together for evidence of comorbidity and how these classifications relate to criminal history as well as socio-demographic and psychosocial indicators. The result of this study is as follows.

Analyses using a MCMI-II base rate score of 85 or greater to indicate a prominent problem revealed that 80% of the probationers exhibited psychological problems other than drug abuse. Dysfunctional personality styles were more common than clinical syndromes. With respect to personality problems, 32% of the probationers were classified as narcissistic, 31% were antisocial, 30% were passive-aggressive, 30% were dependent, 23% were aggressive-sadistic, 22% were avoidant, 21% were self-defeating, 19% were histrionic, 18% were borderline, 14% were compulsive, 11% were paranoid, 8% were schizoid, and 8% were schizotypal. In terms of clinical symptoms, 14% were diagnosed as displaying dysthymia, 8% had anxiety disorder, 8%

had bipolar disorder, 7% had delusional disorder, 4% had thought disorder, 3% had major depression, and 3% had somatoform disorder. As indicated by the percentages, it was not uncommon to find multiple problems (Hiller, Knight, & Simpson, 1996).

This study (Hiller, Knight, & Simpson, 1996) also compared the relationship of the MCMI-II drug dependency scale with the composite drug use severity measure taken from the Texas Christian University Intake Form. Because probationers were sent to the SATF for drug-related offenses and 52% of the probationers reported using drugs at least once a week, it was expected that the composite drug abuse severity measure would classify a larger number of probationers as drug abusers than the MCMI-II. The composite classified 72% of the probationers as having drug abuse problems; whereas, the MCMI-II classified only 32% as drug dependent; therefore, the composite appears to have satisfactory face validity.

The final objective was focused on determining the prevalence and characteristics of comorbidity among Substance Abuse Treatment Facility probationers. The MCMI-II classifications and the composite drug use severity measure showed that 58% of the probationers exhibited comorbid problems. Comparisons were then conducted among three psychological problem groups: the psychopathology-only group, the drug problem-only group, and the comorbid group. The psychopathology-only group ($n = 35$) consisted of all probationers who were found to exhibit a psychological problem, other than substance dependency, by the MCMI-II but did not receive a drug abuse classification from the composite drug use severity measure. The drug problem only group ($n = 23$) consisted of probationers who were identified as being drug abusers by the composite measure but did not have other problems. The comorbid group ($n = 93$)

consisted of probationers who exhibited both MCMI-II psychopathology and a drug problem. As a result of small cell size, a fourth group (n =10) classified as having no problems were dropped from further analyses.

When pretreatment socio-demographic characteristics were analyzed, the data reflected that the comorbid group were involved in more illegal activities in the month before program admission (M = 4.6 days) than the psychopathology-only group (M = 0.4 days), F (2, 145) = 3.28, $p < .05$. There was no difference among groups in terms of other socio-demographic characteristics.

Psychological impairment was found to be prevalent among probationers remanded to treatment at the SATF, a local residential community corrections unit. This finding was consistent with previous findings (Hiller, Knight, & Simpson, 1994). On the basis of the MCMI-II, 80% were shown to exhibit psychological problems (excluding substance abuse); 60% had multiple classifications. Narcissistic, antisocial, passive-aggressive, dependent, aggressive-sadistic, avoidant, and self-defeating characteristics were found at prominent levels in more than 20% of the sample of which depression (i.e., dysthymia) was the most common clinical problem (14%).

The high occurrence of psychopathology and comorbid problems among these offenders is consistent with other research with criminal offenders (Abram, 1990; Teplin, 1990, 1994). These rates are also similar to those found in other substance abuse samples by researchers using other inventories. These researchers (Spitzer & William, 1986; Kleinman, Miller, Millman, Woody, Todd, & Lipton, 1990) using the Structured Clinical Interview for the DSM-III-R demonstrated that 72% of cocaine abusers entering

outpatient drug treatment exhibited concurrent Axis I or Axis II disorders in addition to comorbidity with cocaine dependence.

Endicott and Spitzer (1978) demonstrated that 44% of opioid-abusing clients entering a multi-modality treatment facility were found to have concurrent Axis I disorders as well as drug dependence. Robins, Helzer, Croughan, and Ratcliff (1981) determined that 68% of alcoholics and heterogeneous drug abusers entering a multi-modality program in Toronto had concurrent psychopathology and drug dependence (Ross, Glaser, & Germanson, 1988). In a national multi-site prospective study of substance abusers admitted to treatment, 39% had antisocial personality disorder, 12% had major depression, and 4% had generalized anxiety disorder (Flynn, Craddock, Luckey, Hubbard, & Dunteman, 1996).

Mental health concerns are also prevalent among substance abusers entering residential-based treatment (De Leon, 1989). An article published by Jainchill, De Leon, and Pinkham (1986) indicated that 67% of admissions to community treatment centers received comorbid Diagnostic Interview Schedule diagnoses.

Psychological problems often complicate the therapeutic process. Probationers with significant mental health concerns are frequently being sent to drug treatment centers (Hiller, Knight, & Simpson, 1996). As a result of psychological concerns, the most dysfunctional probationers often are disruptive during community meetings and often detract from the treatment experience for the other participants. These probationers frequently demand a large amount of time from staff members while making little progress in dealing with their problems (Woody, McLellan, & O'Brien, 1990).

Corrections-based treatment programs may find this situation problematic as they attempt to allocate scarce resources among those in their care (Hiller, Knight, & Simpson, 1996).

When comparing those diagnosed with comorbid conditions and those singly diagnosed with either drug abuse problems or psychopathology on pretreatment characteristics showed that the former engaged in more days of illegal activities, had poorer social adjustment, and gave higher ratings of their motivation for treatment (Hiller, Knight, & Simpson, 1996). Although criminal history, psychological dysfunction, and impaired social functioning are often indicators of poor prognosis, the findings suggest that therapeutic intervention can capitalize on the relatively high levels of treatment motivation exhibited by the comorbid group. Comorbid probationers at the Substance Abuse Treatment Facility (SATF) recognized problems associated with their drug use and appeared to be ready to work toward behavioral change (DiClemente, 1993; Prochaska & DiClemente, 1986).

When addressing specific drug use issues, McLellan et al., (1993) suggest that corrections-based treatment units consider psychosocial impairment. Research has demonstrated that treatment programs focusing on psychological and family problems have been found to increase treatment efficacy (McLellan et al.,1993). Treatment modalities that treat the entire person may expedite treatment outcomes of comorbid probationers who receive treatment in corrections-based residential programs. De Leon (1989) stated that the holistic approach of the therapeutic community has much to offer the increasing numbers of dual-diagnosed individuals who demonstrate their dysfunctions through drug abuse and psychological maladjustment.

One of the limitations of the Hiller et al., (1996) study was that the only instrument used to classify psychological problems was the MCMI-II. Relatively high interscale correlations, as well as modest intra-inventory agreements, raise concerns about the construct validity of some MCMI-II scales (Butler, Gaulier, & Haller, 1991), even though other studies have supported the MCMI-II as a reliable instrument for assessing psychological problems among substance abusers (Calsyn & Saxon, 1991). Under the best circumstances, multiple tools can be used to arrive at convergent classifications resulting in more accurate diagnosis and optimal treatment. The Hiller study was based on only one criminal justice treatment program and thus has questionable external validity (Cook & Campbell, 1979). Replication and generalizability of these results across other corrections-based treatment programs are needed.

In 2003, J. Howard, C. J. Lennings, and J. Copeland published a study conducted in Australia that broadens the subject of psychopathology and substance abuse to include suicidal behavior among young offenders. They report that the number of young men who commit suicide in Australia has rapidly increased over the past 15 years so that the rate of suicide for youth in Australia is now one of the highest in the industrialized world. These young people are at risk for other psychosocial behaviors (Baumeister, 1990).

The past five years have seen considerable investigation into the sequelae, correlates, and precipitants of suicide in young adults. Individual factors originally thought to increase a young person's vulnerability to suicide include depression, mental illness, and substance use, to name a few (Copeland & Howard, 1997). Social aspects include economic forces that create mobility in populations, marital dysfunction and family stress, along with attitudes of the population toward sexual orientation. Same-

sex attracted young people were about four times more likely to attempt suicide than their heterosexually oriented peers (Nicholas & Howard, 1998).

Garbarino (1995) referred to an elevation in negative indicators of social well-being. This elevation would include increased rates of child abuse, poverty, housing stress, family breakdown, violence, as well as the reduction of educational resources. These factors appear to represent an overall breakdown in community bonding and function.

Another factor that may either increase or reduce the risk factors for suicide are social policy incentives, such as increased frequency of custodial sentences for minor offenses that have an adverse effect on suicide rates. Kosky, Sawyer, and Gowland (1989) postulate that young offenders have a suicide rate that is four times higher than peers of their same age in the general population. Incarceration is thought to deprive these young individuals of access to resources for effective coping (Ivanoff, 1992). Another vulnerability for suicide is thought to be cultural factors (Dusevic, 2001) with certain ethnic groups and other populations being more likely to attempt suicide.

The literature, again, strongly supports the existence of a complex drug-crime interaction (Ball, Schafer, & Nurco, 1983; Dobinson & Ward, 1987; Ward, Mattick, & Hall, 1994; and for adolescents, Elliot, Huizinga, & Ageton, 1986; Dembo, Turner, Schmeidler, Sue, Bordern, & Manning, 1996). An increase in the rate of suicide has been noted in young people at residential treatment centers for substance abuse (Caviola & Lavender, 1999) as well as detention centers (Harris & Lennings, 1993).

A number of models have been advocated to clarify the relationship between criminal activity and substance abuse, the thought being that substance abuse and crime share predisposing antecedent causes. An annotation that is often made is that it does not matter which appears first, crime or substance abuse. In any case, substance abuse will increase the rate at which crimes are committed and aids in the maintenance of career criminal activity (Dobinson & Ward, 1987). According to Kandel, Raveis, and Davies, (1991), a complex relationship exists between self-harm attempts, substance abuse, and juvenile offending.

The debate is whether substance abuse may have a direct impact on suicide attempts (Crumley, 1990) or that substance abuse acts as a prompting factor, with the bulk of the predictive impact on attempted suicide related to other psychosocial factors. Baumeister (1990) states that the pathway or mediation model suggests that the factors that predict suicide also predict involvement in substance use (Howard, Lennings, & Copeland, 2003).

Howard et al. (2003) provide information on a considerable population of young offenders who have been incarcerated. The study investigates the interrelationship between deliberate self-harm and substance abuse. The hypothesis tested was that increased abuse of illegal substances will represent increased vulnerability to suicide attempts. They posit that, with a higher rate of substance abuse, frequency and lethality will increase. A mediation hypothesis presented suggests that substance use has an indirect effect on both the frequency and lethality of suicide attempts and that the factors that might predict suicide attempts (such as homelessness, past history of violence, and depression) will also be predictors of offending behavior (Howard et al., 2003). The

authors state that once these factors are controlled, there should be little or no effect for substance use as a predictor of suicide attempts.

It is important to understand the factors that are associated with the increased risk of suicide attempts in young offenders. The Howard et al. (2003) study was able to pinpoint that the primary indicators of past suicide attempts are actually psychosocial variables and not variables pertaining to substance abuse. Furthermore, an abundance of research reflects that young offenders experience more emotional difficulties and attempts to harm themselves in many parts of the world. Baumeister's (1990) notion that suicide is a tertiary response to anguish implies that instead of substance use variables directly predicting suicide, they may instead have common predictors. The role that prior exposure to violence and negative affect appear to be factors that are not as remarkable in the generation of self-harm, but rather ones that need to be addressed in therapeutic, rehabilitative efforts (Howard et al., 2003). The quality of early environment is thought to be marked by family dysfunction, child abuse, and exposure to domestic violence (Blackburn, 1993). Interventions that are efficacious in relieving exposure to violence will require significant social change (Garbarino, 1995).

Howard et al. (2003) state that the prediction of prior suicide attempts is only partly influenced by substance abuse. Instead, the number of attempts a person makes is reflective of the degree of difficulty and from which distress that a young adult may be suffering. The authors state that the number of suicide attempts a person makes is treated as an indication of the risk of future suicide attempts. What is interesting in this study is that lifetime substance use does predict the number of suicide attempts.

Substance use variables are the prevailing predictors of "suicide risk," but the young person's self-assessment of lethality does not appear to be associated with substance abuse variables. This study was not able to explain why the self-estimated lethality of the last attempt was not predicted by anything other than a marginal association with negative affect. An appropriate analysis may not have been possible with the large number of variables and fairly small sample size.

The study provides support for both the direct and mediation hypotheses. While substance use does not appear to be a direct predictor of suicide attempts, it is a powerful predictor of the number of attempts. Psychosocial variables, however, appear to be most directly predictive of actual suicide attempts (Howard, Lennings, & Copeland, 2003).

Type I and Type II Alcoholism

Finn, Sharkansky, Viken, West, Sandy, and Bufferd (1997).emphasized that alcoholism is heterogeneous with wide variation in dimensions such as severity, clinical course, comorbid psychopathology, cormorbid characteristics, age of onset, and family history of alcoholism. Heterogeneity in alcoholism has important implications for treatment because it examines various ways that alcoholism develops and the vulnerabilities that are conducive to the disorder

The DSM-III-R suggests a unitary nature of alcoholism while researchers emphasize differences in subtype. Distinctions in personality often form the basis for these typologies (Allen, Faden, Miller, & Rawlings, 1991). Type I alcoholism is characterized by lower heritability, has less childhood risk factors, the age of onset is later, there is less likelihood of dependence, novelty seeking is lower, and the desire to avoid harm is high. Type II alcoholism is characterized by higher heritability and

possibly more male dominance, more childhood risk factors, and greater likelihood of acting out. Severe dependence is prevalent along with psychiatric comorbidity, impulsivity increased high novelty seeking, low harm avoidance, and prevalent antisocial behavior (Ball, Carroll, & Rounaville, 1994). Babor et al. (1992) have validated this typology empirically and have predicted response to specific treatments (Litt, Babor, Delboca, Kadden, & Cooney, 1992).

Ball, Carroll, and Rounaville (1994) contend that sensation seeking may be an important component in the Type II classification, as suggested by its relationship to gender (Zuckerman & Neeb, 1980), age of onset of drug abuse (Sutker, Archer, & Allain, 1978) and childhood adolescent deviance (Newcomb & McGee, 1991).

According to Rounsaville et al. (1991), it is possible that sensation seeking may also be associated with psychiatric disorders, which are elevated in substance abusers as indicated by relationships between sensation seeking with hypomania and psychopathic behaviors (Sutker et al., 1978). In a study done by Zuckerman, Kuhlman, and Carnac (1988), sensation seeking was found to be closely related to personality traits such as impulsivity and novelty seeking. Other data suggest that sensation seeking is an important dimension in family history studies of opioid abusers and their high-risk siblings (Ball et al., 1994).

When this particular study on sensation seeking, psychopathology, and substance abuse was conducted, most research on this topic had not systematically assessed the severity of addiction-related impairment or psychiatric disorders on the basis of standard diagnostic criteria. Ball, Carroll, and Rounsaville (1994) state that most research on sensation seeking focused on either initial abuse of gateway substances or more chronic,

severe alcohol, opiate, and polysubstance dependence. Studying a wider range and larger number of clinical and community cocaine abusers than these two extremes of the continuum allows a better assessment of subtyping hypotheses.

The Ball et al. (1994) study predicted that sensation seeking would be related to the Type II category because of its stronger association with males rather than females, earlier age of onset, and more severe cocaine, alcohol, and other drug abuse as well as related psychosocial impairment. It was also predicted that high sensation-seeking cocaine abusers would have higher rates of antisocial personality and conduct disorder, have stronger family history for these disorders and for substance abuse, and have worse outcomes at one-year follow-up.

Sensation seeking seemed to fit into the Type II schema in its association with onset at an earlier age, childhood psychopathology, male gender, comorbid antisocial behavior and familial history of antisocial behavior, greater symptom severity, impairment, and polysubstance abuse. The methodological strengths of this study included the use of standardized assessments of substance abuse severity and psychiatric diagnoses in a group of treatment-seeking and community cocaine abusers and their first-degree relatives. Limitations included the exclusive reliance on subjects' self-reports of their own as well as family members' substance abuse and psychiatric histories without verification by significant others (Ball, Carroll, & Rounaville, 1994).

Although this study was not designed to explore sensation seeking, the assessment of this personality trait may be especially useful in future studies since it is one subtyping dimension that can be easily measured before problems develop in order to better pinpoint types of individuals who are at greater risk for drug use toward whom

prevention efforts can be targeted. Understanding subtypes is also important from the perspective of treatment development (Ball, Carroll, & Rounsaville, 1994). Type II alcoholics taking part in coping skills treatment received better outcomes than those receiving an interactional therapy. At the same time, coping skills therapies could focus on encouraging activities that satisfy high sensation seekers' motivational needs for novelty, risk, excitement, and avoidance of boredom (Sutker et al., 1978).

California Personality Inventory and Alcoholism

The California Personality Inventory (CPI) was developed as an inventory to evaluate enduring interpersonal characteristics of personality within normal populations. This instrument was first published in 1957 with the last revision taking place in 1996 as the CPI-R. This instrument consists of 434 items that require at least a 5th grade reading level and is generally appropriate for those 13 years of age and older. The CPI was standardized using 3,000 men and 3,000 women as test subjects (Craig, 1999). Compared to other personality inventories, the CPI-R reliability and validity is favorable. Test-retest reliabilities for individual scales are between a low median of .53 for Empathy to a high median of .80 for Self-control (Groth-Marnat, 1999).

One particular scale used to assess the probability of antisocial behavior was once referred to as the "delinquency scale," and, after a reversing the scoring and changing the name, it is now known as the Socialization (So) scale. The Socialization scale has become a measure of integrity, rectitude, and social maturity. This scale has very good concurrent, predictive, and cross-cultural validity (Groth-Marnat, 1999).

The construct of sociopathy has been classified as a noticeable factor affecting the development and management of alcoholism. The significance of sociopathy when

evaluating addictive disorders, and alcoholism specifically, is prevalent. A study found in a 1996 edition of the *Psychology of Addictive Behaviors* examined the psychometric properties of the California Psychological Inventory Socialization scale (CPI-So). This study consisted of 1,627 participants who took part in a national trial involving patient-treatment matching regarding abuse of alcohol (Kadden, Litt, Donovan, & Cooney, 1996).

According to Lewis, Rice, and Helzer (1983), it is not uncommon for sociopathy to be closely associated with alcohol dependence among patients who have sought treatment as well as those found among the general population (Helzer & Pryzbeck, 1988). It is also associated with high dropout rates from addiction treatment programs (Mandell, 1981).

An early onset of excessive drinking along with an increased progression to alcoholism have been found among those with sociopathic traits (Hesselbrock et al., 1983). Adolescents with sociopathic traits have been identified as a possible etiologic factor in the development of alcohol problems (Hartford & Parker, 1994). Suggested etiologic pathways include a "deviance proneness" path characterized by deficient socialization, impulsivity, aggressiveness, and sensation seeking and a "negative affect" path featuring proneness to negative affective states, high levels of life stress, and impaired coping ability (Kadden et al., 1996).

When first published (Kadden et al., 1996), there were no reports on the reliability of the CPI-So scale, but the authors state that this scale has been shown to be fairly independent of other measures such as socioeconomic status, race, intellectual ability, social desirability, anxiety, and ego strength. In their present study, a Cronbach's alpha

was used in computing internal consistency reliability. The overall reliability of the scale across all participants was satisfactory (a = .72). Alpha values were also computed separately for the CPI-So data obtained. These values ranged from .66 to .76, indicating a satisfactory consistency. There were no gender differences (the alpha value for both men and women was .72).

There have only been a few published reports on this scale being used with alcoholics. A study by McCormick, Taber, Kruedelbach, and Russo (1987) determined that patients admitted for alcohol treatment had considerably lower scores on the CPI-So than did patients on medical and surgical services. Low CPI-So data have also been related with increasing levels and recency of involvement with alcohol in adults and adolescents (Kurtines, Ball, & Wood, 1978).

Cooney, Kadden, and Litt (1990) compared the CPI-So with the PCL, the Psychopathic Deviate scale of the 168-item version of the Minnesota Multiphasic Personality Inventory (Overall and Gomez-Mont, 1974) in an effort to identify a measure of sociopathy that could serve as a basis for matching alcoholics to treatments, and a count of the number of *DSM—III* antisocial personality symptoms identified by the National Institute of Mental Health Diagnostic Interview Schedule. They performed a factor analysis of these four sociopathy measures that resulted in a one-factor solution, and the CPI-So had the highest factor loading. This result suggests that'the CPI-So has a strong degree of association with an underlying construct of sociopathy.

Minnesota Multiphasic Personality Inventory and Substance Abuse

A psychologist and a psychiatrist (Hathaway and McKinley, respectively) developed the Minnesota Multiphasic Personality Inventory (MMPI) in the late 1930s at the

University of Minnesota. It was designed to speed diagnosis and psychiatric treatment. They began with approximately 1,000 items generated by hospital staff, colleagues, and friends, as well as items drawn from other personality questionnaires. They administered these questions to 724 individuals who were mostly friends and family of hospital patients. The resulting sample matched the 1930 Census. Hathaway and McKinley attempted to see which questions distinguished the different diagnostic groups. Thus, if the majority of patients answered a question "true," it did little to distinguish between them, and was rejected. On the other hand, if one group endorsed an item more frequently than another group, the question would help to distinguish between them, and was kept. The test they designed would, ideally, allow them to simply test someone and determine his/her diagnosis. However, it is important to realize that diagnostic groups themselves were not discreet and unique entities. Patients with Manic Depressive, Depressive, and Anxiety Disorders share some symptoms, and the specificity of the DSM II is not like that of the DSM IV today. Further, just because someone endorsed items that schizophrenics endorsed did not mean he or she was schizophrenic (Craig, 1999).

In 1969 there was a symposium on the revision of the MMPI as it was becoming increasing evident that changes in society would alter previous patterns of endorsement. The MMPI was restandardized in the 1980s. Some items were removed, others were reworded, and new items were added. Three new validity scales were also added. A more representative norming sample was also collected, and the T Scores were normalized such that elevations on one scale were comparable to elevations on another scale. This configuration means that the raw to scaled score conversion tables were altered so that a T Score of 70 would represent the same percentile, regardless of the

specific scale. The result is referred to as a uniform T Score distribution. Adolescents were not included in the norming sample, and efforts were made to re-create and revalidate the test with a sample of adolescents. The new cutoff score for interpreting pathology is a T Score of 65. This transformation was done because the alteration of T score conversion resulted in overall lower scores (Craig, 1999).

A study found in *Psychological Assessment* (Stein, Graham, Ben-Porath, & McNulty, 1999) evaluated the ability of the MMPI-2 to identify patients with substance abuse concerns in an outpatient mental health location. The authors were particularly interested in the utility of the Addiction Potential Scale (APS), the Addiction Acknowledgement Scale (AAS), and the MacAndrew Alcoholism Scale-Revised (MAC-R). While conducting this study, they also assessed the validity of the AAS and APS in comparison to the MAC-R scale.

The MAC was developed to differentiate between those patients who were diagnosed as alcoholic and those not meeting that criterion. Construction of the scale was done by contrasting responses from 200 male alcoholics seeking treatment at an outpatient clinic with 200 male nonalcoholic psychiatric patients of the same establishment. Graham and Strenger (1988), reported that the MAC scale has been effective with both women and men, and has been equally effective for both inpatients and outpatients. Gottesman and Prescott (1989) stated that incorporation of the MAC scale to classify substance abusers is not as effective as many had assumed. These authors noted poor construct and predictive validity. They go on to note that most of the research reviewed by them also used a cutoff score of 24 in discriminating abusers from non-abusers, and that Graham (1993) suggested a cutoff score of 28. As with any

instrument, clinicians should not make diagnostic decisions on the basis of one instrument alone, but elevated scores on the MAC (or MAC-R) should forewarn clinicians that further collaborating information regarding the existence of a substance abuse problem is needed (Stein et al., 1999).

The Addiction Potential Scale (APS) scale was developed as an MMPI-2-based measure of the personality factors underlying the development of addictive disorders. The scale was empirically derived by selecting MMPI-2 items that differentiated alcoholics and drug abusers from psychiatric patients and normals. Scale development procedures followed those used by MacAndrew (1965) in developing the MAC scale except that the MMPI-2 item pool, which incorporated more relevant item content, was used. The target population is adults. Investigation of the clinical utility of the APS scale finds that it successfully detects personality characteristics that are associated with developing drug or alcohol abuse problems (Weed, Butcher, McKenna, & Ben-Porath, 1992).

The Addiction Acknowledgement Scale (AAS) was constructed to complement the APS. This additional scale consists entirely of items whose content suggests problems with substance abuse. Whereas the construction of APS began with an empirical search through the MMPI-2 item pool, the construction of the AAS began with a rational search through the pool for items with content indicating substance abuse problems. Fourteen such items were located. Three items not contributing to internal consistency were dropped and replaced by two items that improved scale internal consistency and were judged to be consistent in content with the items already identified. The AAS is comprised of these final thirteen items (Weed, Butcher, McKenna, & Ben-Porath, 1992).

The authors of this study (Stein et al., 1999) determined that scores on the three MMPI-2 substance abuse scales, MAC-R, APS, and AAS, were indeed related to interviewer ratings of substance abuse for this particular outpatient mental health sample. The three scales differentiated significantly between individuals classified by experienced interviewers as evidencing different levels of substance abuse behavior. Hierarchical regression analyses indicated that AAS added significantly and substantially to the MAC-R and APS scales in predicting substance abuse variance and that APS scale contributed only modestly to MAC-R on this task with this sample. Although identification accuracy analyses indicated that MAC-R and APS yielded acceptable overall hit rates, AAS produced the best classification rates in this sample. Identifying individuals who have the potential to abuse illicit substances is vital to the development of a successful treatment plan. The authors of this study have determined that the substance abuse scales incorporated into the MMPI-2 play an important role in this process (Stein et al., 1999).

NEO-PI-R and Opiate Abuse

The NEO Personality Inventory-Revised (NEO PI-R) is a succinct measure of the five chief domains of personality (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) as well as the six facets that define each domain. The theoretical basis behind the instrument's construction is known as the Five Factor Model. This instrument is an empirically developed measure of normal personality. The NEO-PI-R provides a systematic evaluation of emotional, interpersonal, experiential, attitudinal, and motivational styles. Taken together, the five domain scales and 30 facet scales of the NEO PI-R, including the scales for the Agreeableness and the Conscientiousness

domains, promote a comprehensive and detailed assessment of normal adult personality. There are useful applications for counseling, psychology, psychiatry, behavioral medicine, education, and personality research (Costa & McCrae, 1992). The NEO-PI-R has been used with those suffering with post-traumatic stress disorder, depression, schizophrenia, and schizoaffective disorders as well as substance abuse problems (Carter et al., 2001).

An important aspect of the assessment of personality traits is the stability of test data over time. Insufficient temporal constancy of personality trait scores increases concerns about the psychometric properties of the instrument and the overall validity of the traits being measured.

A study found in *Psychology of Addictive Behaviors* presents an interesting look at opioid-dependent outpatients who had been abstinent for at least 30 days and the short-term stability of personality trait scores from the NEO Personality Inventory (NEO-PI-R). Using a pretest-posttest format, 230 outpatients completed the 240-item instrument upon admission and again 19 weeks later. The results of the study reflect satisfactory stability for the NEO-PI-R factor domain scores. The coefficients were found to range between .68 and .74. Scores from this measure were found to decrease among potentially invalid response patterns but were not found to be significantly affected by drug-positive versus drug-negative standing during the follow-up. Stability coefficient factors for this sample were Neuroticism (.52), Extraversion (.73), Openness (.79), Agreeableness (.77), and Conscientiousness (.66). It should be noted that the inconsistent reporting styles of active drug users, the possible effects of daily methadone ingestion, and the impact of active heroin and use of other drugs may compromise the psychometric properties of any

self-report instrument. Results of this study are important as findings can be generalized to others among this population to help describe the personality characteristics of this group of patients. An important limitation of this study relates to the fact that conclusions represent only those who completed the NEO-PI-R at both pretest and posttest time points. Those patients who did not finish the initial or follow-up evaluation may represent a clinically distinct population containing major differences in trait stability (Carter, Herbst, Stoller, King, Kidorf, Costa, & Brooner, 2001).

MCMI Cluster Analysis Studies

The purpose of cluster analysis studies is to define the structure of the data by organizing the most common observations into groups (Grimm & Yarnold, 2000). Corbisiero and Reznikoff (1991) used the 20 MCMI-I clinical scales with male alcoholics in a cluster analysis study. Mean scores in the subclinical range on all scales characterized the first cluster. The second cluster revealed significant elevations on the Antisocial, Narcissistic, Paranoid, Alcohol Abuse, and Drug Abuse scales. The third cluster had elevations on the Passive-Aggressive, Schizoid, Dependent, Avoidant, Dependent, Anxiety, Dysthymic, and Alcohol Abuse scales. The subclinical cluster reported the least number of perceived benefits and adverse consequences associated with alcohol use on the Alcohol Use Inventory. The authors also found less compulsive alcohol use and a decrease in disruptive effects of alcohol use than those in the other two clusters. Members of the second (antisocial) and third (passive-aggressive/avoidant) clusters reported elevations of alcohol use. Those in the passive-aggressive/avoidant cluster appeared to be more involved with alcohol than those found in the other two clusters. Clients in the Passive-Aggressive cluster scores were particularly high on the

Alcohol Use Inventory Life Disruption Scale and were considered to be characteristic of severe alcoholics (Millon, 1997).

Retzlaff and Bromley (1991) conducted a research project that canonically correlated the MCMI-I clinical scales and the 11 Basic Personality Inventory (BPI) scales and cluster analyzed the canonical variates (Jackson, 1989).

The BPI is a multiphasic personality inventory that was created to identify sources of maladjustment and personality strengths. It requires a 5th grade reading level, and therefore can be easily administered to adolescents and adults. This instrument is made up of 240 true/false items, 11 substantive clinical scales, and one critical item scale. Administration time normally takes 35 minutes. This study revealed a total of six clusters. Highly elevated scores on the Schizoid, Passive-Aggressive, Avoidant, Dysthymia, Anxiety, Drug Abuse and Alcohol Abuse scales defined the first cluster. General distress, social introversion, self-deprecation, depression, and interpersonal problems appeared to best characterize this cluster. The second cluster had a single clinical elevation on the Histrionic scale with few associated concerns. The third cluster revealed elevated scores on the Anxiety, Dependent, Dysthymia, and Alcohol Abuse scales. High levels of anxiety and depression scores on the BPI characterized this cluster. The fourth cluster had one elevation on the MCMI Narcissistic scale, but was found to be low on the BPI scales that measured depression, anxiety, hypochondriasis, and impulse expression. The fifth cluster was defined by significant clinical elevations on the Dependent, Avoidant, Passive-Aggressive, Dysthymic, Anxiety, Somatoform, and Hypomania scales. The BPI revealed high levels of hypochondriasis and moderate elevations of depression, anxiety, self-deprecation, thought disorder, and impulse

expression. High scores on Schizoid, Dysthymia, Anxiety, and Alcohol Abuse characterized the final cluster. BPI scores confirmed social introversion and low impulse expression within this cluster (Millon, 1997).

Matano, Locke, and Schwartz conducted a study incorporating the 11 MCMI personality scales in 1994. They used separate cluster analysis for male and female alcoholics. The clusters were then compared on the basis of scores of research measures of interpersonal concerns and alcohol use.

The first clusters involving both men and women showed scores in the subclinical range on all MCMI-I personality scales. The second cluster for the male sample showed elevations on the Passive-Aggressive, Schizoid, Avoidant, and Borderline scales. The females second cluster reflected clinical elevations on the Passive-Aggressive and Borderline scales. The third cluster showed a significant increase on the Antisocial and Narcissistic scales for males and on the Histrionic and Narcissistic scales for females. Females demonstrated less alcohol consumption than males, and subclinical clusters for both men and women were indicated by later onset of both drinking and alcohol problems than those found in clinical clusters.

Craig, Verinis, and Wexler (1985) organized separate hierarchical cluster analyses of the MCMI-I profiles on groups of alcoholics and those addicted to opiates. Two clustered emerged in the analysis of opiate addicts. The first included MCMI-I profile spikes on the Antisocial and Narcissistic scales with moderately elevated scores on the Passive-Aggressive and Avoidant personality scales. The Anxiety and Dysthymia scales also reflected elevated scores. The analysis involving alcoholics led to the identification of four clusters. Higher scores on the Passive-Aggressive, Borderline, Paranoid, and

Anxiety scales defined the first cluster and could be a severe personality pathology group. The second group revealed elevations on the Avoidant, Dependent, Schizoid, and Passive-Aggressive symptom scales as well as the Dysthymic and Anxiety symptom scales. The third cluster revealed elevation on the Compulsive scale. Scores were found to be within the normal range on other scales. The final cluster had high scores on the Narcissistic, Paranoid, and Antisocial personality scales along with elevations on the Dysthymia and Drug Abuse scales (Millon, 1997).

In summary, the identity of a number of rather distinctive personality based clusters came about as a result of cluster analytic studies. Distinction among these cluster types in terms of severity of alcohol and drug abuse problems, responsiveness to treatment, and possible motivations for substance use were covered in these research projects. Typically, cluster analysis involving alcoholics results in the classification of a larger number of clusters than those of substance abusers. Research projects that involved MCMI-I and II scale-level comparisons of groups classified according to their drug of choice were harder to interpret. The differentiation of personality patterns was found to be very useful when exploring transient and enduring depression among alcoholics in many of the research projects (Millon, 1997).

McMahon Clusters

Robert C. McMahon, along with Robert Malow and Frank Penedo (1998), conducted a research project that clinically identified different psychopathology subgroups using male veterans in their study. Their entire study examined substance abuse problems, HIV risk, and psychiatric severity with data obtained from the MCMI-II.

HIV risk will not be measured here, but other observations from the McMahon study will be explored further.

The MCMI is widely used because the instrument is based on both psychopathology and personality theory (Millon, 1981) with the clinical symptoms and personality disorder categories found in the *Diagnostic and Statistical Manual of Mental Disorder (DSM)* published by the American Psychiatric Association (McMahon, Malow, & Penedo, 1998).

Three homogeneous psychopathology subtypes derived from hierarchical agglomerative cluster analysis of the MCMI records divulged in the McMahon et al. (1998) study. The study refers to the first as the antisocial cluster subgroup. Those associated with this group are classified as manipulative, exploitive, and interpersonally dominating. These characteristics are said to make them unsuitable for psychotherapy because of their strong sense of self-rule, and their sense of independence often interferes with what the authors refer to as "externally imposed expectations for attitude and behavior change inherent in treatment for substance abuse" (McMahon, Malow, & Penedo, 1998). A lifestyle of self-indulgence and thrill-seeking is thought to associated with drug use in this cluster (Millon, 1981).

Those included among the high pathology cluster subgroup are substance abusers with pathology scores in the clinical range, which is a base rate of 75 or higher. This group is described as displaying unstable moods and erratic behavior. Their attitudes are pessimistic in nature, and they may believe that people are watching them all the time or that others are out to get them or that which belongs to them. Characteristics of this subgroup also include irascibility and petulance, feeling that others are taking advantage

of them, and periodic displays of acting out. Substance abuse is attributed to attempts to handle the frustrations that come from these feelings (McMahon, Malow, & Penedo, 1998).

The last of the three subgroups is the subclinical cluster subgroup. This group is made up of those with lower levels of clinical symptomology and fewer substance abuse concerns than members of other subgroups (McMahon, Malow, & Penedo, 1998).

MCMI Alcohol and Drug Dependence Scales

The MCMI scales that were originally designed to assess alcoholism and drug abuse problems have gone through a number of revisions over the past several decades resulting in the current MCMI-III format. The number and composition of items in the alcohol and drug scales have changed from version to version, but the clinical features and interpretive descriptions of the scales have not changed significantly (Millon, 1997).

Theodore Millon (1994) defined the characteristics of Scale B (Alcohol Dependence) as those related to alcoholism. Patients who scored high were likely to have a history of misusing alcohol, limited success in controlling alcohol use, and negative alcohol-related consequences in social, occupational, and familial settings. There are 15 true and false items, 14 of these are keyed true. Prototypic items are those considered central to the construct measured by the scale (Millon, 1997). Of the 15 items, six are related to DSM-IV substance dependence and abuse criteria. Those items remaining are affiliated to DSM-III-R or DSM-IV personality disorder variables. Scale B items are also incorporated into eight other DSM-IV scales.

MCMI-III Scale T (Drug Dependence) investigates drug abuse histories and prevailing drug abuse problems (Millon 1994). This scale is comprised of 14 true/

false items; all of these are keyed true. Six of the scale's items correspond to DSM-IV substance dependence or abuse criteria and are given a weight of two. The remaining eight are mostly correlated to DSM personality disorder criteria and evaluate items other than those pertaining to substance abuse or dependence.

Substance Abuse Subtle Screening Inventory

The Substance Abuse Subtle Screening Inventory (SASSI) was developed to assist in diagnosing chemical dependency, regardless of how honest the examinee was being at the time of administration (Miller, 1985). There are three versions of the SASSI. The SASSI-2 was released in 1994. The latest version, the SASSI-3, was released in 1998. Schmidt (2001) stated that the SASSI-3 contains no items that are not found in the SASSI-2. The second version has been used frequently among persons referred to substance abuse treatment and has been widely administered within the criminal justice system (Schmidt, 2001).

The SASSI is made up of both direct and indirect measures. The direct measures ask openly about substance abuse issues and as a result have been found to have high face validity. The indirect measures are derived empirically using a contrasted-groups approach such as that used with the MacAndrew Scale of the Minnesota Multiphasic Personality Inventory (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989). Face validity for these scales is somewhat lower than that found with the direct scales (Gray, 2001).

Responses from three groups were used in the initial SASSI test construction: (a) substance abusers; (b) non-substance abusers; and (c) a second set of responses from the substance abusers, this time instructed to "fake good" as if they were not substance

abusers. From this three scales were developed Obvious Attributes, Subtle Attributes, and Defensiveness.

The Risk Prediction Scales (RPS) are a different set of items that were added later to the SASSI to enhance predictive validity (Miller, 1985). These scales are derived from the Face Valid Alcohol (FVA) and Face Valid Other Drug (FVOD) portion of the questionnaire. The first is made up of 12 questions specifically about alcohol; the latter is composed of 14 questions that assess the examinee's involvement with illegal drug use. The decision rules formulated by the SASSI's developers to determine if the examinee has a substance abuse problem rely on the RPS direct scales first and then the indirect scales (Gray, 2001).

Gray (2001) conducted a factor analytic study using two samples. There were 888 respondents in the first sample composed of people referred to a central agency by the criminal justice system because of substance abuse problems that led to legal difficulties. They were asked to complete the SASSI-2 as part of the intake process. Sample demographics were mostly male (80%), Caucasian (64%), African American ((12%) and Hispanic (23%). The mean age was 31years ranging from 12 to 68 years. Most of the respondents had at least a 12^{th} grade education. The second sample was comprised of 580 protocols obtained from an agency that provided psychoeducational programming for those convicted of Minor in Possession of Alcohol. The SASSI-2 had been used for a number of years as a regular part of the intake process. Respondents were again mostly Caucasian (81%) males (63%). Hispanics only made up 9% of this particular group (Gray, 2001).

Internal consistency scores reflect satisfactory reliability for the FVA and FVOD scales. The author states that value of the FVA was lower for the second sample. Both samples showed less impressive reliabilities on the Supplemental Addiction Measure (SAM), Family (FAM), and Random Answer Pattern (RAP) scales. The remaining indirect measures also reflected less powerful alpha coefficients (Gray, 2001). The following table lists the internal consistency scores found in the Gray (2001) study.

Table 1. *Alpha coefficients for SASSI-3 Subscales taken from Gray (2001) study*

	Sample	
	1 (n = 888)	2 (n = 580)
Face Valid Alcohol (FVA)	.90	.78
Face Valid Other Drugs (FVOD)	.94	.88
Obvious Attributes (OAT)	.76	.63
Subtle Attributes (SAT)	.25	.24
Defensiveness (DEF)	.66	.41
Supplemental Addiction Measure (SAM)	.29	.22
Family (FAM)	.30	.19
Corrections (COR)	.72	.54
Random Answering Pattern (RAP)	.34	.32

One area of concern reported by Gray (2001) is that there is a considerable degree of overlap among the SASSI-2 scales suggesting that the model for this particular instrument was overspecified. Some questions are present in different subscales resulting in homogeneity (Schmidt, 2001).

Gray (2001) was not encouraged by the psychometric properties of the factor analytic study. Confirmatory Factor Analysis (CFA) reflected an unimpressive fit between the Sample 1 data and a model based on the SASSI's scoring keys. Gray confirmed this by performing an Exploratory Factor Analysis taking out 10 factors. Further attempts to modify the SASSI scales to show improved psychometric properties with at least one sample were unsuccessful (Gray, 2001).

Summary of Chapter 1

Measurement of substance abuse has been attempted for many years, for the reliability of the assessment process is vital in order to devise an accurate diagnosis and subsequent treatment plan. The clinicians need to feel confident that they have chosen the proper tool. One of the most widely used instruments incorporated to assess alcohol and/or drug dependence is the Substance Abuse Subtle Screening Inventory (SASSI). A factor analytic study revealed that the internal consistency scores for the direct scales reflect satisfactory reliability while the indirect scales were less powerful.

A second measure of the same criterion extends the assessment process one step further by either validating or invalidating diagnostic considerations. This study will compare the alcohol and drug dependence scales embodied in the Millon Clinical Multiaxial Inventory (MCMI) to those of the SASSI to compare the results. The internal consistency for the MCMI scales are satisfactory with test-retest reliability ranging from .84 to .96 between a one-to two-week period.

Another area of interest when assessing substance abuse which may be reflective of dual-diagnosis are personality disorders. Many personality assessment instruments analyze substance abuse. The Minnesota Multiphasic Personality Inventory (MMPI), a valid and reliable instrument used by many in the field, has three subscales that explore various aspects of drug dependency; the same is true of the California Personality Inventory, and the NEO-PI-R. Another widely-used personality inventory is the MCMI, often used to examine personality disorders and major clinical syndromes.

Using the MCMI-II, McMahon et al. (1998) conducted a study on substance abuse, psychiatric severity, and Human Immuno Virus risk, resulting in findings that would be

of interest to many clinicians. Through use of hierarchical agglomerative cluster analysis, the research team clinically identified three personality subgroups among substance-dependent participants: the antisocial cluster subgroup, the high pathology cluster subgroup, and the subclinical cluster subgroup. According to this research team, members of the high pathology subgroup appeared to have more substance abuse concerns and psychiatric problems than what was found in other subgroups. Their findings also suggest that the MCMI plays a vital role in pinpointing personality subgroups with different treatment requirements. The present study attempted to replicate those findings.

Dissertation Hypotheses

Hypothesis One

It was hypothesized that three major clusters of respondents would obtained that are similar to the three-cluster solution reported by McMahon, Malow, and Penedo (1998): a high pathology cluster, an antisocial cluster, and a subclinical cluster. Hypothesis 1 was tested on 269 subjects.

Hypothesis Two

It was hypothesized that there will be significant Pearson product moment correlations between two of the MCMI scales (Alcohol Dependence and Drug Dependence) with the SASSI subscales (Face Valid Alcohol, Face Valid Other Drugs, Obvious Attributes, Subtle Attributes, Defensiveness, Supplemental Addiction Measure, Family, Corrections). Hypothesis 2 tested the validity of the two MCMI-III scales against the criterion of the SASSI subscale scores. As an additional test of Hypothesis 2, it was predicted that, when the sample was divided into two groups based on the SASSI

probability determinant (High vs. Low probability of substance dependence), the two groups will show significant differences in mean scores for the MCMI-III Alcohol Abuse scale and Drug Abuse scale.

Hypothesis Three

It was hypothesized that a large canonical variate will show a significant relationship between a set of MCMI-III variables indicative of clinical pathology and scores on the SASSI, indicative of drug and alcohol abuse.

CHAPTER 2

Research Methodology and Procedure

The present study investigated whether there is criterion validity between the Millon Clinical Multiaxial Inventory (MCMI-III) and the Substance Abuse Subtle Screening Inventory (SASSI-3) regarding the assessment of substance abuse. The goal was to determine if the Base Rate scores achieved on the MCMI-III accurately predict alcoholism and/or drug abuse with scores on the SASSI-3

Other aspects of this study explored the clusters found in Dr. Robert McMahon's substance abuse research involving the MCMI to see if his findings are replicated with this population. Finally, the study will investigate what, if any, DSM-IV personality clusters are prevalent, as measured by the MCMI-III.

Participants

Data were randomly selected from archival assessments on file at a correctional institution in Louisiana and did not date back farther than the year 2001. The maximum security institution incarcerated male inmates 18 years of age and older. None of the inmates assigned to this facility had been diagnosed with mental retardation or was considered to be developmentally delayed. The male inmates were in the custody of the Louisiana State Department of Corrections after being charged with one or more felony crimes. There were no female participants housed at this facility.

The population was selected because a number of inmates that come through the reception and diagnostic center have abused drugs and/or alcohol. Some inmates reported that they were under the influence while committing their offense. A thorough review of the MCMI-III and SASSI-3 was warranted to ensure an accurate diagnosis of substance dependence, thus enhancing treatment goals.

Instruments

There were two assessment instruments used in the current study. The first was the Millon Clinical Multiaxial Inventory (MCMI-III). The second was the Substance Abuse Subtle Screening Inventory-3 (SASSI-3).

The Millon Clinical Multiaxial Inventory-III (MCMI-III). The MCMI-III is a self-report personality measurement constructed by Theodore Millon and originally developed to operationalize Millon's theory of psychopathology. Millon made the decision to revise the MCMI-II as a result of theoretical, professional, and empirical concerns. The theory that the MCMI-I and MCMI-II were originally constructed on has continued to evolve. The theory is no longer based on behavioral principles of reinforcement and conditioning (Millon, 1969, 1983, 1981; Millon & Everly, 1985). The theory is now based strongly on evolutionary theory (Millon, 1990; Millon & Davis, 1996). As a result of this change, personality disorders are seen as evolutionary constructs. The clinical field has undergone a number of professional changes and developments. There have been over 400 research articles produced that have incorporated the MCMI. This type of empirical base led to several major refinements in the structure of the MCMI-III (Millon, 1997).

The MCMI-III is the most recent version and was designed to comply with the diagnostic criterion set forth by the *Diagnostic and Statistical Manual of Mental Disorders – IV* (American Psychological Association, 1994).

The instrument consists of 175 questions and usually takes approximately 30 minutes to administer. Respondents are asked to answer either "true" or "false" to items designed to assess 14 personality patterns and 10 clinical syndromes. The MCMI was normed on 998 adult psychiatric outpatients 18 years of age and older (Millon, 1997). Since the test was introduced, the MCMI has often been used to examine personality disorders and major clinical syndromes and is considered to be a valid and reliable instrument. The clinical and personality scales contain 12 to 24 items each. Using Cronbach's (1951) alpha, the internal consistency of the scales was estimated to be .67 to .90, and the test-retest stability was estimated to be .84 to .96 over a five to 14-day period (Strack, 1999).

In an effort to assure that a MCMI-III profile is a valid indicator of the person's true psychological state, it is important to first observe and interpret the validity scales comprised of three modifier indices. These three scales evaluate highly questionable events and occurrences that are not common to most people in an effort to evaluate those who respond randomly or who may be confused. *Disclosure* (Scale X) attempts to estimate the degree of self-disclosure and willingness to admit to problems. *Desirability* (Scale Y) appraises the examinee's tendency to answer items in such a way as to appear to be without problems or concerns. Endorsement of items on *Debasement* (Scale Z) often reflects the person's tendency to accentuate or exaggerate problems (Strack, 1999).

As stated above, there are 14 measures of clinical personality pathology (11 clinical and three severe). The following is a limited synopsis of these personality types. *Schizoid* (Scale 1) individuals tend to be apathetic and noted for their lack of desire along with their incapacity to experience deep pain or pleasure. *Avoidant* (Scale 2) individuals have a tendency to be always on guard, experiencing few positive reinforcers. A constant vigil is maintained to prevent their longing for affection from resulting in repetitious anguish and emotional pain. *Depressive* (Scale 2B) individuals reflect commonalities with the first three clinical personality patterns, experiencing a lack of joy, pessimism, and projecting a degree of psychomotor retardation. *Dependent* (Scale 3) individuals are often characterized by leaning on others for affection, guidance, and security, and turning to others for nurturance. *Histrionic* (Scale 4) persons are often characterized as overtly dramatic in an attempt to maximize attention received from those around them. *Narcissistic* (Scale 5) individuals often reflect a sense of self-entitlement, taking great pleasure in focusing attention on themselves. *Antisocial* (Scale 6A) characteristics are reflected in behaviors that are irresponsible and impulsive. *Sadistic/Aggressive* (Scale 6B) remains a construct of the MCMI-III although it was deleted from the DSM-IV. These individuals have a tendency to be hostile and pervasively combative and may appear to be indifferent. *Compulsive* (Scale 7) measures characteristics found in those who tend to prudent, perfectionistic, and controlled. The *Negativistic* (Scale 8A) refers to individuals also known as Passive-Aggressive. They may display erratic patterns of explosive anger or stubbornness intermingled with periods of shame and guilt. *Masochistic* (Self-Defeating) (Scale 8B) individuals normally relate to others in a self-sacrificing manner and may place themselves in an inferior light (Strack, 1999).

There are three measures of severe personality pathology. The first of these is *Schizotypal* (Scale S). This scale looks at individual characteristics related to social isolation with minimal personal obligations and attachments. The second is *Borderline* (Scale C). These individuals often experience intense endogenous moods with periods of apathy and dejection with feelings of anxiety, anger, and euphoria interspersed. The third is *Paranoid* (Scale P). Persons with this personality disorder find it difficult to trust others and become defensive when perceiving criticism. They often fear loss of independence and are inflexible in thought. The MCMI-III has six Axis I symptom scales which assess the following disorders. *Anxiety* (Scale A) refers to individuals who are anxious, tense, and often apprehensive. *Somatoform Disorder* (Scale H) refers to persons who appear to be obsessed or preoccupied with vague physical concerns that do not have an organic cause. *Bipolar* (Scale N) may also be termed Manic Disorder. These individuals have an over abundance of energy, are restless, impulsive, and find it difficult to sleep. *Dysthymic Disorder* (Scale D) is diagnosed in those individuals who are depressed but maintain the ability to function on a day-to-day basis. *Alcohol Dependence* (Scale B) is diagnosed for those whose personality traits that are associated with abusing alcohol and/or admitting to problems with alcohol. *Drug Dependence* (Scale T) is diagnosed for those who admit they have problems with illicit drugs or endorse items in that direction. *Post-Traumatic Stress Disorder* (Scale R) is assessed in those who report intrusive memories of a traumatic event(s). These individuals may experience repeated flashbacks, become hypervigilant, and suffer recurring nightmares (Strack, 1999).

Strack (1999) stated that the final three measures on the MCMI-III are the severe syndromes scales. The first is *Thought Disorder* (Scale SS) which is elevated in those individuals who experience thought disorders reaching psychotic proportions, many times reporting delusions and hallucinations. Those with *Major Depression* (Scale CC) are often severely depressed, unable to function on a daily basis, may become vegetative, are unwilling to get out of bed, and feel hopeless. Persons who are acutely paranoid with irrational and delusional thought processes will have elevated scores on the last of the three severe syndromes, *Delusional Disorder* (Scale PP).

Scores for the MCMI-III clinical and personality syndromes are standardized as base rate (BR) scores rather than T scores. Millon's thought (1997) was that T scores would be inappropriate because of the assumption of a normal population distribution when the normative sample for this instrument actually consisted of adult psychiatric patients. BR scores of 75 were allocated to the minimum raw score acquired by patients who met criteria for the particular disorder or condition. BR scores of 85 were assigned to the minimum raw score of patients who were found to meet criteria for a particular disorder. BR scores between 75 and 84 on the MCMI-III represent the presence of clinically significant personality traits. For the clinical syndrome scales, BR scores of 75 to 84 suggest the presence of a particular syndrome, while those BR scores of 85 and above represent the prominence of a particular syndrome (Strack, 1999).

The Substance Abuse Subtle Screening Inventory-3 (SASSI-3). The first publication of the Substance Abuse Subtle Screening Inventory (SASSI) by Miller was in 1990. It is a self-report assessment tool used to determine the "high" or "low" probability of having a substance dependence disorder. The SASSI-3 does not take long

to complete, is easy to administer, and is objectively scored. In order for the SASSI-3 to be considered valid, the examinee must have at least a 6th grade reading level. Subtle true/false statements such as "Most people laugh at a joke at times," or "I have been tempted to leave home" may appear to be unrelated to substance abuse but are useful in identifying individuals who have substance dependence disorders even if the person does not openly admit to substance misuse (Miller, Roberts, Brooks, & Lazowski, 1997).

This instrument has ten subscales. The profile has two face-valid scales on one side and eight true/false scales on the other side. The Face Valid Alcohol (FVA) and Face Valid Other Drugs (FVOD) evaluates how frequently clients experienced certain situations that are related to substance abuse (Miller, Roberts, Brooks, & Lazowski, 1997).

The following is a breakdown of the remaining eight subscales. *Symptoms* (SYM) calculates the causes, consequences, and correlates of substance abuse. *Obvious Attributes* (OAT) looks at various characteristics that are normally associated with substance misuse. *Subtle Attributes* (SAT) examines personality styles that are common among people with substance dependence problems. *Defensiveness* (DEF) may or may not be related to substance abuse and may reflect a lasting character trait or a temporary response to a current situation. *Supplemental Addiction Measure* (SAM) supplements other scales in decision rules that are not used in clinical interpretation. The *Family vs. Control* (FAM) subscale assesses similarities among family members of persons with substance dependence concerns. The *Correctional* (COR) subscale looks at similarities the person may have with others who experience extensive legal problems. Finally, the *Random Answering Pattern* (RAP) views the method used in responding to the questions

in order to determine if the responses are appropriate and valid. Once completed, the results are reported on the SASSI-3 profile form. One side is for males, the other for females. Interpretation of the SASSI-3 profiles may also be useful to the clinician by suggesting possibilities that may be help understand the client better thus enhancing treatment. The SASSI-3 decision rules have been found to identify substance dependence disorders with a 94% empirical accuracy rate. This instrument is also 93% accurate in identifying persons who do not have a substance dependence disorder (Miller, Roberts, Brooks, & Lazowski, 1997). Listed in Table 2 below are SASSI-3 subscale titles along with alpha coefficients derived for the SASSI-3.

Table 2. *Alpha coefficients for SASSI-3 Subscales from SASSI-3 Manual*

Overall SASSI-3	.94
Face Valid Alcohol (FVA)	.94
Face Valid Other Drugs (FVOD	.96
Symptoms (SYM)	.85
Obvious Attitudes (OAT)	.73
Subtle Attitudes (SAT)	.29
Defensiveness (DEF)	.63
Supplemental Addiction Measure (SAM)	.58
Family vs. Controls (FAM)	.42
Correctional (COR)	.79

Procedure

As inmates are processed through the reception and diagnostic center, background information was obtained from staff members who have completed graduate level training in psychodiagnostic assessment. The intake process allowed the mental health personnel to acquire demographic, psychosocial, criminal, substance abuse, military, and brief medical histories. Inmates are routinely required to complete a series of assessment instruments. Completion of the testing process is a mandatory regulation set forth by the Department of Corrections in an effort to ascertain overall intellectual functioning and

personality characteristics. This assessment procedure, in turn, enhances the ability of the staff to provide appropriate treatment needs. The MCMI-III is administered to determine characteristics of personality, and the SASSI-3 evaluates the probability of substance abuse. A clinical assessor proctored the testing procedure and made every attempt to ensure an optimal environment. Prior to test administration, all participants were guaranteed anonymity.

Data were collected from files dating from 2001, 2002, and 2003. Files were randomly selected from a pool of Department of Corrections (DOC) numbers that are assigned to each inmate upon entering the DOC system. This method of selection has been chosen to protect anonymity. Once the files are pulled, all identifying information was blacked out prior to review. A population of 500 participants were included in this study.

It should be noted that some of the MCMI-III and SASSI-3 profiles were considered either invalid or of questionable validity because of reading level. The MCMI-III sets reading validity at an 8th grade reading level (Millon, 1997). The SASSI-3 sets reading validity at a 6th grade reading level (Miller, Roberts, Brooks, & Lazowski, 1997). Reading levels were determined by administering the Wide Range Achievement Test -3. All those found to have below average reading levels were discarded and not included the results of this study.

Data Analysis

Data collected for this study were analyzed to determine if congruous groups were found among the MCMI-III data. Further testing was executed to determine how these clusters related to subscales on the SASSI-3.

A canonical correlation analysis (CCA) was used to investigate the relationship between the variable sets. CCA was used to determine whether or not a large canonical variate would reveal a distinctive relationship between MCMI-III variables indicative of clinical pathology and scores obtained on the SASSI-3, indicating abuse of drugs and/or alcohol.

CHAPTER THREE

Results

Presentation of Data

Data were analyzed to test the hypotheses about the relationship between personality clusters and substance dependence among male inmates housed at a Southern correctional institution. The outcome of the data analyses is presented in this chapter. First, descriptive statistics for the full sample (N = 500), including MCMI-III and SASSI-3 scale means and standard deviations, will be presented.

Descriptive statistics

A sample of 500 male inmates was used. They were randomly selected from archival assessment data at a Southern correctional facility. The inmates had a mean age of 30 years (SD = 9.7). The ethnic distribution of the sample was approximately 31% European Americans, 67% African Americans, with the remaining 2% of other ethnic groups. Among this sample, 70% were single, 14% were married, 11% were divorced, 1% was widowed, and 2% reported cohabitation. A review of education records revealed that 2% received only an elementary school education, 46% had an incomplete high school education, 18% graduated from high school, 18% received their GED, 10% had some college education, 1% completed two years of formal college education, while another 1% completed four years of college.

Concerning the criminal records of this sample, 31% were charged with nonviolent felony offenses such as simple burglary, forgery, or driving while intoxicated; 29% were charged with violent felony crimes such as manslaughter or first degree robbery; while 39% were charged with drug-related felony offenses such as distribution and possession. The percentages exceed 100% because some inmates had multiple charges.

From the initial sample of 500 subjects, a total of 269 reported drug and/or alcohol abuse problems based on their SASSI-3 responses. This 269 respondent sample was selected for testing Hypothesis 1 in an effort to make the sample used as similar to the McMahon et al., (1998).

Results of Hypothesis 1

Hypothesis 1 stated that three major clusters of respondents would be obtained and that the nature of the three clusters would be similar to the three-cluster solution reported by McMahon et al., (1998). It was specifically predicted that the three clusters would be consistent with the following interpretation: a high pathology cluster, an antisocial cluster, and a subclinical cluster.

Hypothesis 1 was tested by cluster analysis, a statistical method to classify cases (i.e., persons) into homogeneous categories based on scores on a set of variables. The cases selected for clustering were 269 male prisoners who self-reported substance abuse problems with alcohol and/or drugs. The variables that served as the basis for cluster analysis were the same 22 MCMI-III scales used by McMahon et al., (1998). These MCMI-III scales were: Schizoid, Avoidant, Dependent, Histrionic, Narcissistic, Antisocial, Aggressive (Sadistic), Compulsive, Passive-aggressive, Schizotypal, Borderline, Paranoid, Anxiety Disorder, Somatoform Disorder, Bipolar Disorder, Self-

Defeating, Dysthymic Disorder, Alcohol Dependence, Drug Dependence, Thought Disorder, Major Depression, and Delusional Disorder. The SPSS k-means cluster analysis procedure was selected as the clustering method. A standard distance measure was used to compute an index of similarity. The k-means method allowed the researcher to specify the number of clusters initially and the number of iterations of the clustering algorithm to be performed. Convergence on a three-cluster solution occurred after the sixth iteration.

A comparison of mean scores for the MCMI-II and the MCMI-III are reflected in Table 3. This allowed a direct comparison of the three clusters extracted from both the McMahon study and the current study.

As indicated in Table 3, Cluster 1 in the current study shows elevations on twelve of the 22 MCMI-III scales, six of which are in the clinically significant range (above 80). The six clinically significant elevations are on the following scales: Avoidant, Antisocial, Passive-aggressive, Anxiety Disorder, Alcohol Dependence, and Drug Dependence. Cluster 1 further revealed clinical elevations with a base rate between 75.6 and 80 on five of the remaining MCMI-III scales, including clinically significant elevations on Schizoid, Self-Defeating, Schizotypal, Paranoid, and Dysthymic Disorders. The final elevation in this cluster was on the MCMI-III Borderline scale at 75.0.

These elevations closely resemble the MCMI-II scale structure obtained on McMahon's high pathology cluster. In this category, the McMahon data reflect a total of ten clinical elevations (above 80). Five out of 10 MCMI-II scales that showed clinically significant elevations in McMahon's study match those MCMI-III scales with elevations in the current study: Avoidant, Antisocial, Passive-aggressive, Alcohol Dependence, and

Table 3.
Means for MCMI-II & III Scales by MCMI-II & III Defined Clusters from McMahon, Malow, and Penedo (1998) and the current study.

	McMahon Cluster 1 High Pathology (n = 91)	Flye Cluster 1 High Pathology (n=121)	McMahon Cluster 2 Antisocial (n = 160)	Flye Cluster 2 Antisocial (n=91)	McMahon Cluster 3 Subclinical (n = 40)	Flye Cluster 3 Subclinical (n=57)
Schizoid	74.7	78.9	65.1	66.0	39.5	44.5
Avoidant	91.8	81.0	69.2	56.7	27.0	17.3
Dependent	52.8	73.9	57.2	48.0	51.9	28.2
Histrionic	69.2	42.1	70.6	48.9	63.2	55.5
Narcissistic	79.8	66.8	79.5	68.8	66.0	65.7
Antisocial	99.7	84.4	87.1	75.2	65.9	66.1
Aggressive	89.6	71.1	77.3	60.2	55.8	48.9
Compulsive	51.1	45.5	63.1	51.9	60.0	54.0
Passive-Aggressive	102.6	85.4	72.3	68.3	31.0	34.3
Self-Defeating	86.2	76.8	66.3	57.7	35.9	26.5
Schizotypal	80.0	75.6	65.4	60.9	44.1	18.6
Borderline	95.7	75.0	69.7	57.7	45.8	33.1
Paranoid	73.5	77.2	65.0	66.1	48.6	41.7
Anxiety	74.8	88.1	48.7	62.3	24.4	33.9
Somatoform	55.0	64.4	51.6	40.7	36.3	20.0
Bipolar	61.4	70.1	57.8	60.6	51.4	47.1
Dysthymic	82.3	76.8	54.0	52.1	28.2	22.1
Alcohol Dependence	89.8	81.9	82.9	74.8	64.2	62.4
Drug Dependence	93.8	82.0	61.7	75.0	19.1	69.0
Thought Disorder	69.7	68.7	56.7	51.7	31.5	19.2
Major Depression	67.6	63.9	54.3	29.5	23.9	14.5
Delusional	62.5	68.5	55.1	55.5	36.1	32.9

Drug Dependence. The remaining five MCMI-III scales with elevations from the McMahon high pathology cluster are Aggressive, Self-Defeating, Schizotypal, Borderline, and Dysthymic. Elevations on clinical scales may be indicative of severe personality pathology. In summary, Cluster 1 in the current study appears similar to McMahon's high pathology cluster.

From an examination of the pattern of means on the MCMI-III scales across the two separate three-cluster solutions, it is reasonable to conclude that the three clusters reported by McMahon were largely replicated in the current prisoner sample.

As indicated in Table 3, Cluster 2 in the current study shows elevations on the Antisocial and Narcissistic MCMI-III scales. It is important to note that the mean scores on the Antisocial and Narcissistic scales recorded by McMahon's sample were in the clinically significant range (means = 87.1 and 79.5, respectively), while the elevations on the Antisocial and Narcissistic scales in the prisoner sample were in the subclinical range (75.2 and 68.8, respectively). However, the respondents in the McMahon study were selected from active participants in a substance abuse treatment program, while the members of the current sample were incarcerated men who self-reported substance abuse problems and were not currently under treatment. Thus, a difference in elevation on the MCMI-III is to be expected because the McMahon sample was selected on the basis of more severe psychopathology substance abuse problems warranting treatment. It is most important to note that in both the McMahon study and in the present sample, the two MCMI-III scales with the highest elevations on Cluster 2 were identical: Antisocial and Narcissistic. Therefore, it is reasonable to conclude that Cluster 2, in the current study, is similar to McMahon's Antisocial cluster.

According to Choca and Denburg (1997), persons showing elevations on the MCMI-III Antisocial and Narcissistic scales describe a personality style referred to as negativistic-antisocial. The kind of person described by Cluster 2 are thought to be competitive in nature and often resentful. When these traits are combined, the person may become irritable and moody, frequently altering his/her behaviors and feelings.

Finally, as indicated in Table 3, Cluster 3 in the current study shows no notable elevations on any of the 22 MCMI-III scales, with the exception of the Drug Dependence Scale (mean = 69.0). Thus, Cluster 3 appears similar to McMahon's Subclinical cluster, which similarly showed no notable elevations on any of the 22 MCMI-III scales.

Summarizing the evidence concerning the test of Hypothesis 1, an examination of the pattern of MCMI-II and MCMI-III mean scores across the two separate three-cluster solutions provides moderate support to conclude that the three clusters reported by McMahon were largely replicated in the current prisoner sample.

Results of Hypothesis 2

Hypothesis 2 tested the criterion validity of two of the MCMI-III scales, Alcohol Dependence and Drug Dependence, for the full 500-subject sample in two ways. First, the Pearson product moment correlation coefficients was completed between these two MCMI-III scales and each of the nine SASSI-3 scales that served as criterion variables. Second, the full 500-subject sample was split into two groups based on their SASSI-3 probability scale scores (Group 1 = high probability of substance abuse; Group 2 = low probability of substance abuse). Then, the MCMI-III Alcohol Dependence and Drug Dependence scale scores for the two groups were compared. It was hypothesized that there would be significant differences between the two SASSI-3 groups, with the High

Probability of Substance Abuse Group (Group 1) showing significantly higher mean Alcohol Dependence and Drug Dependence scale scores than the Low Probability of Substance Abuse Group (Group 2).

As indicated in Table 4, the MCMI-III Alcohol Dependence scale showed significant ($p < .001$) Pearson correlations with all nine of the SASSI-3 scales, with correlations ranging from a high of .62 (for the SASSI-3 Symptoms scale) to a low of .26 (for the SASSI-3 Subtle Attitudes scale). All correlations are in the expected directions, with higher MCMI-III Alcohol Dependence scale scores associated with greater symptomology on the SASSI-3 scales. Thus, strong, clear support was provided for the criterion validity of the MCMI-III Alcohol Dependence scale.

The Pearson correlations between the MCMI-III Drug Dependence scale with the SASSI-3 scales also provide strong, clear support for the criterion validity of the Drug Dependence scale. As indicated in Table 5, the MCMI-III Drug Dependence scale showed significant ($p < .001$) Pearson correlations with all nine of the SASSI-3 scales, with correlations ranging from a high of .70 (for the SASSI-3 Face Valid Other Drugs scale) to a low of .34 (for the SASSI-3 Subtle Attitudes scale). All correlations (except for the Defensiveness scale and Family scale) are in the expected directions, with higher MCMI-III Drug Dependence scale scores associated with greater symptomology on the SASSI-3 scales. Table 4 provides a listing of the Pearson product moment correlation coefficients between the two MCMI-III scales Alcohol Dependence and Drug Dependence.

Table 4. *Pearson Correlations Between MCMI-III Alcohol and Drug Dependence Scales and all SASSI-3 Subscales*

	MCMI-III Alcohol	MCMI-III Drug
Face Valid Alcohol	.57	.46
Face Valid Other Drugs	.50	.70
Symptoms	.62	.67
Obvious Attributes	.43	.44
Subtle Attributes	.26	.34
Defensiveness	.47	-.46
Supplement Addiction Measure	.36	.38
Family	.44	-.47
Corrections	.57	.62

Note. All correlations are significant at p.< 001. N = 500

Next the full sample was split into two groups on the basis of SASSI-3 Probability scale scores (1 = High probability of substance abuse, 2 = Low probability of substance abuse). Then mean scores on the two MCMI-III scales, Alcohol Dependence and Drug Dependence, were compared for the two SASSI-3 Probability scale groups.

Table 5 displays the results of the t tests comparing the Alcohol Dependence and Drug Dependence mean scores for the SASSI-3 groups. Group 1 represents High probability of substance dependence. Group 2 represents Low probability of substance dependence.

Table 5. *Results from t tests MCMI-III Alcohol and Drug Dependence Scales and SASSI-3*

MCMI-III Scale	SASSI-3 Probability Group *	N	Mean	t	df	p
Alcohol Dependence Scale	I	374	71.0	8.28	498	p <.001
	II	126	52.4			
Drug Dependence Scale	I	374	73.7	12.0	498	p <.001
	II	126	52.5			

As hypothesized, the means for the two probability groups on the Alcohol Dependence and Drug Dependence scales were both significantly different and in the predicted directions. For the MCMI-III Alcohol Dependence scale, the mean score for

the SASSI-3 Probability Group I (High probability of substance abuse) was 71.0, while the mean score for the SASSI-3 Probability Group II (Low probability of substance abuse) was 52.4. This mean difference was statistically significant ($t(498) = 8.28$, $p < .001$).

Similarly, as hypothesized, for the MCMI-III Drug Dependence scale, the mean score for the SASSI-3 Probability Group I (High probability of substance abuse) was 73.7, while the mean score for the SASSI-3 Probability Group II (Low probability of substance abuse) was 52.5. This mean difference was statistically significant ($t(498) = 12.07$, $p < .001$). It is important to note that both the Alcohol Dependence and Drug Dependence scale scores of the High Probability of Substance Abuse Group (Group I) are at clinically significant levels.

To summarize, the results from the two sets of Pearson correlations, as well as the results from the t tests performed on the respondents classified by SASSI-3 Probability scale scores, both support the hypothesis of significant relationships in the predicted direction between the two MCMI-III scales (Alcohol Dependence and Drug Dependence) and the SASSI-3 scales. These findings clearly support the criterion validity of the two MCMI-III scales as measures of substance abuse. It is noted that the patterns of relationships are similar for both MCMI-III Scales (Alcohol Dependence and Drug Dependence). Thus, there is no evidence of discriminant validity between the Alcohol Dependence and Drug Dependence scales. This is not unexpected because most persons with substance abuse problems tend to abuse both alcohol and other drugs.

Results for Hypothesis 3

Hypothesis 3 was tested by performing a canonical correlation between the 14 MCMI-III personality scales (Schizoid, Avoidant, Depressive, Dependent, Histrionic, Narcissistic, Antisocial, Aggressive (Sadistic), Compulsive, Passive-Aggressive (Negativistic), Self-Defeating, Schizotypal, Borderline, and Paranoid) and the nine SASSI-3 scales (Face Valid Alcohol, Face Valid Other Drugs, Obvious Attributes, Subtle Attributes, Defensiveness, Supplemental Addiction Measure, Family, and Corrections). As is conventional in canonical correlation, only variables with loadings > or = an absolute value of .40 were used to name canonical variates. Also consistent with conventions, the higher loading variables were given greater consideration when interpreting the meaning of the canonical variates.

Canonical correlation is a multivariate statistical procedure used to uncover the underlying relationship between two sets of variables, one set being the predictor (i.e., independent) variables, the other set are the outcome (i.e., dependent) variables. In this study, the MCMI-III scales are used as the Set 1 (predictor or independent) variables, while the SASSI-3 scales are used as the Set 2 (outcome or dependent) variables.

As indicated in Table 6, three statistically significant canonical variates were obtained, with the first showing the greatest magnitude of relationship. As is conventional, interpretation will emphasize the first, largest magnitude, canonical dimension.

Table 6. *Significance Table for Canonical Variates*

Canonical Variates	Canonical Correlations	Wilk's	Chi Square	df	Significance
I	.58	.37	308	126	p.< 001
II	.38	.57	174	104	p.< 001
III	.36	.67	123	84	p.< 003

As indicated in Table 7, the set of MCMI-III scales that make the greatest contribution to Canonical Variate I, with their loadings are Antisocial (-.89), Aggressive-Sadistic (-.73), Borderline (-.70), Self-Defeating (-.53), Passive-Aggressive (-.51), Compulsive (.63), Depressive (-.49), Dependent (-.41), and Avoidant (-.40). First, to aid in interpretation, the signs of all of the loadings for the MCMI-III scales will be reflected (i.e., changed from – to +). In reviewing the magnitude, direction, and meaning of these MCMI-III scales, the underlying common dimension appears to be global psychopathology characterized by impulse control problems. This interpretation appears reasonable given the theme of outward expression of aggression characterizing the three highest loading scales (Antisocial, Aggressive-Sadistic, and Borderline). This interpretation is further substantiated because the Compulsive scale shows a significant (> .40) loading in the opposite direction from the other marker scales. The Compulsive scale assesses, in part, hypervigilence and tendencies to over control impulses.

Table 7. *Findings for Canonical Variate I*

MCMI-III Variable Canonical Loadings Canonical Variate I, Set 1		SASSI-3 Variable Canonical Loadings Canonical Variate I, Set 2	
Antisocial	-.89	Corrections	-.80
Aggressive (Sadistic)	-.73	Symptoms	-.77
Borderline	-.70	Face Valid Other Drugs	-.74
Compulsive	.63	Obvious Attributes	-.73
Self-Defeating	-.53	Face Valid Alcohol	-.61
Passive-Aggressive	-.51	Defensiveness	.50
Major Depressive	-.49	Supplemental Addiction Measure	-.46
Dependent	-.41	Subtle Attributes	-.41
Avoidant	-.40		

As displayed in Table 8, the canonical loadings for Set 2 variables (i.e., the SASSI-3 scales) for Canonical Variate I (again with the signs reflected) are Obvious Attitudes (.73), Subtle Attitudes (.41), Defensiveness (.50), Supplemental Addiction Measure (.46), Correctional (.80), Face Valid Alcohol (.61), Face Valid Other Drugs (.74), and Symptoms (.77). All but one of the SASSI-3 scales loaded strongly on Canonical Variate I. In fact, the only SASSI-3 scale not loading above .40 on this first Canonical Variate was Family vs. Controls, with a loading of .39. Thus, it is clear that the Set 2 variables (i.e., the SASSI-3 scales) on Canonical Variate I reflect a generalized high level of self-reported substance abuse.

Table 8. *Findings for Canonical Variate II*

MCMI-III Variable Canonical Loadings Canonical Variate II, Set 1		SASSI-3 Variable Canonical Loadings Canonical Variate II, Set 2	
Paranoid	.73	Defensiveness	-.66
Schizoid	.69	Supplemental Addiction Measure	-.46
Schizotypal	.67	Passive-Aggressive	.63
Depressive	.57	Dependent	.56
Avoidant	.54	Self-Defeating	.52

To interpret Canonical Variate I, the cluster of MCMI-III scales reflecting global pathology, characterized by problems with impulse control is significantly associated with greater self-reported substance abuse (i.e., high scores on all of the SASSI-3 scales). More specifically, it appears that Antisocial, Aggressive-Sadistic, and Borderline elevations on the MCMI-III are associated with relatively high scores on the SASSI-3, consistent with a high level of self-reported alcohol and drug abuse.

As indicated in Table 8, the set of MCMI-III scales that make the greatest contribution to Canonical Variate II, with their loadings are Paranoid (.73), Schizoid .69), Schizotypal (.67), Passive-Aggressive (.63), Depressive (.57), Dependent .56),

Avoidant (.54), and Self-deferential (.52). Reviewing the magnitude, direction, and meaning of these MCMI-III scales, the underlying common dimension appears to be psychopathology characterized by an emphasis on inner processing, control, and transformation of aggressive impulses. Persons characterized by this profile tend to internalize their problems and spend considerable resources defending themselves against their own impulses. They tend to withdraw from others and from the world around them.

As displayed in Table 8, the canonical loadings for Set 2 variables on Canonical Variate II, only two SASSI-3 scales show significant canonical loadings: Defensiveness (-.66) and Supplemental Addiction Measure (-.46). Because high Defensiveness is associated with defensive hypervigilance and withholding of information, it appears that higher scores on the Set 1 variables of Canonical Variate II (Paranoid, Schizoid, Schizotypal, Passive-Aggressive) are associated with lower scores on the Defensiveness scale of the SASSI-3. The most parsimonious interpretation of this finding may be that persons scoring high on the Set 1 variables of Canonical Variate II are very vigilant of the scale contents and are consistently denying that they are being defensive.

As indicated in Table 9, only three MCMI-III scales make a significant contribution to Canonical Variate III. These MCMI-III scales with their loadings are Narcissistic (-.48), Dependent (.45), and Self-defeating (.43). The SASSI-3 scales defining Canonical Variate III are: Subtle Attributes (-.55), Supplemental Addiction Measure (.45), and Symptoms (.40). Given the relatively small amount of variance contributed by Canonical Variate III, the high likelihood of error variance playing a role in the structure of Variate III, it was concluded that Canonical Variate III is largely

constituted by capitalization of error variance. Therefore, this Canonical Variate will not be interpreted.

Table 9. *Findings for Canonical Variate III*

MCMI-III Variable Canonical Loadings Canonical Variate III, Set 1		SASSI-3 Variable Canonical Loadings Canonical Variate III, Set 2	
Narcissistic	-.48	Subtle Attributes	-.55
Dependent	.45	Suppl. Addiction Measure	-.45
Self-Defeating	.43	Symptoms	.40

Summary of Chapter Three

Hypothesis 1 predicted that three major clusters would be obtained that are similar to the MCMI-II three-cluster solution reported by McMahon, Malow, and Penedo (1998). The three clusters reported in their findings were (1) a high pathology cluster, (2) an antisocial cluster, and (3) a subclinical cluster. The current sample consisted of 269 male prisoners who self-reported substance abuse problems with drugs and/or alcohol. This hypothesis was tested by cluster analysis, a statistical method used to classify cases into homogeneous categories based on scores on a set of variables. An examination of the pattern of MCMI-III means across the two separate three-cluster solutions provided evidence supporting the conclusion that the three clusters reported by McMahon were largely replicated in the current prison sample.

Hypothesis 2 predicted that there would be significant Pearson product moment correlations between two of the MCMI-III scales (Alcohol Dependence and Drug Dependence) with the nine SASSI-3 subscales. This particular hypothesis tested the validity of the two MCMI-III against the criterion of the SASSI-3 subscale scores. The result from two sets of Pearson correlations supports the hypothesis of significant relationships between the two MCMI-III scales (Alcohol Dependence and Drug

Dependence) and the SASSI-3 scales. An additional test of the criterion validity of the Alcohol Dependence and Drug Dependence scales were performed by comparing the mean scores on these two MCMI-III scales for two groups formed by classifying respondents according to their SASSI-3 Probability of substance abuse scores. In this case, the High Probability group showed significantly greater mean scores on both the Alcohol Dependence and the Drug Dependence scales than the Low Probability of abuse group. These findings clearly support the criterion validity of the two MCMI-III scales as measures of substance abuse.

Finally, Hypothesis 3 predicted that a significant proportion of the relationship between the MCMI-III scales and the SASSI-3 scales could be explained by a relatively large canonical variate that would reveal a significant relationship between a set of MCMI-III variables, indicative of clinical pathology and scores on the SASSI-3, indicative of drug and alcohol abuse. This hypothesis was tested by performing a canonical correlation between the 14 MCMI-III personality scales and the nine SASSI-3 scales. As is conventional in canonical correlation, only variables with loadings greater than or equal to an absolute value of .40 were used to name canonical variables. Three statistically significant canonical correlations were obtained, with the first canonical variate showing the greatest magnitude of relationship. The first (largest magnitude) canonical variate indicated that global psychopathology emphasizing impulse control problems was associated with higher SASSI-3 scores on all subscales, indicative of a high level of self-reported substance abuse. In summary, all three hypotheses for this study were supported by the data.

CHAPTER 4

Conclusions, Recommendations, and Implications

Discussion of Formal Hypothesis1

Hypothesis 1 predicted that three clusters similar to those reported by McMahon would be replicated. A total of 269 male prisoners reporting substance abuse problems with either alcohol and/or drugs were selected from the data set to investigate this hypothesis. The SPSS k-means cluster analysis procedure was selected as the clustering method because it allowed the researcher initially to specify the number of clusters and the number of iterations of the clustering algorithm to be performed. As indicated in the results section, Cluster 1 showed elevations on twelve of the 22 MCMI-III clusters. There were six scales with clinically significant elevations of 75 or higher: Avoidant, Aggressive, Passive-Aggressive, Anxiety Disorder, Alcohol Dependence, and Drug Dependence. This cluster is similar to results determined by McMahon and referred to as the high pathology cluster. Members of this cluster are described as having unstable moods, pessimistic attitudes towards life, and erratic behavior. Those individuals scoring high on Anxiety may be tense and apprehensive, while those who score high on Aggressive (Sadistic) have a tendency to be controlling, abusive, and may enjoy humiliating others. From the standpoint of multiaxial nosolgy, those in this category may be diagnosed with an Axis I clinical diagnosis, according to DSM-IV criterion. Persons in this category may abuse drugs and/or alcohol in an effort to reduce intrapersonal as well as interpersonal anxieties and frustrations.

As indicated in Cluster 2 of the current study, McMahon's antisocial cluster was replicated. Elevations on the Narcissistic and Antisocial MCMI-III scales were found in the current study. Persons in this cluster may be described as exploitive or interpersonally dominating. Narcissistic individuals are often considered to be self-centered, arrogant, and egotistical, while Antisocial individuals are often irresponsible, and vengeful, may engage in criminal activities, and are viewed as strongly independent. Persons in this cluster may be given an Axis II personality disorder diagnosis, according to DSM-IV criterion. Thrill-seeking and self-indulgence are associated with escalations in substance abuse for members of this cluster.

Finally, as indicated in Cluster 3, the current study replicated the subclinical cluster extracted in the McMahon study. This category consists of persons that reflected no notable elevations on any of the 22 MCMI-III scales. Persons found in this cluster had less evidence of clinical symptomology and fewer substance abuse problems.

As the study of the relationship of personality styles to substance dependence has developed, the growing consensus is that there is a relationship between inherent factors pertaining to these two variables. The current study, when compared to that of McMahon, Malow, and Penedo (1998), extracted similar in the predicted direction that are significant at $p. < 001$. In summary, the outcome of the data analysis for this predicted hypothesis is considered to be significant.

Discussion of Formal Hypothesis 2

Hypothesis 2 tested the criterion validity of two of the MCMI-III scales (Alcohol Dependence and Drug Dependence) by computing Pearson product moment correlation coefficients between this instrument and the nine SASSI-3 scales that served as criterion

variables. Criterion validity is known as the degree to which a test predicts a measure of performance. This type of validity is ascertained by looking at the correlation between the test and the criterion measure.

The current study found that the MCMI-III Alcohol Dependence and Drug Dependence scale reflect significant Pearson correlations with all nine of the SASSI-3 scales. The correlations between these two scales provided strong criterion validity. Higher Drug Dependence scores appear to be directly related to increased symptomology on the SASSI-3 scales.

Discussion of Formal Hypothesis 3

Hypothesis 3 observed the relationship between variables on the MCMI-III scales and the SASSI-3 scales by conducting a canonical correlation analysis. This hypothesis predicted that a large variate would explain the association between the two instruments. The hypothesis was tested by performing a canonical correlation between the 14 MCMI-III personality scales (Schizoid, Avoidant, Depressive, Dependent, Histrionic, Narcissistic, Antisocial, Aggressive (Sadistic), Compulsive, Passive-Aggressive (Negativistic), Self-Defeating, Schizotypal, Paranoid, and Borderline) and the nine SASSI-3 scales (Face Valid Alcohol, Face Valid Other Drugs, Symptoms, Obvious Attributes, Subtle Attributes, Defensiveness, Supplemental Addiction Measure, Family, and Corrections). There were a set of nine MCMI-III scales that made the greatest contribution to canonical Variate I. These scales are Antisocial, Aggressive (Sadistic), Borderline, Self-Defeating, Passive-Aggressive, Compulsive, Depressive, Dependent, and Avoidant. The common underlying variate appeared to be global psychopathology characterized by impulse control.

Implications for Treatment

There are several points of interest regarding the outcomes of this study. Earlier studies conducted to investigate the relationship between clinical personality styles and substance abuse have determined that various clustering of traits appeared to coincide with illicit use of drugs and/or alcohol.

When considering implications for diagnosis and treatment, incorporation of sound, reliable instruments that have criterion validity would aid the clinician in the diagnostic process. Clients often find it difficult fully to disclose symptoms related to psychological impairment and/or substance abuse. This reluctance may be due to fear of rejection or negative perception, internal denial of the problem, or low cognitive functioning that may lead to the inability of the person to conceptualize and acknowledge the existence of a problem.

With this particular population, the ability of the clinician properly to identify an Antisocial Disorder would allow for the construction and implication of an appropriate treatment plan that might include interventions such as helping the inmate to develop a list of specific dissatisfactions he is presently experiencing with incarceration or assisting the inmate in identifying at least one relationship that merits trust and assigning him the task of expressing appreciation and trust to that person.

While instrumentation alone is not sufficient for completing a thorough assessment of the client, possession of a valid and reliable measure would help extricate symptomology that might otherwise go unnoticed and untreated. Competent diagnostic tools are essential to treatment outcome.

This study added to the body of current literature on the relationship between personality clusters and substance abuse with replicated findings of McMahon, Malow, and Penedo (1998). A similar three-cluster solution existed among male prisoners in the current study.

Limitations of the Current Study

It is important to understand the results obtained in the current research in light of the study's limitations. A general methodological limitation is that there is no clear consensus on one specific cluster analysis criterion to test similarity.

Internal validity is a major concern to the researcher as threats to this foundation strike at the heart of experimental goals, the demonstration of causality. The researcher needs to be able to state, with a relatively strong degree of confidence, that the observations derived were not weakened or confounded by other influences. One of the limitations of the current study is sample selection. Sample selection becomes a threat when one or more factors create groups that are not equivalent at the beginning of the study. Randomly selected participants in the McMahon et al. study were taken from a population of men currently enrolled in a formal substance abuse treatment program. Thus, all participants could be said to have substance abuse concerns. Data for the current study were randomly selected from inmates who were transferring into a correctional facility and reported substance abuse, or the lack thereof, during the intake process.

There are a considerable number of cluster analytic methods, algorithms, and procedures that can be used to calculate results elicited in the current study. A k-means procedure of cluster analysis was chosen because it allows the researcher to specify, in advance, the number of clusters to be extracted. Therefore, a direct comparison is more

easily made between the three-cluster solution obtained by McMahon and the three-cluster solution that underlies this pattern of data. Other cluster analytic methods, algorithms, and procedures might generate solutions that vary from this three-cluster solution. From a mathematical point of view, there is no single criterion for the single best cluster analytic solution; therefore, researcher judgment plays a role in the selection of the technique used.

Because the sample for the current study was randomly selected from archival assessment data at an all-male prison facility, findings in this study may have limited application to women and persons not incarcerated at the time of assessment. Incarcerated females may present with different symptomolgy as would those persons not currently faced with the many stressors of being incarcerated (e.g., loss of freedom and privileges, loss of self-respect, loss of financial income, possible loss of family and friends, and age at time of incarceration coupled with length of sentence, to name a few).

Data for this study were randomly selected from profiles of inmates, who at the time of assessment were required by guidelines instituted by the Louisiana Department of Public Safety and Corrections to sit for the exam or face being reprimanded for defiance. Because recent incarceration, transfers between institutions, and/or other situational stressors, participants may not have put forth their best effort during test administration.

Research findings are limited by the reliability of the instruments used to obtain the results. While the internal consistency of the MCMI-III is moderately substantial, only two of the nine SASSI-3 subscales retain alpha coefficients that are considered satisfactory. The two strongest subscales for this instrument are referred to as

the direct scales (Face Valid Alcohol and Face Valid Other Drugs); the remaining indirect scales have poorer internal consistency, therefore, making this a limitation of the current study.

Strengths of the Current Study

A particular strength of the current study is the amount of archival data obtained. A total of 269 male prisoners self-reported substance abuse problems with alcohol and/or drugs. Cluster analysis was used to test Hypothesis 2, which predicted that there will be significant Pearson product moment correlations among Alcohol Dependence and Drug Dependence measures on the MCMI-III and the nine SASSI-3 scales measuring drug and/or alcohol dependence.

A total of 500 protocols were strategically reviewed and analyzed to investigate the proposed hypotheses. Instrumentation is considered both a limitation and a strength for this study as the overall reliability and validity of both the MCMI-III and the SASSI-3 are satisfactory. Both instruments are widely used in various mental health settings, and as the current study reflects, there appears to be solid criterion validity between the Alcohol Dependence and Drug Dependence scales on the MCMI-III with nine SASSI-3 scales. An additional strength of the MCMI-III is that this instrument reflects diagnostic criteria used in the DSM-IV. The test is coordinated with the multiaxial format provided in the DSM-IV and is linked to the manual's conceptual terminology and diagnostic criteria.

Threats to internal validity are major types of confounding variables that can effect research findings, and thus, lead to erroneous interpretations. The use of archival data proved to be a strength to the current study. There were no changes in the dependent

variable that occurred during the course of the study that were due to normal maturation of participants. There were no changes in the dependent variable cased by historical events occurring during the study. There were no changes in the participants score on the dependent variable as a function of prior testing. There were no changes in the calibration of the instruments or procedure over the course of the study. There was no regression to the mean. There was no attrition or loss of participants during the current study. There was no change in the response of participants in a particular condition because of information gained about other research conditions. In other words, there was no diffusion of treatment. Finally, sequence effects, which are effects on the participant's performance in later conditions that result from the experience the participant had in previous conditions, were not a factor.

Campbell and Stanley (1966) stated that a research study has external validity when findings can be generalized to other people, settings, and conditions. A study's external validity is limited by its internal validity. If the researcher cannot find a causal relationship between variables within the context of the study, there will be difficulty concluding that the relationship that was obtained will generalize to other people and circumstances. It is important to note that a high degree of internal validity may not guarantee external validity. A relationship between variables might exist for the conditions in which the study is conducted or the particular subjects who participated in the study that cannot be generalized to other conditions or people. Once again, the use of archival data helped to limit threats to external validity in the following areas. There were no pretests administered that might sensitize the examinee to the purpose of the research study, thereby altering their reaction to the independent variable. Interaction

between testing and treatment was not a factor for the current study. The use of archival data prevented subject characteristics that might cause them to respond in a particular way. The best way to eliminate this threat is to ensure that the sample is representative of the population of interest. This sample is representative of the overall population. Interaction between selection and treatment was not a factor. When a study involves exposing each subject to two or more levels of an independent variable, the effects of one level of the independent variable, there may be effects reflected by previous exposure to another level. When this occurs, the results cannot be generalized to situations in which people will be exposed to only one level of the independent variable. In the current study, multiple treatment interference (carryover effects) were not a factor. Finally, with respect to external validity, participants were randomly selected (from archival data) in an effort to enhance generalizability of the results to this population.

Suggestions for Future Research

It is suggested that future researchers consider collecting data in an environment that does not allow for group interaction during test administration in order to reduce verbal and behavioral interactions among examinees which might directly or indirectly influence the response patterns of other participants. Future researchers may consider replicating the current study to include female prisoners to investigate any possible gender variation in response pattern.

Another future direction for research might involve further, more intensive investigation of the personality and clinical characteristics of substance abusers that represent each of the three clusters.

Further information about the personality dynamics that distinguish members of the these clusters might lead to selection and use of those therapeutic techniques that are optimal for substance abusers representing each separate clusters.

Summary of Chapter Four

This study hypothesized that three major clusters of respondents would be obtained that are similar to the three-cluster solution reported by McMahon, Malow, and Penedo (1998). The three clusters referenced are (1) a high pathology cluster, (2) an antisocial cluster, and (3) a subclinical cluster. Another prediction was that there would be significant Pearson product moment correlations between two of the MCMI-III scales (Alcohol Dependence and Drug Dependence) with the nine SASSI-3 scales. A final prediction was that a relatively large canonical dimension could explain a significant proportion of the relationship between the MCMI-III scales and the SASSI-3 scales.

A male correctional facility in the South was the site for data collection. Over 500 archival files were randomly selected and reviewed for content validity (reading level, completion of test administration, and inclusion of all required instruments). These assessment profiles were obtained from inmates one day after processing into the facility.

All predicted hypotheses were supported. As a result of this study, the research findings can be generalized to a male correctional institution.

References

Abram, K. M., & Teplin, L. A. (1991). Co-occuring disorders among mentally ill jail detainees. *American Psychologist*, 46, 1036-1045.

Abram, K. M. (1990). The problem of co-occurring disorders among jail detainees. *Law and Human Behavior,* 14, 333-345.

Allen, J. P., Faden, V. B., Miller, A., & Rawlings, Robert R. (1991). Personality correlates of chemically dependent patients scoring high versus low on the MacAndrew Scale. *Psychological Assessment: A Journal of Consulting and Clinical Psychology,* 3 (2), 273-276.

Alterman, A. I., McDermott, P. A., Cacciola, J. S., Rutherford, M. J., Boardman, C. R., McKay, J. R., & Cook, T. G. (1998). A typology of antisociality in methadone patients. *Journal of Abnormal Psychology*, 107 (3), 412-422.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (4th ed.).* Washington, DC:Author.

Babor, T. F., Hofmann, M., DelBoca, F. K., Hesselbrock, V., Meyer, R. E., Dolinsky, Z. S. & Rounsaville, B. (1992). Types of alcoholics, I: Evidence for an empirically derived typology based on indicators of vulnerability and severity. *Archives of General Psychiatry*, 49, 599-608.

Ball, J. C., Schaffer, J. W., & Nurco, D. N. (1983). The day-to-day criminality of heroin addicts in Baltimore: A study in the continuity of offence rates. *Drug and Alcohol Dependence*, 12, 119- 142.

Ball, S. A., Carroll, K. M., & Rounsaville, B. J. (1994). Sensation seeking, substance abuse, and psychopathology in treatment-seeking and community cocaine abusers. *Journal of Consulting and Clinical Psychology*, 62 (5), 1053-1057.

Baumeister, R. (1990). Suicide as escape from self. *Psychological Review,* 97, 90-113.

Blackburn, R (1993). *The psychology of criminal conduct: Theory, practice and applications.* Oxford: Blackwell.

Blumenthal, S. J., & Kupfer, D. J. (1988). Overview of early detection and treatment strategies for suicidal behavior in young people. *Journal of Youth and Adolescence*, 17, 1-23.

Bockian, N. R., & Jongsma, A. E. (2001). The personality disorders treatment planner. New York:Wiley.

Boruch, R. F., & Wolins, L. (1970). A procedure for estimation of trait, method, and error variance attributable to a measure. *Educational and Psychological Measurement*, 30, 547-574.

Brook, J. S., Cohen, P., Whiteman, M. & Gordon, A. S. (1992). Psychosocial risk factors in the transition form moderate to heavy use or abuse of drugs. (In M. Glantz & R. Pickens (Eds.), *Vulnerability to drug abuse* (pp. 359-388). Washington, DC: American Psychological Association.

Brown, T. A., & Barlow, D. H. (1992). Comorbidity among anxiety disorders implications for treatment and DSM-IV. *Journal of Consulting and Clinical Psychology,* 60, 835-844.

Bureau of Justice Statistics. (2003). *Reentry Trends in the United States.* Online document. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Minnesota Multiphasic Personality Inventory (MMPI-2): Manual for administrative scoring*. Minneapolis:University of Minnesota Press.

Butler, S. F., Gaulier, B., & Haller, D. (1991). Assessment of Axis II personality disorders among female substance abusers. *Psychological Reports*, 68, 1344-1346.

Calsyn, D. A. & Saxon, A. J. (1991). Personality disorder subtypes among cocaine and opioid addicts using the Millon Clinical Multiaxial Inventory. *International Journal of the Addictions,* 25, 1037-1049.

Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research*. Skokie, IL:Rand-McNally.

Carter, J. A., Herbst, J. H., Stoller, K. B., King, V. L., Kidorf, M. S., Costa, P. T., & Brooner, R. K. (2001). Short-term stability of NEO-PI-R personality trait scores in opioid-dependent outpatients. *Psychology of Addictive Behaviors*, 15 (3), 255-260.

Caviola, A. A., & Lavender, N. (1999). Suicidal behavior in chemically dependent adolescents. *Adolescence,* 34, 735-744.

Chassin, L., Curran, P. J., Hussong, A. M.,& Colder, C. R. (1996). The relation of parent alcoholism to adolescent substance use: A longitudinal follow-up study. *Journal of Abnormal Psychology,* 105, 70-80.

Choca, J. P., & Denburg, E. V. (1997*). Interpretive guide to the Millon Clinical Multiaxial Inventory (2nd ed.).* Washington, D.C.:American Psychological Association.

Corbisiero, J. R., & Reznikoff, M. (1991). The relationship between personality type and style of alcohol use. *Journal of Clinical Psychology*, 47, 291-298.

Cooney, N. L., Kadden, R. M., & Litt, M. D. (1990). A comparison of methods for assessing sociopathy in male and female alcoholics. *Journal of Studies on Alcohol*, 51, 42-48.

Copeland, J., & Howard, J. (1997). Juvenile crime and substance use. (In A. Borowski, I. O'Connor (Eds.), *Juvenile crime, juvenile justice and juvenile corrections*, pp.167–189. Longman: Cheshire.

Cook, T. D. & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Chicago: Rand McNally.

Costa, P. T. Jr., & McCrae, R. R. (1992). Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI): Professional manual. Odessa, FL: Psychological Assessment Resources.

Craig, R. J., Verinis, J. S., & Wexler, S. (1985). Personality characteristics of drug addicts and alcoholics on the Millon Clinical Multiaxial Inventory. *Journal of Personality Assessment*, 49, 156-160.

Craig, R. J. (1988). A psychometric study of the prevalence of DSM-III personality disorders among treated opiate addicts. *International Journal of the Addictions,* 23, 115-124.

Craig, R. J. (1999). *Essentials of MCMI-III assessment.* New York:Wiley

Craig, R. J., Olson, R. E. (1990). MCMI Comparisons of cocaine abusers and heroin addicts. *Journal of Clinical Psychology*, 46, 230-237.

Crumley, F. (1990). Substance abuse and adolescent suicidal behavior. *Journal of the Australian Medical Association*, 263, 3051-3056.

De Leon, G. (1989). Psychopathology and substance abuse: What is being learned from research in therapeutic communities. *Journal of Psychoactive Drugs, 21,* 177-188.

Dembo, R., Turner, G., Schmeidler, J., Sue, C. C., Bordern, P., & Manning, D. (1996). Development and evaluation of a classification of high-risk youths entering a juvenile assessment center. *Substance Use and Misuse,* 31, 303-322.

DiClemente, C. C. (1993). Changing addictive behaviors: A process perspective. *Current Directions in Psychological Science,* 2, 101-106.

Dobinson, I., & Ward, P. (1987). *Drugs and crime-phase II.* Sydney: New South Wales Bureau of Crime Statistics and Research, Attorney General's Department.

Dusevic, N. (2001). Youth resilience in foreign lands. *Youth Suicide Bulletin,* February, 14-17.

Ekleberry, S. (1996). Dual diagnosis: Addiction and axis II personality disorders. *The Counselor,* March/April 1996, pp. 7-13.

Elliott, D.S., Huizinga, D., & Ageton, S. S. (1986). *Explaining delinquency and drug use.* Newbury Park: Sage.

Endicott, J. & Spitzer, R. L. (1978). A diagnostic interview: The Schedule for Affective Disorders and Schizophrenia. *Archives of General Psychiatry,* 37, 837.

Finn, P. R., Sharkansky, E. J., Viken, R., West, T. L., Sandy, J., & Bufferd, G. M. (1997). Heterogeneity in the families of sons of alcoholics: The impact of familial vulnerability type on offspring characteristics. *Journal of Abnormal Psychology*, 106 (1), 26-36.

Finn, P. R., Sharkansky, E. J., Brandt, K. M.,& Turcotte, N. (2000). The effects of familial risk, personality, and expectancies on alcohol use and abuse. *Journal of Abnormal Psychology,* 109, 122-133.

Flory, K., Lynam, D., Milich, R., Leukefeld, C., & Clayton, R. (2002). The relations among personality, symptoms of alcohol and marijuana abuse, and symptoms of comorbid psychopathology: Results from a community sample. *Experimental and Clinical Psychopharmacology*, 10, 425-434.

Flynn, P. M., Craddock, S. G., Luckey, J. W., Hubbard, R. L. & Dunteman, G. H. (1996). Comorbidity of antisocial personality and mood disorders among psychoactive substance-dependent treatment clients. *Journal of Personality Disorders.* 10 (1), 56-67.

Garbarino, J (1995). *Raising children in a socially toxic environment.* San Francisco: Jossey-Bass.

Gottesman, I. I., & Prescott, C. A. (1989). Abuses of the MacAndrew MMPI Alcoholism Scale: A critical review. *Clinical Psychology Review*, 9, 223-242.

Gray, B. T. (2001). A factor analytic study of the substance abuse subtle screening inventory (SASSI). *Educational and Psychological Measurement*, 61 (1), 102-118.

Graham, J. R. (1993). MMPI-2: Assessing personality and psychopathology (2nd ed.). New York:Oxford University Press.

Graham, J. R., & Strenger, V. E. (1988). MMPI characteristics of alcoholics. *Journal of Consulting and Clinical Psychology*, 56 (2) 197-205.

Graziano, W. G.,& Eisenberg, N. (1997). Agreeableness: A dimension of personality. (In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 795–824). San Diego, CA: Academic Press.

Grimm, L. G., & Yarnold, P. R. (2002). Reading and understanding more multivariate statistics. Washington, DC: American Psychological Association.

Groth-Marnat, G. (1999). *Handbook of psychological assessment.* New York:Wiley

Guy, E., Platt, J. J., Zwerling, I. & Bullock, S. (1985). Mental health status of prisoners in an urban jail. *Criminal Justice and Behavior,* 12, 29-53.

Harris, T,& Lennings, CJ (1993). Suicide and adolescence. *International Journal of Offender Therapy and Comparative Criminology,* 37, 263-270.

Hartford, T. C., & Parker, D. A. (1994). Antisocial behavior, family history, and alcohol dependence symptoms. *Alcoholism: Clinical and Experimental Research*, 18, 265-268.

Helzer, J. E., & Pryzbeck, T. R. (1988). The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. *Journal of Studies on Alcohol*, 49, 219-224.

Hesselbrock, M. N., Hesselbrock, V. M., Babor, T. F., Stabenau, J. R., Meyer, R. E., & Weidenman, M. (1983). Antisocial behavior, psychopathology and problem drinking in the natural history of alcoholism. (In D. W. Goodwin, K. T. Van Dusen, & S. A. Mednick (Eds.), *Longitudinal research in alcoholism* (pp. 197-214). Boston: Kluwer-Nijhoff).

Hiller, M. L., Knight, K., & Simpson, D. D. (1996). An assessment of comorbid psychological problems in a residential criminal justice drug treatment program. *Psychology of Addictive Behaviors*, 10, 181-189.

Hogan, J.,& Ones, D. S. (1997). Conscientiousness and integrity at work. (In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 849-870). San Diego, CA: Academic Press.

Howard, J., Lennings, C. J., & Copeland, J. (2003). Suicidal behavior in a young offender population. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 24 (3), 98-104.

Ivanoff,, A (1992). Background risk factors associated with parasuicide among male prison inmates. *Criminal Justice and Behaviour,* 19, 426-436.

Jackson, D. N. (1989). *Basic Personality Inventory Manual.* Port Huron, MI: Research Psychologists Press.

Jainchill, N., De Leon, G. & Pinkham, L. (1986). Psychiatric diagnoses among substance abusers in therapeutic community treatment. *Journal of Psychoactive Drugs,* 18, 209-213.

James, J. F., Gregory, D., Jones, R. K. & Rundell, O. H. (1980). Psychiatric morbidity in Prisons. *Hospital and Community Psychiatry,* 31, 675-677.

Jemelka, R. P., Wiegand, G.A., Walker, Edward, A., & Trupin, E.W. (1992). Computerized offender assessment validation study. *Psychological Assessment*, 4 (2), 138-144.

John, O. P. (1990). The "Big Five" factor taxonomy: Dimensions of personality in the natural language and in questionnaires. (In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 66–100). New York: Guilford.

Kadden, R. M., Litt, M. D., Donovan, D., & Cooney, N. L. (1996). Psychometric properties of the California psychological inventory socialization scale in treatment-seeking alcoholics. *Psychology of Addictive Behaviors*, 10 (3), 131-146.

Kandel, D. B., Raveis, V. H., & Davies, M. (1991). Suicide ideation in adolescence: Depression, substance use, and other risk factors. *Journal of Youth and Adolescence,* 20, 289-309.

Kaufman, E. (1994). *Psychotherapy of addicted persons*. New York:Guilford.

Kleinman, P. H., Miller, A. B., Millman, R. B., Woody, G. E., Todd, T., Kemp, J. & Lipton, D. S. (1990). Psychopathology among cocaine abusers entering treatment. *Journal of Nervous and Mental Disease,* 178, 442-447.

Koenigsberg, H. W., Kaplan, R. D., Gilmore, M. M., & Cooper, A. M. (1985). The relationship between syndrome and personality disorder in DSM-III: Experience with 2,462 patients. *American Journal of Psychiatry*, 142, 207-212.

Kosky, RJ, Sawyer, MG,& Gowland, JC (1989). Adolescents in custody: hidden psychological morbidity? *Medical Journal of Australia,,* 153, 24-27.

Krueger, R. F., Caspi, A., Moffitt, T. E., Silva, P. A.,& McGee, R. (1996). Personality traits are differentially linked to mental disorders: A multitrait-multidiagnosis study of an adolescent birth cohort. *Journal of Abnormal Psychology,* 105, 299-312.

Kurtines, W. M., Ball, L. R., & Wood, G. H. (1978). Personality characteristics of long-term recovered alcoholics: A comparative analysis. *Journal of Consulting and Clinical Psychology*, 57, 698-704.

Lewis, C. E., Rice, J., & Helzer, J. E. (1983). Diagnostic interactions: Alcoholism and antisocial personality. *Journal of Nervous and Mental Disease*, 171, 105-113.

McCormick, R. A., Taber, J. Kruedelbach, N. & Russo, A. (1987). Personality profiles of hospitalized pathological gamblers: The California Personality Inventory. *Journal of Clinical Psychology*, 43, 521-527.

McLellan, A. T., Arndt, I. O., Metzger, D. S., Woody, G. E. & O'Brien, C. P. (1993). The effects of psychosocial services in substance abuse treatment. *Journal of the American Medical Association*, 269, 1953-1959.

McMahon, R. C., Malow, R. M., & Penedo, F. J. (1998). Substance abuse problems, psychiatric severity, hiv risk in Millon Clinical Multiaxial Inventory-II personality subgroups. *Psychology of Addictive Behaviors*, 12 (1), 3-13.

MacAndrew, C. (1965). The differentiation of male alcoholic outpatients from nonalcoholic psychiatric outpatients by means of the MMPI. *Quarterly Journal of Studies on Alcohol*, 26, 238-246.

Mandell, W. (1981). Sociopathic alcoholics: Matching treatment and patients.(In E. Gottheil, A. T. McLellan, & K. A. Druley (Eds.), *Matching patient needs and treatment methods in alcoholism and drug abuse* (pp. 325-369). Springfield, IL: Charles C Thomas.

Martin, E. D., & Sher, K. J. (1994). Family history of alcoholism, alcohol use disorders, and the Five-Factor Model of Personality. *Journal of Studies on Alcohol*, 55, 88-90.

Matano, R. A., Locke, K. D., & Schwartz, K. (1994). MCMI personality subtypes for male and female alcoholics. *Journal of Personality Assessment*, 63, 250-264.

Milich, R., Lynam, D., Zimmerman, R., Logan, T. K., Martin, C.,& Leukefeld, C. (2000). Differences in young adult psychopathology among drug abstainers, experimenters, and frequent users. *Journal of Substance Abuse,* 11, 69-88.

Miller, F. G., Roberts, J., Brooks, M. K., & Lazowski, L. E. (1997). *SASSI-3 user's guide: A quick reference for administration and scoring.* Bloomington, IN:Baugh Enterprises.

Miller, G. A. (1985). *The Substance Abuse Subtle Screening Inventory manual.* Bloomington, IN: Author.

Millon, T. (1981). *Disorders of personality.* New York:Wiley.

Millon, T. (1983). *Modern Psychopathology.* Prospect Heights, IL:Waveland Press.

Millon, T. (1987). Millon Clinical Multiaxial Inventory—II: Manual for the MCMI-II. Minneapolis, MN: National Computer Systems.

Millon, T. (1990). *Toward a new personology.* New York:Wiley.

Millon, T. (1994). *Millon Clinical Multiaxial Inventory-III manual.* Minneapolis, MN:National Computer Systems.

Millon, T. (1997). *Millon Clinical Multiaxial Inventory-III (2nd ed.).* Minneapolis, MN:National Computer Systems.

Millon, T., & Davis, R. (1996). *Disorders of personality (2nd ed.).* New York:Guilford.

Morgenstern, J., Langenbucher, J., Labouvie, E., & Miller, K. J. (1997). The comorbidity of alcoholism and personality disorders in a clinical population: Prevalence rates and relation to alcohol typology variables. *Journal of Abnormal Psychology*, 106, 74-84.

Myerholtz, L. E., & Rosenberg, H. (1997). Screening DUI offenders for alcohol problems: Psychometric assessment of the Substance Abuse Subtle Screening Inventory. *Psychology of Addictive Behaviors*, 11 (3), 155-165.

Newcomb, M. D. & McGee, L. (1991). Influence of sensation seeking on general deviance and specific problem behaviors from adolescence to young adulthood. *Journal of Personality and Social Psychology*, 61, 614-628.

Nicholas, J,& Howard, J (1998). Better dead than gay? Depression, suicide ideation and attempt among a sample of gay- and straight-identified males aged 18–24. *Youth Studies Australia,* 17, 28-33.

Overall, J. E., & Gomez-Mont, F. (1974). The MMPI-168 for psychiatric screening. *Educational and Psychological Measurement*, 34, 315-319.

Palermo, G. B., Gumz, E. J., & Liska, F. J. (1992). Mental illness and criminal behavior revisited. *International Journal of Offender Therapy and Comparative Criminology*, 36, 53-61.

Pervin, L.A., and John, O. P. (1999). *Handbook of personality: theory and research.* New York:Guilford.

Peters, R. H., & Hill, H. A. (1993). Inmates with co-occurring substance abuse and mental health disorders. (In H. J. Steadman & J. J. Cocozza (Eds.), Providing services for offenders with mental illness and related disorders in prisons (pp. 159-210). Washington, DC.).

Plomin, R., DeFries, J. C., & McClearn, G. E. (1990). *Behavioral genetics: A primer* (2nd ed.). New York:Freeman.

Piazza, N. J. (1996). Dual diagnosis and adolescent psychiatric inpatients. *Substance Use and Misuse*, 31, 215-223.

Prochaska, J. O. & DiClemente, C. C. (1986). Toward a comprehensive model of change. In W. Miller & N. Heather (Eds.), *Treating addictive behaviors: Process of change* (pp. 3-27). New York:Plenum.

Ravndal, E. & Vaglum, P. (1991). Psychopathology and substance abuse as predictors of program completion in a therapeutic community for drug abusers: A prospective study. *Acta Psychiatrica Scandinavica,* 83, 217-222.

Regier, D. A., Burke, J. D., & Burke, K. C. (1990). Comorbidity of affective and anxiety disorders in the NIMH Epidemiologic Catchment Area Program. (In J. D. Maser & C. R. Cloniger (Eds.), Cormorbidity of mood and anxiety disorders (pp. 113-122). Washington, DC: American Psychiatric Press.).

Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L. & Goodwin, F. K. (1990). Comorbidity of mental disorders with alcohol and other drug a abuse. *Journal of the American Medical Association,* 264, 2511-2518.

Renn, W. (1999). Defensiveness and non-voluntary clients: The importance of additional assessment data. *The SASSI-3 Institute Newsletter*, 7 (3).

Retzlaff, P. D., & Bromley, S. (1991). A multi-test alcohol taxonomy: Canonical coefficent clusters. *Journal of Clinical Psychology*, 47, 299-309.

Robinet, P. M., Rowlett, J. K.,& Bardo, M. T. (1998). Individual differences in novelty-induced activity and the rewarding effects of novelty and amphetamine in rats. *Behavioural Processes,* 44, 1-9.

Robins, L. N., Helzer, J. E., Croughan, J. & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule. *Archives of General Psychiatry,* 38, 381-389.

Ross, H. E., Glaser, F. B. & Germanson, T. (1988). The prevalence of psychiatric disorders in patients with alcohol and other drug problems. *Archives of General Psychiatry,* 45, 1023-1031.

Rounsaville, B. J., Weissman, M. M. & Rosenberger, P. H. (1982). Diagnosis and symptoms of depression in opiate addicts: Course and relationship to treatment outcome. *Archives of General Psychiatry,* 39, 151-156.

Rounsaville, B. J., Anton, S. F., Carroll, K., Budde, D., Prusoff, B. & Gawin, F. (1991). Psychiatric diagnoses of treatment-seeking cocaine abusers. *Archives of General Psychiatry*, 48, 43-51.

Schuckitt, M. (1995). Drug and alcohol abuse: A clinical guide to diagnosis and treatment (4th ed.). New York:Plenum.

Schmidt, E. A. (2001). Pre- and post-test administration of the adult substance abuse subtle screening inventory-2 (SASSI-2): Detecting change. *Alcoholism Treatment Quarterly*, 19 (2), 2001.

Shedler, J.,& Block, J. (1990). Adolescent drug use and psychological health. *American Psychologist,* 45, 612-630.

Shrier, L. A., Emans, S. J., Woods, E. R. & DuRant, R. H. (1997). The association of sexual risk behaviors and problem drug behaviors in high school students. *Journal of Adolescent Health*, 20, 377-383.

Smith, D. E., & Seymour, R. B. (2001). *Clinician's guide to substance abuse.* San Francisco:McGraw-Hill.

Spitzer, R. L. & Williams, J. B. W. (1986). *Structured clinical interview for DSM-III-R–Personality disorders (SCID-II; rev. 5/1/86).* New York: Biometrics Research Department, New York State Psychiatric Institute.

Stanley, J. C. (1961). Analysis of unreplicated three-way classifications, with applications to rater bias and trait independence. *Psychometrika*, 26, 205-219.

Stein, L. A., Graham, J. R., Ben-Porath, Y. S., & McNulty, J. L. (1999). Using the MMPI-2 to detect substance abuse in an outpatient mental health setting. *Psychological Assessment*, 11 (1), 94-100.

Strack, S. (1999). *Essentials of Millon inventories assessment.* New York:Wiley.

Sutker, P. B., Archer, R. P. & Allain, A. N. (1978). Drug abuse patterns, personality characteristics, and relationships with sex, race, and sensation seeking. *Journal of Consulting and Clinical Psychology*, 46, 1374-1378.

Teplin, L. A. (1990). The prevalence of severe mental disorder among male urban jail detainees: Comparison with the epidemiologic catchment area program.(*American Journal of Public Health,* 80, 663-669.).

Teplin, L. A. (1994). Psychiatric and substance abuse disorders among male urban jail detainees. *American Journal of Public Health*, 84, 290-293.

Travis, J., Solomon, A.J., & Waul, M. (2001). *From Prison to Home: The Dimensions and Consequences of Prisoner Reentry.* Washington, DC: The Urban Institute.

Trull, T. J.,& Sher, K. J. (1994). Relationship between the Five-Factor Model of Personality and Axis I disorders in a nonclinical sample. *Journal of Abnormal Psychology,* 103, 350-360.

Ward, J., Mattick, R. P., & Hall, W. (1994). The effectiveness of methadone maintenance treatment: An overview. *Drug and Alcohol Review,* 13, 327-336.

Watson, D.,& Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin,* 96, 465-490.

Weed, N. C., Butcher, J. N., McKenna, T., & Ben-Porath, Y. S. (1992). New measures for assessing alcohol and drug abuse with the MMPI-2: The APS and AAS. *Journal of Personality Assessment*, 58, 389-404.

Wills, T. A., Vaccaro, D.,& McNamara, G. (1994). Novelty seeking, risk-taking, and related constructs as predictors of adolescent substance use: An application of Cloninger's theory. *Journal of Substance Abuse*, 6, 1-20.

Woody, G. E., McLellan, A. T. & O'Brien, C. P. (1990). Research on psychopathology and addiction: Treatment implications.(*Drug and Alcohol Dependence,* 25, 121-123.).

Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking.* Cambridge, England:Cambridge University Press.

Zuckerman, M. (1987). Biological connection between sensation seeking and drug abuse.(In J. Engel & L. Oreland (Eds.), *Brain reward systems and abuse* (pp. 165-173). New York:Raven Press.

Zuckerman, M., Kuhlman, D. M. & Camac, C. (1988). What lies beyond E and N? Factor analyses of scales believed to measure basic dimensions of personality. *Journal of Personality and Social Psychology*, 54, 96-107.

Zuckerman, M. & Neeb, M. (1980). Demographic influences in sensation seeking and expressions of sensation seeking in religion, smoking and driving habits. *Personality and Individual Differences,* 1, 197-206.

VITA

Anita Flye graduated Cum Laude with a Bachelor of Arts Degree from Louisiana Tech University in 1995, receiving an Outstanding Scholastic Achievement Award during this program. She returned to Louisiana Tech to work on a Master of Arts Degree in Counseling and Guidance, graduating in 1997. She was then awarded a Minority Doctoral Fellowship and began working on her Ph.D. in Counseling Psychology at Louisiana Tech University, completing the requirements for her doctorate degree after successfully defending this dissertation. She graduated in May, 2004. While working on her doctorate, she also completed the requirements for a second Master of Arts Degree in Industrial/Organization Psychology.

Her clinical and counseling experience have included work with a mental health community hospital, where she assisted both children and adults by conducting various therapeutic individual and group interventions. Other clinical and counseling experiences were gathered from the local VA Medical Center where she was assigned to work with various psychologists on rotations that included: Pain Management, Outpatient Psychiatric Services, Inpatient Psychiatric Services, and the Drug Dependency Treatment Program. She assisted local psychologist in private practice with biofeedback. She worked with another local psychologist, performing assessment duties with clients from the Headstart Program, Vocational Rehabilitation, and a parish prison facility. She currently works with the Department of Corrections and Public Safety and plans to build a career as a Medical and Correctional Psychologist.