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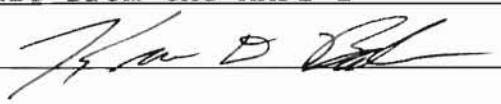
Abstract Approved: 

This study investigated the relationship between the Addiction Acknowledgement Scale (AAS) from the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), the Michigan Alcoholism Screening Test (MAST), Denial scale (DEN) from the Substance Abuse Subtle Screening Inventory, and the MMPI-2's Lie and Defensiveness validity scales. The purpose of this study was to infer construct validity by determining a relationship between the AAS and the MAST and DEN, two established measures of acknowledgement to alcohol and drug-related problems and denial. Scores on these measures were obtained from a sample of 35 men at a rural, midwestern mental health center who had been arrested for driving under the influence or other drug-related arrests. Thirty valid protocols were used for this study. Pearson product-moment coefficients were calculated to determine the relationship between the AAS and MAST, the AAS and DEN, the AAS and the MMPI-2's Lie validity scale, and the AAS and MMPI-2's Defensiveness validity scale. A significant positive correlation of .53 ($p < .01$) was found between the AAS and MAST, as well as a significant negative correlation of -.37

($p < .05$) between the AAS and DEN. This study demonstrated that the moderate significant relationship between the AAS and the MAST only accounted for 28% of the variance, leaving 72% of the variance unaccounted. Additionally, only 14% of the variance in the DEN was accounted for by the AAS. Despite the statistically significant relationships between the AAS and MAST and the AAS and DEN further investigation of the AAS is needed to establish the validity of this measure.

Determining the Construct Validity of the Addiction Acknowledgement Scale from the MMPI-2

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CHAPTER 1

INTRODUCTION

The adverse impact of alcohol dependency has been recognized by the public as well as medical and mental health clinics as one of the most pervasive diseases affecting America today. In 1993, approximately 103 million people drank alcohol, while 11 million were classified as heavy drinkers (1993 Household Survey, 1994). According to Donna Shalala, currently the Human Services Secretary of the United States (cited in 1993 Household Survey, 1994):

> The need [today is] to focus treatment efforts on longer term, "hard core" drug abusers. We must enhance and expand treatment options for so-called chronic hard core drug abusers if we are ever going to solve America's drug problem. (p. 6)

In order to meet the demand for an effective diagnostic instrument to help identify factors for treating substance abuse, researchers have used the items from the Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley, 1942) and in its recent revision, MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen & Kaemmer, 1989) to create supplementary scales devoted to this cause. The MMPI is an objective personality inventory that has been one of the most widely used assessment inventories for diagnosing substance-dependent people and identifying those factors that need to be the focus of treatment. Denial as associated

with substance dependence has been considered one of the most serious impediments in the diagnosis and treatment of a substance dependent person (Goldsmith & Greene, 1988; Moore & Murphy, 1961; Pennock & Poudrier, 1978). The authors of the original MMPI attempted to assess denial with two validity scales, specifically, the Defensiveness (K) and Lie (L) scales. However, these validity scales were developed to assess an overall test-taking attitude and not designed to directly assess the concept of denial as it relates to substance dependence. Weed, Butcher, McKenna, and Ben-Porath (1992) used the MMPI-2 items to create the Addiction Acknowledgement Scale (AAS) in an attempt to develop a MMPI-2 scale that will assess alcohol and drug related denial. Specifically, the AAS was developed to assess one's willingness to admit problems with alcohol and other drugs.

In order to establish psychometric utility of any instrument, different types of validity must be demonstrated. Because the AAS is a new scale, its validity has yet to be established. The purpose of this study was to explore the construct validity of the AAS.

Literature Review

Throughout the years, various definitions of alcohol dependence have been created by many different mental health professionals. By combining their efforts, the National Council on Alcohol and Drug Dependence (NCADD) and the American Society of Addiction Medicine (ASAM) developed the

following definition of alcoholism (cited in Flavin & Morse, 1991):

> Alcoholism is a primary, chronic disease with genetic, psychosocial, and environmental factors influencing its development and manifestations. The disease is often progressive and fatal. It is characterized by continuous or periodic impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial. (p. 267)

Alcoholics who demonstrate denial typically minimize the impact of drinking on their health and well-being. Also, denial may involve defensive devices that help the alcoholic avoid painful life events and feelings (Flavin & Morse, 1991). The concept of denial has been defined in many ways. The basic definition of denial is the unconscious attempt by an individual to believe something despite evidence to the contrary (Moore & Murphy, 1961). Denial as it pertains to alcoholism is a set of alcoholic behaviors that prevent the person from acknowledging unacceptable consequences and the negative impact of the drinking behavior (Amodeo & Liftik, 1990). Amodeo and Liftik (1990) also stated that denial allows the alcoholic to isolate and reject unacceptable parts of the alcoholic's self by distorting and excluding information from conscious experience, thus allowing the person to protect the alcoholic's sense of self.

Denial can take on many forms during the course of alcoholism. In fact, denial can prevent the diagnosis of alcoholism at an early stage of the disease. Early diagnosis can be overlooked because the alcoholic symptoms are less prominent in the early stages, and these symptoms can be dismissed by the alcoholic as another type of physical or emotional problem or both (Lisansky, 1975). Denial can also distort the alcoholic's self-report of drinking patterns and drinking consequences (Amodeo & Liftik, 1990).

Alcoholics and other substance abusers often present denial as their first line of defense. Generally, alcoholics either completely deny their use, acknowledge their use but claim they can control it, or accept that they have a substance abuse problem but believe that they can stop anytime they want (Johnson et al., 1986). Additionally, alcoholics exhibiting denial typically minimize the impact of drinking and how it affects their health as well as their social and personal relationships. Consequently, this minimization and lack of insight and understanding about the nature and the severity of their alcohol problems may hinder the diagnostic process (Flavin & Morse, 1991). Woodward, Fortgang, Sullivan-Trainer, Stojanov and Mirin (1991) found that clients' denial and comorbid psychosis best predicted the underdiagnosis of alcoholism.

Smith (1986) claimed that although denial displayed in male and female alcoholics often delays treatment and

diagnosis, their denial systems keep alcoholic females from the appropriate diagnosis more often than males. This is influenced by gender-related differences in drinking patterns, rationales, symptoms, time of onset and course of illness (Smith, 1986).

In 1989, Moore et al. presented a study that evaluated the effectiveness of alcohol diagnosis of patients who visited the adult services of the Johns Hopkins Hospital. The study concluded that the diagnosis of alcoholism was contingent upon how accurately and willingly patients admitted their alcohol consumption and other alcohol-related problems. Moore et al. (1989) concluded that although asking questions about the frequency and quantity of intake facilitated the diagnosis in self-acknowledged abusers, those who denied heavy alcohol intake evaded detection.

The majority of clinicians have claimed acknowledgement of the addiction must be achieved before treatment and recovery can begin (Douglas, 1976; Moore & Murphy, 1961; Pennock & Poudrier, 1978). The major effect of addicts' denial as it influences treatment is the inability or unwillingness to acknowledge difficulties with the substance. For example, alcoholics come to a point in their lives when they must face the reality of the negative results of their drinking. These realities associated with drinking attempt to erode the alcoholics' denial and force them to face the difficulties associated with alcohol. At

this point, alcoholics are presented with a decision. If they do not acknowledge their substance abuse problem, they may give themselves permission to drink out of control, and, as a result, exacerbate the physical and psychological effects of substance abuse and thereby prevent the acknowledgement of the need of treatment (Amodeo & Liftik, 1990).

Another effect of denial as it relates to treatment of the alcoholic occurs when the addict does acknowledge the alcoholism or difficulties with alcohol but does not acknowledge the need for help. Those who acknowledge their addiction yet deliberately reject treatment typically are convinced that treatment is not necessary, the problem can be handled and relapse is preventable (Amodeo & Liftik, 1990).

Denial can also surface when the addict must make a decision of the type of treatment and how long the treatment will last. Addicts may require a more extensive and in-depth treatment modality, but their denial may prevent their participation. For example, the addict may believe that only two sessions of outpatient treatment are needed, when actually, two weeks of intensive inpatient treatment is the most appropriate decision.

Also, denial may prevent addicts from participating in a particular focus of treatment that they may believe is unnecessary. For example, some addicts may believe that

their alcohol problems are mainly caused by only psychological factors (e.g., anger control, low self-esteem) and their excessive drinking should not be the main concern, thus taking the emphasis off of the drinking problem and placing it only on treating psychological issues. Conversely, some addicts may acknowledge their problem but dismiss it as a problem caused by their excessive drinking and not influenced by psychological or social factors. Thus, the emphasis, as these addicts believe, should be on only the drinking problem and not on psychological issues (Amodeo & Liftik, 1990). This type of denial can lead addicts to ignore some or all of the many factors that need to be addressed in treatment.

Data compiled by Moore and Murphy (1961) demonstrated that denial influenced treatment and the patient's prognosis. This study concluded that the alcoholic patient who was rated as exhibiting a high level of denial before entering treatment showed no improvement after treatment and showed a high rate of denial on follow-up interviews (Moore & Murphy, 1961). Additionally, patients who showed improvement after treatment had the lowest denial ratings before treatment started and during follow-up interviews (Moore & Murphy, 1961).

Addiction Acknowledgement Scale

Several instruments have been developed to help assess the level of a person's acknowledgement of substance abuse

problems (e.g., Denial Rating scale; Goldsmith & Greene, 1988). In 1992, Weed et al. developed a substance-use denial scale called the Addiction Acknowledgement scale (AAS). The AAS contains 13 items that relate to denial and acknowledgement of substance abuse problems. Specifically, the AAS measures the substance abuser's willingness to report alcohol and drug problems. Unlike other MMPI substance abuse scales, the AAS was developed rationally by choosing those MMPI-2 items that relate directly with substance abuse (e.g., "I have used alcohol excessively"). Other MMPI derived alcoholism scales (MacAndrew Alcoholism Scale; MacAndrew, 1965) utilized the empirical keying approach and had deleted items that directly referred to obvious substance abuse. Typically, a T scale score of 60 or more on the AAS suggests that the individual has acknowledged many problems related to alcohol and drug abuse (Graham, 1993).

To date, three studies have been devoted to establishing AAS' validity. Weed et al. (1992) demonstrated that the AAS discriminated effectively between persons in treatment for substance abuse problems, psychiatric patients, and the MMPI-2 normative sample while minimizing false positive rates. This study also demonstrated that the degree of discrimination (i.e., the degree to which an instrument discriminates between a correct classification and an incorrect classification) was superior in the AAS

when compared to the Addiction Potential Scale in both female and male substance abuse samples with the degree of discrimination being slightly superior in the female sample than in the male sample (Svanum, McGrew & Ehrmann, 1994).

Although Greene, Weed, Butcher, Arredondo and Davis' (1992) cross-validation study replicated earlier findings of the Weed et al. (1992) study, the test discriminated differently between a psychiatric and substance abuse sample. In fact, according to Svanum et al. (1994), "the magnitude of discrimination was much less than in the original study, and in the range that would have limited clinical utility" (p. 430).

The third study was conducted by Svanum et al. (1994). The authors concluded that "the AAS showed a moderate ability [emphasis added] to detect the study's participants who met the DSM-III-R criteria for substance abuse disorder" (p. 433).

Validity

According to the guidelines specified in the Standards for Educational and Psychological Tests printed by the American Psychological Association (1974), the kinds of inferences one might wish to draw from test scores will determine what kind of validity one will utilize. The validity of an instrument will help establish confidence in the inferences one wishes to derive from the test scores. Since the definition of validity is the ability of a given

test to measure what it purports to measure and how well it does so (Anastasi, 1982), the validity of an instrument and the procedures that establish it are very important. Essentially, the procedures for determining the validity of an instrument all share the same objective of ensuring that the test score on a given instrument corresponds with the behavior trait or construct under consideration. Several categories of validity having their own specific procedure on how to demonstrate the concept of validity have been described by various names (e.g. predictive, discriminant). One critical step in determining the utility of a psychological test is ascertaining its construct validity.

Anastasi (1982) indicated that the definition of construct validity is when an instrument can measure a certain theoretical construct, trait or attribute of a person. A procedure used to establish construct validity is correlating a new test with a similar test that measures the same general construct or behavior (Anastasi, 1982).

Since the validity coefficient is a correlation between a test score and a criterion measure (Anastasi, 1982), the coefficient depends upon the relevant characteristics (e.g., validity, reliability) of the criterion measure. Thus, the criterion can directly influence the generalizability of the validity coefficient.

Taking this into account, the Michigan Alcoholism Screening Test (MAST; Selzer, 1971) was used in this study

as one of the criterion measures. There are several reasons why the MAST was chosen as a criterion measure. First, like most face valid and direct assessment inventories, the MAST is susceptible to conscious and unconscious manipulation. If so motivated, a non-alcoholic person taking the MAST can simulate alcoholism (Otto & Hall, 1988; Sinnet, Benton, & Whitfill, 1991), and an alcoholic can avoid being detected (Sinnet et al., 1991). The AAS may also be susceptible to this threat.

The second reason the MAST was chosen as one of the criterion measures was that, like the AAS, the MAST also measures the acknowledgement of alcohol-related problems. Most researchers (e.g., Michke & Venneri, 1987; Ross, Gavin, & Skinner, 1990) agree that the MAST has been one of the most widely used alcoholism screening devices and has been used primarily to detect alcoholics and to assess the extent of excessive alcohol use (e.g., Zung, 1982). When used as a screening device, a score of five or greater on the MAST classifies a person as alcoholic (Selzer, 1971). However, Kaplan, Pokorny, Kanas and Lively (1974) reported that self-identified alcoholics scored higher on the MAST items than non-self-identified alcoholics. Therefore, they concluded that since the MAST was validated by using self-acknowledged alcoholics, the MAST might reflect the degree to which they will admit alcohol problems, rather than to identify the alcoholic condition. Kaplan et al. (1975) further concluded

that the MAST measured a perception and a willingness to admit behaviors associated with alcoholism.

Sinnet et al. (1991) stated that non-alcoholics can simulate severe alcohol dependency on the MAST while other groups, including alcoholics, can dissimulate (i.e., respond in a way to look better) and avoid detection of alcoholism on the MAST. Since non-alcoholics score higher on the MAST when asked to simulate alcoholism, one's willingness to disclose information can affect the score on the MAST (Sinnett et al., 1991). Also, Goldberg (1974) and Zung (1978) reported that the MAST measures acknowledgement of problems associated with alcoholism.

Additionally, in factor analytical studies conducted on the MAST, it is shown that denial or self-identification with alcoholism are distinct symptoms which the MAST measures (Friedrich, Boriskin, & Nelson, 1978; Zung, 1978). Zung (1978) stated that denial was directly related to the overall MAST scores of alcoholic and non-alcoholic DUI offenders and was also the most prominent dimension of the alcoholic DUI offender.

The other scale that was used as one of the criterion measures was the Denial scale (DEN) of the Substance Abuse Subtle Screening Inventory (SASSI; Miller, 1985). The DEN is a 14 item scale that identifies abusers who attempt to deny their pattern of alcohol/drug use and problems associated with it. This scale measures a general tendency to

consciously minimize one's weaknesses, create an impression that one does not have any type of problems and deny any personal defects. Also, it may measure a person's tendency to attribute many kinds of positive attributes to himself or herself. A high score on this scale (a T scale score of 70 or more) suggests that the person is exhibiting denial of problems resulting from his/her alcohol, drug use, or both (Cooper & Robinson, 1987).

The purpose of this study was to contribute to the few studies that have helped to establish AAS' validity. The strategy used to infer validity was to correlate the AAS to psychological inventories that measure the same construct. Specifically, this procedure intended to do this by using AAS scores obtained from a sample of men arrested for a driving under the influence offense (DUI) or other drug-related arrest and correlate them to their corresponding MAST scores. Also, this procedure entailed correlating the samples' AAS scores to their corresponding DEN scores. Since the MAST and DEN are established inventories that assess denial and acknowledgement of problems associated with alcohol dependence, and since the AAS also assesses problems associated with substance dependence, validity can be inferred to a certain degree if the AAS correlates with the MAST and DEN.

Primary Hypothesis I

The scores on the MAST were predicted to be positively

related to the scores on the AAS. Specifically, as the scores increased on the AAS, so would the scores on the MAST.

Primary Hypothesis II

Since the AAS measures acknowledgement of problems associated with substance abuse and dependence, and the DEN scale measures denial of problems related to substance abuse, a negative correlation between these two sets of scores was expected. According to this hypothesis, as scores on the AAS increased, the scores on the DEN would decrease.

Secondary Hypothesis

Additionally, construct validity was inferred by correlating the scores obtained on the AAS with the scores obtained on the MMPI-2 Lie (L) and Defensiveness (K) validity scales. Although the L and K scales of the MMPI-2 do not directly measure the construct of denial, these scales could reflect a tendency on the part of the participant to minimize personal information and, as a result, serve as a more discrete measure of denial.

CHAPTER 2

METHOD

Participants

The sample (*N* = 35) used in this study was drawn from men arrested for driving under the influence (DUI) of alcohol or who had been involved in other drug use-related offenses. As a result of the individual's arrest, the sample was court-ordered to the Mental Health Center of East Central Kansas (MHC) to participate in an alcohol and drug evaluation. The purpose of this evaluation was to determine a diagnosis and to develop pre-sentencing and diversionary recommendations for the arrestee to follow.

The participants ranged in age from 18 through 53 (*M* = 27.5; *SD* = 8.73) with an education level ranging from 10 to 16 years (*M* = 12.8; *SD* = 1.30). The majority of the participants were Caucasian (*n* = 33), with one African-American and one Native-American being represented. Twenty-one of the participants were single, seven were married, and seven were divorced. Eighty percent of the participants had been arrested for a DUI, while 20% of them had been arrested due to an alcohol and drug use related offense other than a DUI in one of the following Kansas counties: Morris, Lyon, Osage, Coffee, Wabaunsee, or Greenwood.

Instruments

Lie (L) scale. The L scale from the MMPI-2 consists of 15 items that are intended to identify individuals who are

not responding in an honest manner. This scale suggests that the person did not respond in a straight-forward and candid manner to the MMPI-2 items. Scores elevated above a T scale score of 65 suggest the individual is defensive, exhibits extreme denial, and is consciously trying to create a favorable impression of himself or herself (Butcher & Williams, 1992).

Defensiveness (K) scale. The K scale from the MMPI-2 is a 30 item scale designed to assess an individual's willingness to disclose personal information. This scale is also more of a subtle measure to identify an individual's attempt to exaggerate psychopathology and to present oneself in a favorable or unfavorable light (Graham, 1990a). A high T scale score (usually above 65) on the K scale suggests defensiveness, an uncooperative attitude, and also is a indication of an unwillingness to divulge personal information. A low score (usually a score below 45) suggests openness and a tendency to admit problems (Graham, 1990a).

Substance Abuse Subtle Screening Inventory (SASSI). The SASSI (Miller, 1985) consists of 52 true-false items that generate five scales that assess chemical dependency, regardless of the level of honesty or conscious-faking of the instrument. Also included on the SASSI are two scales that consist of 26 face-valid items, 12 questions that deal directly with alcohol use, and 14 questions that deal directly with the individual's drug use. All of the

questions that are endorsed in the scored direction are used in a decision-tree format that systematically determines if the test-taker is chemically dependent. One of the SASSI scales used in the decision-making process is called the Denial (DEN) scale. This scale directly measures denial.

DEN. The DEN scale is a 14 item scale that identifies abusers who attempt to deny their pattern of substance use and problems associated with it. A high score on this scale (T scale score of 70 or more) suggests that the test-taker is denying problems associated with substance abuse or dependence.

Michigan Alcohol Screening Test (MAST). The MAST (Selzer, 1971) consists of 25 true-false items that directly assess a person's medical, legal and psychosocial problems caused by excessive drinking, as well as a person's past involvement in alcohol treatment and aberrant drinking patterns (Zung, 1982). Each MAST item has a weighted score that produces a total score ranging from 0 to 53 when the items are endorsed in the scored direction. Normally, a score of five or more indicates a diagnosis of alcoholism (Selzer, 1971). However, for purposes of this study, the MAST items were not assigned the corresponding weighted score but received one point per question endorsed in the scored direction and no point if not endorsed in the scored direction. As the participants' MAST scores increase, the test taker has increasingly acknowledged and admitted many

problems associated with alcohol abuse and dependence.

Addiction Acknowledgement Scale (AAS). The AAS is a 13 item scale that assesses a person's willingness to admit problems associated with substance use and abuse (Graham, 1993). A high score on the AAS (T scale score of 60 or more) indicates that the test-taker has admitted many problems and consequences due to his or her substance use (Graham, 1993). Due to copyright laws, the DEN, AAS, and L and K scales were not included in the Appendix section.

Procedure

The participants were obtained from a pool of men who were referred to the MHC's alcohol and drug services for the purpose of an alcohol and drug evaluation following an arrest for a DUI or other alcohol and drug use-related offense during the time period of June 5, 1995 to July 7, 1995. All of the people referred to the MHC for an alcohol and drug evaluation during this time period completed the following process that each court-referred person must complete when sent to the MHC for purposes of an alcohol and drug evaluation. First, the referred person signed the MHC's confidentiality form. This form explained the client's rights as they pertain to state and federal laws. Next, the referred person completed the SASSI in its entirety. The next step in this process required the referred person to complete the MHC's personal history form. This form gathered the person's relevant demographic information, as well as

other information that is needed to complete the evaluation. Included in the MHC personal history form were questions that comprise the MAST and the MacAndrew Alcoholism Scale (MAC). Completion of the personal history form, including the MAST and the SASSI, usually took about one and one-half hours to two hours to complete. This information gathering process was supervised by the author of this study.

Following completion of the information gathering process, the referred person and the researcher scheduled an appointment time when the referred person would meet with one of the staff members of the MHC's Alcohol and Drug Services. These staff members consist of master level psychologists registered in the state of Kansas and clinical interns who have been trained by the MHC to conduct alcohol and drug evaluations. The evaluator would determine the diagnosis of the participant by questions derived from the criteria listed in the Diagnostic Statistical Manual, Fourth Edition (DSM-IV), clinical impressions of the evaluator, the MAST (Selzer, 1971), the MAC (MacAndrew, 1965) and SASSI (Miller, 1985) test scores.

After an appointment time was determined, the researcher approached all the men present and individually asked them for their assistance as volunteers to participate in this study. The men who agreed to participate were asked to read and sign a consent form (see Appendix A). This consent form detailed their rights as a participant and

further explained that their participation, or lack thereof, would not influence or affect the outcome of their evaluation.

Then, the participants completed only the items that comprise the L and K scales and the AAS that were marked in the MMPI-2 test booklet (total of 58 questions). Although some researchers recommend administering the entire MMPI-2 to get its scale scores (Butcher & Williams, 1992; Graham, 1990a), several researchers have shown that one can obtain a score on a supplementary scale by administering it independently of the entire MMPI (e.g., MacAndrew Alcoholism Scale, MacAndrew, 1979; Posttraumatic Stress Disorder scale, McFall, Smith, Rosell, Tarver & Malas, 1990). Researchers have also demonstrated that if the substance abuse scales, specifically the MAC, are administered independently from the entire MMPI, the items from the L and K scales should also be administered (Ciancio, Saltstone & Fraboni, 1990; MacAndrew, 1979).

Exclusion criteria. Those participants who had an invalid AAS, L or K scale scores were excluded from this study. Invalid scores on the AAS, L and K scales were defined as omitting an answer to any of the 58 items on any of these scales, a T scale score above 65 on the L scale, or a T scale score above 70 on the K scale. Although some researchers agree that a T scale score above 65 is a sufficient cut-off score to invalidate the K scale (i.e.,

Butcher & Williams, 1992), Graham (1990a, 1990b) showed that a T scale score of 70 or more on the K scale is an acceptable cut-off score to determine profile invalidity. Another reason a cut-off score of 70 was used on the K scale to invalidate the protocol was to prevent a "ceiling effect," since the AAS and K scales were being correlated. A ceiling effect may be achieved by a person because DUI offenders are in a population that is motivated to conceal problems in order to present themselves in a favorable status (Otto, Lang, Megargee & Rosenblatt, 1988). Therefore, a higher cut-off score on the K scale will include some protocols that will typically be invalidated.

Additionally, since most of the people who are referred to the MHC are men, a sufficient sample of women could not have been achieved. Therefore, women were excluded for purposes of this study.

CHAPTER 3

RESULTS

Thirty-five males were administered the MAST, DEN, and the items that comprise the AAS, L and K scales of the MMPI-2. A total of five protocols were discarded, four for having an L scale score above 65 and one from a minor without parental permission to participate. The data from the remaining 30 participants were used for analysis. The means and standard deviations derived from the raw scores of the participants' AAS, MAST, DEN, L scale and K scale are presented in Table 1.

Pearson-product moment correlation coefficient (r) was used to determine the degree of intercorrelation the scores obtained on the L and K scales, AAS, MAST, and DEN. The test of significance was determined at a .05 level of confidence. Table 2 lists the intercorrelations among the AAS, MAST, DEN, L scale and K scale. Additionally, the statistical analyses determined that DEN and L scale scores positively correlated, $r = .43$, $p < .01$. Furthermore, DEN and K scale scores positively correlated $r = .39$, $p < .05$.

To statistically partition for the total variation that is caused by correlating these tests, the coefficient of determination (r^2) and the coefficient of alienation (k) were calculated. The coefficient of determination is a measure that demonstrates the proportion of total variation

Table 1

Means and Standard Deviations Derived from the Raw Scores of the AAS, MAST, DEN, L Scale and K Scale Scores

Variable[a]	M	SD
AAS	3.53	2.42
MAST	5.33	3.99
DEN	6.77	2.79
L Scale	4.07	1.91
K Scale	15.57	5.39

Note. AAS = Addiction Acknowledgement Scale, MAST = Michigan Alcoholism Screening Test, DEN = Denial Scale, L Scale = Lie Scale, K Scale = Defensiveness Scale.

[a] *N* = 30 for each variable.

Table 2

Correlation Matrix of the AAS, MAST, DEN, L Scale and K Scale

Variable[a]	1	2	3	4	5
1. AAS		0.53**	-0.37*	-0.11	-0.30
2. MAST			-0.15	-0.08	-0.16
3. DEN				0.43**	0.39*
4. L Scale					0.35*
5. K Scale					

[a] N = 30 for each variable.

*p < .05. **p < .01.

that can be accounted for when two test measures are intercorrelated. The coefficient of alienation is a measure of non-association between two variables. This variable shows the portion of the variance that is unexplainable. Table 3 displays the coefficients of determination and the coefficients of alienation between the AAS and each of the other variables.

Table 3

The Degree of Determination (r^2) and the Degree of Non-Association (k) Between the AAS and the MAST, DEN, L Scale and K Scale

Variable[a]	AAS	
	r^2	k
MAST	.28	.85
DEN	.14	.93
L Scale	.01	.99
K Scale	.09	.95

Note. AAS = Addiction Acknowledgement Scale, MAST = Michigan Alcoholism Screening Test, DEN = Denial Scale, L Scale = Lie Scale, K Scale = Defensiveness Scale.

[a]*N* = 30 for each variable.

CHAPTER 4

DISCUSSION

The main objective of this study was to determine the degree of relationship between the Addiction Acknowledgement scale (AAS) and the Michigan Alcoholism Screening Test (MAST) and the AAS with the Denial scale (DEN) from the Substance Abuse Subtle Screening Inventory (SASSI). Since the AAS and the MAST both assess a person's willingness to admit problems related to alcoholism and substance dependence, and since the DEN measures unwillingness to admit substance dependence-related problems, the MAST and DEN were expected to correlate strongly with the AAS. Specifically, a positive correlation between the AAS and MAST and a negative correlation between the AAS and DEN would be obtained. A strong correlation would be required to support an argument that these scales measure the same construct.

The results demonstrated a statistically significant positive correlation between the AAS and MAST and a significant negative correlation between the AAS and DEN, lending some support to the hypotheses of the study. According to Kaplan and Sacuzzo (1982), interpretation of correlation coefficients can be complicated. For example, when interpreting correlation coefficients related to psychometric tests, coefficients in the range of .30 to .40 are considered high. However, when interpreting coefficients

statistically, coefficients in the range of .30 to .40 are generally seen as moderate to low (Kaplan & Sacuzzo, 1982). Therefore, the coefficients of determination and alienation are needed to understand the validity coefficient.

This study also explored the relationship between the AAS and the Lie (L) and Defensiveness (K) scales from the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) to indirectly infer construct validity of the AAS. It was expected that the L and K scales would correlate with the AAS. However, since the L and K scales are not considered direct measures of the construct of denial, strong inferences of the relationship between the AAS and the K and L scale should be avoided.

The results demonstrated that there was not a significant relationship between the AAS and the L and K scales. This finding supports the research that the L and K scales do not measure the construct of denial, but instead assesses the person's test-taking attitude and whether the person approached the test in a defensive manner (Friedman, Webb, & Lewak, 1989).

Despite the significant correlations, several points should be considered before one can infer that the AAS measures the same construct in which the MAST and DEN measure. An examination of the coefficients of determination and alienation bring the results of this study into perspective. The correlation between the MAST and the AAS

was encouraging; however, 72% of the variance between these two measures was unaccounted for. Accounting for only 28% of the variance dictates that one should interpret the results of this study with caution. Similarly, the AAS accounted for only 14% of the variance with the DEN, leaving 86% of it unaccounted for.

The magnitude of the correlation coefficient is dependent upon the characteristics of the criterion measure and the predictor measure. Despite the fact that the MAST and the AAS are similar in some ways (i.e., both assess problems relating to alcohol dependence), the different scoring methods of these two measures may contribute to the study's results. For example, the MAST contains a wide variety of questions (25 questions) that relate to alcohol problems with each question having a weighted score which increases depending upon the severity of the problem associated with the question. Therefore, a MAST question like "Do you have the shakes or delirium tremens" will be scored higher than "Do you feel that you are a normal drinker."

Conversely, the AAS has 13 items that include a smaller range of questions that relate to substance abuse problems and can only be endorsed "True" or "False." As a result, the items scored on the AAS are independent of the problem associated with the question. Therefore, the AAS question "I have used alcohol excessively" will be scored the same as "I

frequently notice my hand shakes when I try to do something." Despite the difference in magnitude of severity between these two questions, they are scored the same. As a result, scores on the MAST and AAS may be independent and may not be influenced by the test-taker's level of honesty and denial, but may be influenced by other factors. For example, the test-taker may not endorse an item on the AAS because of the person's age, life experiences, the extent of the person's substance dependence and diagnosis. The person may have had problems associated with substance abuse or dependence, but the specific nature of these problems may not be included in the AAS.

The variation in the AAS does not appear to be due to denial. Therefore, determining what the AAS does measure is important. While Weed et al. (1992) and Greene et al. (1992) describe the AAS as an assessment of denial and unwillingness to admit substance abuse and dependence-related problems, others (i.e., Duckworth & Anderson, 1995) do not assume this to be true. Further research is needed to determine the exact nature of the AAS as a measure of denial.

The majority of the participants were Caucasian and were arrested in a rural, midwestern town. A random sample was not utilized when selecting the participants. Due to these factors, the results of this study are limited and only generalizable to scores obtained from other people from

the Midwest who share the same demographic characteristics as the study's participants.

Another factor that limited the generalizability of the study's results was the small sample size. A coefficient obtained from a small sample is not as reliable as a correlation obtained from a large sample because "it is more likely that the correlation will capitalize on chance variation in the data. Thus, a validity coefficient based on a small sample may have a greater tendency to be artificially inflated" (Kaplan & Sacuzzo, 1989; p. 126). Increasing the sample size, cross-validation of this study, and validity studies of the AAS using different groups in a variety of settings and situations will increase confidence about generalizing findings.

Significant positive correlations between the DEN and the L scale and between the DEN and the K scale were obtained. One inference that can be made from these results is that the DEN has tapped into a trait or traits that the L and K measure (and vice-versa). However, more research, especially factor analytic studies, is needed to substantiate this premise.

In summary, according to Kaplan and Sacuzzo (1982), research is needed to determine if a relationship exists between the criterion measure and the measure being considered. After the relationship is determined, a variety of validity and cross-validation studies (e.g., factor

analytic studies) determine if the measure is assessing the construct in question. The results of this study suggest that a relationship exists between the AAS and two measures used to assess denial and acknowledgement of substance abuse problems.

Also, the results of this study suggest that, despite the positive correlation between the AAS and the MAST, and a significant, negative correlation between the DEN and AAS, different types of cross-validation studies are needed to help account for some of the variation created. Validity studies for the AAS, conducted in a variety of settings, using a heterogeneous group of people experiencing substance abuse or dependence-related issues, and cross validation studies of the AAS and the MAST and DEN in order to further explore the relation of these instruments to each other, will help further establish the validity of the AAS.

Since the MAST is susceptible to dissimulation and conscious manipulation, the validity scales of the MMPI-2, especially the L and K scales, should be used to help determine the person's test-taking attitude. According to Cassisi and Workman (1992), the validity scales of the MMPI-2 can be used to assess test-taking attitudes when completing other types of psychometric tests, other than the MMPI-2.

Furthermore, when administering the AAS, the test-administrator consider the test-taker's age, previous

psychological history and other relevant diagnoses, life experiences, validity scales from the MMPI-2, and extent of his or her substance dependence. Also, until greater evidence of the validity on the AAS becomes available, it should be used as a supplemental assessment tool rather than a primary measure of an individual's willingness to acknowledge addiction problems. When used in this manner, the AAS may complement other diagnostic measures and procedures designated to assess problems related to alcohol and drug abuse and addiction.

REFERENCES

American Psychological Association. (1974). Standards for educational and psychological tests (2nd ed.) Washington, DC: Author.

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

Amodeo, M., & Liftik, J. (1990). Working through denial in alcoholism. Families in Society, 71, 131-135.

Anastasi, A. (1982). Psychological testing (5th ed.). New York: MacMillian Canada, Inc.

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

Butcher, J. N., & Williams, C. L. (1992). Essentials of MMPI-2 and MMPI-A interpretation (2nd ed.). Minneapolis, MN: University of Minnesota Press.

Cassisi, J. E., & Workman, D. E. (1992). The detection of malingering and deception with a short form of the MMPI-2 based on the L, F, and K scales. Journal of Clinical Psychology, 48, 54-58.

Ciancio, C., Saltstone, R., & Fraboni, M. (1990). Tavern patrons and the MacAndrew Alcoholism scale: Self-reported drinking behavior in relation to the MMPI L & K scales. Journal of Clinical Psychology, 46, 687-691.

Cooper, S. E., & Robinson, D. A. (1987). Use of the Substance Abuse Subtle Screening Inventory with a college population. Journal of American College Health, 36, 180-184.

Douglas, D. B. (1976). Who is a real Alcoholic? Practical help in managing alcoholism. New York State Journal of Medicine, 76, 603-607.

Duckworth, J. C., & Anderson, W. P. (1995). MMPI & MMPI-2: Interpretation manual for counselors and clinicians (4th ed.). Bristol, PA: Accelerated Development.

Flavin, D. K., & Morse, R. M. (1991). What is alcoholism? Current definitions and diagnostic criteria and their implications for treatment. Alcohol Health and Research World, 15, 266-271.

Friedman, A. F., Webb, J. T., & Lewak, R. (1989). Psychological assessment with the MMPI. Hillsdale, NJ: Lawrence Erlbaum Associates.

Friedrich, W. N., Boriskin, J. A., & Nelson, O. (1978). A factor analytic study of the Michigan Alcoholism Screening Test. Psychological Reports, 42, 865-866.

Goldberg, L. R. (1974). Objective diagnostic tests and measures. Annual Review of Psychology, 25, 343-366.

Goldsmith, R. J., & Greene, B. L. (1988). A rating scale for alcoholic denial. The Journal of Nervous and Mental Disease, 176, 614-621.

Graham, J. R. (1990a). MMPI-2: Assessing personality and psychopathology. New York: Oxford University Press.

Graham, J. R. (1990b, May). MMPI-2 workshop. Workshop presented by J. R. Graham at Charter Hospital of Wichita, KS.

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

Greene, R. L., Weed, N. C., Butcher, J. N., Arredondo, R., & Davis, H. G. (1992). A cross-validation of MMPI-2 substance abuse scales. Journal of Personality Assessment, 58, 405-410.

Hathaway, S. R., & McKinley, J. C. (1942). The Minnesota Multiphasic Personality Schedule. Minneapolis, MN: University Free Press.

Johnson, S., Michals, T. J., Solomon, J., Turnbull, J. M., Millman, R. B., Khuri, E. T., & Sbriglio, R. (1986). Detecting cocaine abuse in a patient. Medical Aspects of Human Sexuality, 20, 66-82.

Kaplan, H. B., Pokorny, A. D., Kanas, T., & Lively, G. (1974). Screening tests and self-identification in the detection of alcoholism. Journal of Health and Social Behavior, 15, 51-56.

Kaplan, H. B., Pokorny, A. D., Kanas, T., & Lively, G. (1975). Self-identification and the underdetection of alcoholism. Disease of the Nervous System, 36, 133-136.

Kaplan, R. M., & Saccuzzo, D. P. (1982). Psychological tests: Principles, applications and issues. Montery, CA:

Brooks/Cole.

Lisansky, E. T. (1975). Why physicians avoid early diagnosis of alcoholism. New York State Journal of Medicine, 75, 1788-1792.

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

MacAndrew, C. (1979). MAC scale scores of three samples of men under conditions of conventional versus independent scale administration. Journal of Studies on Alcohol, 40, 138-141.

McFall, M. E., Smith D. E., Roszell, D. K., Tarver, D. J., & Malas, K. L. (1990). Convergent validity of measures of PTSD in vietnam combat veterans. American Journal of Psychiatry, 147, 645-648.

Michke, H. D., & Venneri, R. L. (1987). Reliability and validity of the MAST, Mortimer-Filkins Questionnaire, and CAGE in DUI assessment. Journal of Studies on Alcohol, 48, 492-501.

Miller, G. A. (1985). Substance Abuse Subtle Screening Inventory (SASSI): Manual. Spencer, IN: Spencer Evening World.

Moore, R. A., & Murphy, T. C. (1961). Denial of alcoholism as an obstacle to recovery. Quarterly Journal of Studies on Alcohol, 22, 597-609.

Moore, R. D., Bone, L. R., Geller, G., Mamon, J. A., Stokes, E. J., & Levine, D. M. (1989). Prevalence, detection and treatment of alcoholism in hospitalized patients. Journal of the American Medical Association, 261, 403-407.

1993 Household survey good and bad news substance abuse and mental health services administration. (1994 Summer). Substance Abuse and Mental Health Services Administration, 2, 6-15.

Otto, R. K., & Hall, J. E. (1988). The utility of the Michigan Alcoholism Screening Test in the detection of alcoholics and problem drinkers. Journal of Personality Assessment, 52, 499-505.

Otto, R. K., Lang, A. R., Megargee, E. I., & Rosenblatt, A. I. (1988). Ability of alcoholics to escape detection by the MMPI. Journal of Consulting and Clinical Psychology, 56, 452-457.

Pennock, M., & Poudrier, L. M. (1978). Overcoming denial: Changing the self concepts of drunk drivers. Journal of Studies on Alcohol, 39, 918-921.

Ross, H. E., Gavin, D. R., & Skinner, H. A. (1990). Diagnostic validity of the MAST and the Alcohol Dependence scale in the assessment of DSM-III-R alcohol disorders. Journal of Studies on Alcohol, 51, 506-513.

Selzer, M. L. (1971). The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. American Journal of Psychiatry, 127, 1653-1658.

Sinnett, R. E., Benton, S. L., & Whitfill, J. (1991). Simulation and dissimulation on alcoholism inventories: The ALCADD and the MAST. Psychological Reports, 68, 1360-1362.

Smith, A. (1986). Alcoholism and gender: Patterns of diagnosis and response. Journal of Drug Issues, 16, 407-420.

Svanum, S., McGrew, J., & Ehrmann, L. (1994). Validity of the substance scales of the MMPI-2 in a college student sample. Journal of Personality Assessment, 62, 427-439.

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.

Woodward, B., Fortgang, J., Sullivan-Trainor, M., Stojanov, H., & Mirin, S. M. (1991). Underdiagnosis of alcohol dependence in psychiatric inpatients. American Journal of Alcohol Abuse, 17, 373-388.

Zung, B. J. (1978). Factor structure of the Michigan Alcoholism Screening Test. Journal of Studies on Alcohol, 39, 56-67.

Zung, B. J. (1982). Evaluation of the Michigan Alcoholism Screening Test (MAST) in assessing lifetime and recent problems. Journal of Clinical Psychology, 38, 425-439.

APPENDIX

APPENDIX A

Participant's Consent Form

This study will be conducted by Matthew R. Botkin from Emporia State University. The purpose of this study is to see if scores on three tests are similar to each other. If these three tests scores are similar, then it can be said that they measure the same thing. You have already completed two of the test as part of the evaluation process. The third test that you will take for this study should be completed in 15 to 20 minutes, or less.

PLEASE READ THE FOLLOWING STATEMENTS AND SIGN YOUR NAME AT THE BOTTOM OF THIS FORM IF YOU AGREE WITH THEM AND ARE WILLING TO PARTICIPATE IN THIS RESEARCH PROJECT.

I understand that if I agree to participate, I may stop participating in this study at any time. I also understand that my confidentiality will be respected. I will not be required to put my name on the test form and any identifying information about myself will not be included in the report. I also understand that I will be required to provide 15 to 20 minutes of my time if I choose to participate in this study. My participation, or lack thereof, will not have an effect on my evaluation. Also, I understand that some of the information that was obtained in the evaluation process will be used for this study.

AGAIN, THE INFORMATION COLLECTED IN THIS STUDY WILL REMAIN CONFIDENTIAL AND WILL NOT BE LINKED WITH YOUR NAME OR

YOUR PERSONAL INFORMATION. ALSO, THE INFORMATION OBTAINED ON THE FOLLOWING QUESTIONNAIRE WILL NOT BE GIVEN TO THE MENTAL HEALTH CENTER AND WILL NOT BE INCLUDED IN YOUR EVALUATION. THANK YOU!!!!

I have read and understand the above information and I agree to participate in this study.

Signed_____

I, Matthew R. Botkin, hereby submit this thesis to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.

Matthew R. Botkin
Signature of Author

August 10, 1995
Date

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