

# **ALCOHOL-DRUG-SCREEN: AN INVENTORY OF SCIENTIFIC FINDINGS**

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## INTRODUCTION

### Alcohol-Drug-Screen

The Alcohol-Drug-Screen (ADS) focuses entirely on alcohol and drug use or abuse. The ADS interprets its evidence based Alcohol Scale and Drug Scale problem severity measures with Diagnostic and Statistical Manual of Mental Disorders 4<sup>th</sup> Edition (DSM-IV) Substance Abuse and Substance Dependency classifications.

The Alcohol-Drug-Screen (ADS) is a brief, self-administered evidence based substance (alcohol and other drugs) abuse assessment instrument or test. It consists of 116 questions and takes 20 minutes to complete. From test data (answers) input, the ADS is scored with 3 page reports printed within 2½ minutes on-site.

One of the best single sources of Alcohol-Drug-Screen (ADS) information is its website [www.alcohol-drug-screen.com](http://www.alcohol-drug-screen.com).

The ADS incorporates six scales (measures) **1. Truthfulness Scale, 2. Alcohol Scale, 3. Drug Scale, 4. DSM-IV Substance Abuse Scale, 5. DSM-IV Substance Dependency Scale and 6. Stress Management Scale.**

#### ADS SCALES (MEASURES)

**Truthfulness Scale:** measures the truthfulness of the client (patient, probationer, offender) while completing the Alcohol-Drug-Screen (ADS). All interview and self-report information is subject to the dangers of untrue answers due to client defensiveness, guardedness or deliberate falsification. The straightforward nature of any self-report questionnaire may appear to some people as intrusive - giving rise to denial and attempts to “fake good.” The ADS Truthfulness Scale identifies these self-protective, recalcitrant and guarded people that minimize or attempt to conceal information.

The ADS Truthfulness Scale goes beyond just establishing the truthfulness of the client. The correlation between the Truthfulness Scale and each other ADS scale has been established, error variance associated with untruthfulness has been identified and in a procedure similar to that used in the Minnesota Multiphasic Personality Inventory (MMPI, the most widely used test in the United States) this measure is added back into “truth-corrected” scale scores. **Truth-corrected scale scores are more accurate than raw scores.** A Truthfulness Scale score at or above the 90<sup>th</sup> percentile invalidates all ADS scale scores.

**Alcohol Scale:** measures the severity of a client’s (patient, probationer, offender) alcohol use or abuse. This enables assessors to match the severity of alcohol problems with the optimum matching of intervention or treatment program intensity. An elevated Alcohol Scale score (at or above the 70<sup>th</sup> percentile) identifies alcohol-related problems. An elevated Alcohol Scale score at or above the 90<sup>th</sup> percentile identifies dependency and severe alcohol problems. The Alcohol Scale measures the severity of alcohol problems which makes matching of alcohol intervention or treatment intensity possible.

**Drug Scale:** measures the severity of a client's drug use or abuse. Drugs refer to marijuana, cocaine, crack, ice, ecstasy, amphetamines, barbiturates, LSD, opium, heroin, etc. Drug abuse can incorporate prescription and non-prescription drugs. The burgeoning awareness of marijuana, crack and cocaine abuse has emphasized the importance of accurate drug use and abuse measurement. The ADS Drug Scale makes matching of drug problem severity with appropriate or matching drug treatment intensity possible.

**Stress Management Scale:** measures how well a person manages or copes with their experienced stress. Stress is an increasingly significant concept in our society. The National Institute for Occupational Safety and Health (NIOSH) evaluated the health records of 22,000 workers in 130 companies. **Their conclusion: stress affects workers in all types of jobs and at all levels. Unskilled laborers are equally susceptible, as are top level executives.** Everybody experiences stress. The issue is how "well a person manages stress." Since stress management is a learned skill (techniques and strategies) people that can't manage or cope with the stress in their lives are often referred to "stress management classes."

**DSM-IV Substance Abuse Classification Scale:** psychoactive substance use, abuse and dependency are defined and discussed in the Diagnostic and Statistical Manual of Mental Disorders 4<sup>th</sup> Edition (DSM-IV). It is from this source (DSM-IV) that the DSM-IV Substance Abuse Scale and the DSM-IV Substance Dependency Scale evolved. Substance abuse is defined in terms of admission to one or more of four DSM-IV symptoms or criterion items. These DSM-IV substance abuse symptoms were rephrased and reformatted into the ADS version of the DSM-IV Substance Abuse Scale. **Client admission to one or more of the four DSM-IV abuse items or symptoms results in a Substance Abuse classification.**

**DSM-IV Substance Dependency Classification Scale:** substance dependency is defined in terms of admissions to three (3) or more of seven DSM-IV dependency symptoms or criterion items. These DSM-IV substance dependency symptoms were rephrased and reformatted into the ADS version of the DSM-IV Substance Dependency Scale. Also, if a person is diagnosed "substance dependent," they maintain that diagnosis for the rest of their lives. **Client admission to three or more of seven DSM-IV dependency symptoms or items results in a Substance Dependency classification. Of if a person is diagnosed "substance dependent" they are diagnosed substance dependent for life.**

Alcohol-Drug-Screen (ADS) items are personal. The straightforward nature of most self-report tests may appear to some people as intrusive. Although perhaps an issue for some, this emphasizes the importance of the ADS Truthfulness Scale. More ADS information and its scale scores is presented on its website [www.alcohol-drug-screen.com](http://www.alcohol-drug-screen.com).

This Alcohol-Drug-Screen (ADS) discussion is an introduction to the presentation of ADS research, which follows.

## RESEARCH STUDIES

Alcohol-Drug-Screen (ADS) validation studies were conducted with established Minnesota Multiphasic Personality Inventory (MMPI) scales as well as Polygraph examinations and other tests. Reliability and validity studies have been conducted on chemical dependency inpatients, outpatients, college students, job applicants, defendants, diversion program clients, probationers, and counseling patients.

Empirically based ADS scales (or measures) were developed by statistically relating scale item configurations to known substance (alcohol and other drugs) abuse groups. The ADS was then normed against an adult (male and female) population. A summary of much of this ADS research follows.

This document first presents the earlier studies that investigated the Stress Management Scale. The research represented in this document is reported chronologically -- as it occurred. Chronological presentation enables the reader to follow the evolution of the ADS into a state-of-the-art assessment instrument. More recent studies (toward the end of this document) are most representative of current ADS statistics.

ADS risk level classification categories are presented below. These percentages are based on ADS respondent scale scores. This permits comparison of predicted percentages with obtained percentages for each risk range category.

### TRUTHFULNESS, ANTISOCIAL, VIOLENCE & STRESS MANAGEMENT SCALES

PREDICTED RISK RANGE PERCENTAGES FOR EACH ADS SCALE		
RISK CATEGORY	RISK RANGE	PREDICTED PERCENTAGE
Low Risk	zero to 39th percentile	39%
Medium Risk	40 to 69th percentile	30%
Problem Risk	70 to 89th percentile	20%
Severe Problem	90 to 100th percentile	11%

Predicted percentages for each scales risk range category can be compared to actually attained percentile scores. This comparison helps in understanding the accuracy of the ADS.

### STRESS MANAGEMENT

The Stress Management (SM) or Stress Management Scale is based upon the following mathematical equation:

$$SM = CS/S \times k$$

The Stress Management (SM) scale is a numerical value representing a person's ability to handle or cope with stress relative to their amount of experienced stress. CS (Coping Skill) refers to a person's ability to cope with stress. S (Stress) refers to experienced

stress.  $k$  (Constant) represents a constant value in the SM equation to establish SM score ranges. The SM includes measures of both stress and coping skills in the derivation of the Stress Management (SM) score. The better an individual's management or coping skills, compared to their level of experienced stress, the higher their SM score.

The Stress Management (SM) scale equation represents empirically verifiable relationships. The SM scale (and its individual components) lends itself to research. Nine studies were conducted to investigate the validity and reliability of the Stress Management Scale.

**Validation Study 1:** This study was conducted (1980) to compare SM High Stress and Low Stress groups. The High Stress group ( $N=10$ ) was comprised of 5 males and 5 females. Their average age was 39. Subjects for the High Stress group were randomly selected from outpatients seeking treatment for stress. The Low Stress group ( $N=10$ ) was comprised of 5 males and 5 females (average age 38.7) randomly selected from persons not involved in treatment for stress. High Stress group SM scores ranged from 32 to 97, with a mean of 64.2. Low Stress group SM scores ranged from 82 to 156, with a mean of 115.7. The t-test statistical analysis of the difference between the means of the two groups indicated that the High Stress group had significantly higher SM scores than the Low Stress group ( $t = 4.9, p < .001$ ). This study shows that the Stress Management (SM) Scale is a valid measure of stress coping. The Stress Management Scale significantly discriminates between high stress individuals and low stress individuals.

**Validation Study 2:** This study (1980) evaluated the relationship between the SM scale and two criterion measures: Taylor Manifest Anxiety Scale and Cornell Index. These two measures have been shown to be valid measures of anxiety and neuroticism, respectively. If the SM Scale is correlated with these measures it would indicate that the Stress Management Scale is a valid measure. In the Taylor Manifest Anxiety Scale, high scores indicate a high level of anxiety. Similarly, in the Cornell Index high scores indicate neuroticism. Negative correlation coefficients between the two measures and the SM were expected because high SM scores indicate good stress coping abilities. The three tests were administered to forty-three (43) subjects selected from the general population. There were 21 males and 22 females ranging in age from 15 to 64 years. Utilizing a product-moment correlation, SM scores correlated  $-.70$  with the Taylor Manifest Anxiety Scale and  $-.75$  with the Cornell Index. Both correlations were significant, in the predicted direction, at the  $p < .01$  level. These results support the finding that the Stress Management Scale is a valid measure of stress management or coping abilities. The reliability of the SM was investigated in ten subjects (5 male and 5 female) randomly chosen from this study. A split-half correlation analysis was conducted on the SM items. The product-moment correlation coefficient ( $r$ ) was  $.85$ , significant at the  $p < .01$  level. This correlation indicates that the Stress Management (SM) Scale is a reliable measure. These results support the Stress Management (SM) Scale as a reliable and valid measure.

**Validation Study 3:** In this study (1981) the relationship between the SM Scale and the Holmes Rahe Social Readjustment Rating Scale (SRRS) was investigated. The SRRS,

which is comprised of a self-rating of stressful life events, has been shown to be a valid measure of stress. Three correlation analyses were done. SRRS scores were correlated with SM scores and separately with two components of the SM scale: Coping Skill (CS) scores and Stress (S) scores. It was hypothesized that the SM and SRRS correlation would be negative, since subjects with lower SM scores would be more likely to either encounter less stressful life events or experience less stress in their lives. It was also predicted that subjects with a higher CS would be less likely to encounter stressful life events, hence a negative correlation was hypothesized. A positive correlation was predicted between S and SRRS, since subjects experiencing more frequent stressful life events would reflect more experienced stress. The participants in this study consisted of 30 outpatient psychotherapy patients. There were 14 males and 16 females. The average age was 35. The SM and the SRRS were administered in counterbalanced order. The results showed there was a significant positive correlation (product-moment correlation coefficient) between SM and SRRS ( $r = .4006$ ,  $p < .01$ ). The correlation results between CS and SRRS was not significant ( $r = .1355$ , n.s.). There was a significant positive correlation between S and SRRS ( $r = .6183$ ,  $p < .001$ ). The correlations were in predicted directions. The significant correlations between SM and SRRS as well as S and SRRS support the construct validity of the Stress Management Scale.

**Validation Study 4:** This validation study (1982) evaluated the relationship between factor C (Ego Strength) in the 16 PF Test as a criterion measure and the SM in a sample of juveniles. High scores on factor C indicate high ego strength and emotional stability, whereas high SM scores reflect good coping skills. A positive correlation was predicted because emotional stability and coping skills reflect similar attributes. The participants were 34 adjudicated delinquent adolescents. They ranged in age from 15 to 18 years with an average age of 16.2. There were 30 males and 4 females. The Cattell 16 PF Test and the SM scale were administered in counterbalanced order. All subjects had at least a 6.0 grade equivalent reading level. The correlation (product-moment correlation coefficient) results indicated that Factor C scores were significantly correlated with SM scores ( $r = .695$ ,  $p < .01$ ). Results were significant and in the predicted direction. These results support the Stress Management Scale as a valid measure of stress coping abilities in juvenile offenders.

In a subsequent study the relationship between factor Q4 (Free Floating Anxiety) on the 16 PF Test and S (Stress) on the Stress management (SM) Scale was investigated. High Q4 scores reflect free floating anxiety and tension, whereas high S scores measure experienced stress. A high positive correlation between Q4 and S was predicted. There were 22 of the original 34 subjects included in this analysis since the remainder of the original files were unavailable. All 22 subjects were male. The results demonstrated that Factor Q4 scores were significantly correlated (product-moment correlation coefficient) with S scores ( $r = .584$ ,  $p < .05$ ). Results were significant and in predicted directions. The significant correlations between factor C and SM scores as well as factor Q4 and S scores support the construct validity of the Stress Management (SM) scale.

**Validation Study 5:** Psychotherapy outpatient clients were used in this validation study (1982) that evaluated the relationship between selected Wiggin's MMPI (Minnesota

Multiphasic Personality Inventory) supplementary content scales (ES & MAS) as criterion measures and the Stress Management (SM) Scale. ES measures ego strength and MAS measures manifest anxiety. It was predicted that the ES and SC correlation would be positive, since people with high ego strength would be more likely to possess good coping skills. Similarly, it was predicted that MAS and S correlations would be positive, since people experiencing high levels of manifest anxiety would also likely experience high levels of stress. The subjects were 51 psychotherapy outpatients ranging in age from 22 to 56 years with an average age of 34. There were 23 males and 28 females. The MMPI and the SM were administered in counterbalanced order. The correlation (product-moment correlation coefficient) results indicated that ES and CS were positively significantly correlated ( $r = .29, p < .001$ ). MAS and S comparisons resulted in an  $r$  of  $.54$ , significant at the  $p < .001$  level. All results were significant and in predicted directions.

In a related study (1982) utilizing the same population data ( $N=51$ ) the relationship between the Psychasthenia (Pt) scale in the MMPI and the S component of the SM scale was evaluated. The Pt scale in the MMPI reflects neurotic anxiety, whereas the S component of the SM scale measures stress. Positive Pt and S correlations were predicted. The correlation (product-moment correlation coefficient) results indicated that the Pt scale and the S component of the SM scale were significantly correlated ( $r = .58, p < .001$ ). Results were significant and in the predicted direction. The significant correlation's between MMPI scales (ES, MAS, Pt) and the SM scale components (CS, S) support the construct validity of the Stress Management (SM) Scale.

**Validation Study 6:** The reliability of the Stress Management (SM) Scale was investigated (1984) in a population of outpatient psychotherapy patients. There were 100 participants, 41 males and 59 females. The average age was 37. The SM was administered soon after intake. The most common procedure for reporting inter-item (within test) reliability is with Coefficient Alpha. The reliability analysis indicated that the obtained Coefficient Alpha of 0.81 was highly significant ( $F = 46.74, p < .001$ ). Highly significant inter-item scale consistency was demonstrated.

**Validation Study 7:** (1985) The reliability of the Stress Management (SM) Scale was investigated in a sample of 189 job applicants. There were 120 males and 69 females with an average age of 31. The SM was administered at the time of pre-employment screening. The reliability analysis indicated that the Coefficient Alpha Coefficient of 0.73 was highly significant ( $F = 195.86, p < .001$ ). Highly significant Cronbach Coefficient Alpha reveals that all SM scale items are significantly ( $p < .001$ ) related and measure one factor or trait.

**Validation Study 8:** Chemical dependency inpatients were used in a validation study (1985) to determine the relation between MMPI scales as criterion measures and the Stress Management (SM) Scale. The SM is inversely related to other MMPI scales, consequently, negative correlations were predicted. The participants were 100 chemical dependency inpatients. There were 62 males and 38 females with an average age of 41. The SM and the MMPI were administered in counterbalanced order. The reliability analysis results showed that the Coefficient Alpha of 0.84 was highly significant ( $F = 16.20, p < .001$ ). Highly significant inter-item scale consistency was demonstrated.



The correlation (product-moment correlation coefficient) results between the Stress Management (SM) and selected MMPI scales were significant at the  $p < .001$  level and in predicted directions. The SM correlation results were as follows: Psychopathic Deviate (-0.59), Psychasthenia (-.068), Social Maladjustment (-0.54), Authority Conflict (-0.46), Taylor Manifest Anxiety Scale (-0.78), Authority Problems (-0.22), and Social Alienation (-0.67). The most significant SM correlation was with the Taylor Manifest Anxiety Scale. As discussed earlier, stress exacerbates symptoms of impaired adjustment as well as emotional and attitudinal problems. These results support the Stress Management Scale as a valid measure of stress coping abilities.

**Validation Study 9:** In a replication of earlier research, a study (1986) was conducted to further evaluate the reliability and validity of the Stress Management (SM). The participants were 212 inpatients in chemical dependency programs. There were 122 males and 90 females with an average age of 44. The SM and MMPI were administered in counterbalanced order. Reliability analysis of the SM scale resulted in a Coefficient Alpha of 0.986 ( $F = 27.77$ ,  $p < .001$ ). Highly significant inter-item scale consistency was again demonstrated. Rounded off, the **Coefficient Alpha for the Stress Management (SM) Scale was 0.99.**

In the same study (1986, inpatients), product-moment correlations were calculated between the Stress Management (SM) Scale and selected MMPI scales. The SM correlated significantly (.001 level) with the following MMPI scales: Psychopathic Deviate (Pd), Psychasthenia (Pt), Anxiety (A), Manifest Anxiety (MAS), Ego Strength (ES), Social Responsibility (RE), Social Alienation (PD4A), Social Alienation (SC1A), Social Maladjustment (SOC), Authority Conflict (AUT), Manifest Hostility (HOS), Suspiciousness/Mistrust (TSC-II), Resentment/Aggression (TSC-V) and Tension/Worry (TSC-VII). **All SM correlations with selected MMPI scales were significant (at the .001 level of significance) and in predicted directions.** These results support the SM Scale as a valid measure of stress coping abilities.

The studies cited above demonstrate empirical relationships between the Stress Management (SM) Scale and other established measures of stress, anxiety and coping skills. This research demonstrates that the Stress Management (SM) Scale is a reliable and valid measure of stress coping abilities. The SM has high inter-item scale reliability. The SM also has high concurrent (criterion-related) validity with other recognized and accepted tests. The SM scale permits objective (rather than subjective) analysis of the interaction of these important variables.

## ALCOHOL-DRUG-SCREEN RESEARCH

**Validation Study 10: Truthfulness Scale.** The Truthfulness Scale in the Alcohol-drug-Screen (ADS) is an important psychometric scale as these scores establish how truthful the respondent (client, patient, offender) was while completing the ADS. Truthfulness Scale scores determine whether or not ADS profiles are accurate and are integral to the calculation of Truth-Corrected ADS scale scores.

The Truthfulness Scale identifies clients (patients, probationers, offenders, etc.) who were self-protective, recalcitrant and guarded, as well as those who minimized or even concealed information while completing the test. Truthfulness Scale items are designed to detect clients that try to fake good or put themselves into a favorable light. These scale items are statements about oneself that most people agree to. The following statement is an example of a Truthfulness Scale item, "Sometimes I worry about what others think or say about me."

This preliminary study (1985) used the ADS 21 item Truthfulness Scale to determine if these Truthfulness Scale items could differentiate between respondents that were honest from those trying to fake good. It was hypothesized that the group trying to fake good would score higher on the Truthfulness Scale than the group instructed to be honest.

### Method

Seventy-eight Arizona State University college students enrolled in an introductory psychology class were randomly assigned to one of two groups. Group 1 comprised the "Honest" group and Group 2 comprised the "Fakers" group. Group 1 was instructed to be honest and truthful while completing the test. Group 2 was instructed to "fake good" while completing the test, but to respond "in such a manner that their faking good would not be detected." The test, which included the ADS Truthfulness Scale, was administered to the subjects and the Truthfulness Scale was embedded in the test as one of six scales. Truthfulness Scale scores were made up of the number of deviant answers given to the 21 Truthfulness Scale items.

### Results

The mean Truthfulness Scale score for the Honest group was 2.71 and the mean Truthfulness Scale score for Fakers was 15.77. The results of the correlation (product-moment correlation coefficient) between the Honest group and the Fakers showed that the Fakers scored significantly higher on the Truthfulness Scale than the Honest group ( $r = 0.27, p < .05$ ).

The Truthfulness Scale successfully measured how truthful the respondents were while completing the test. The results of this study demonstrate that the Truthfulness Scale accurately detects "Fakers" from those students that took the test honestly.

**Validation Study 11: Four ADS Scales using Criterion Measures.** In general terms, a test is valid if it measures what it is supposed to measure. The process of confirming this statement is called validating a test. A common practice when validating a test is to compute a correlation between it and another (criterion) test that purports to measure the same thing and that has been previously validated. For the purpose of this study (1985), the four ADS scales (Truthfulness, Alcohol, Drug, Stress Management) were validated with comparable scales in the Minnesota Multiphasic Personality Inventory (MMPI). The MMPI was selected for this validity study because it is the most researched, validated and widely used objective personality test in the United States. The ADS scales were validated with MMPI scales as follows. The Truthfulness Scale was validated with the L ("Lie") Scale. The Alcohol Scale was validated with the MacAndrew Scale. The Drug Scale was validated with the MacAndrew and

Psychopathic Deviant scales. The Stress Management Scale was validated with the Taylor Manifest Anxiety, Psychasthenia, Social Maladjustment and Social Alienation scales.

Method

One hundred (100) chemical dependency inpatients were administered both the ADS scales and the MMPI. Tests were counterbalanced for order effects -- half were given the ADS scales first and half the MMPI first. (1985)

Results and Discussion

Product-moment correlation coefficients were calculated between ADS scales and MMPI scales. These results are summarized in Table 1. Correlation results presented in Table 1 show that all ADS scales significantly correlated (.001 level of significance) with all represented MMPI scales. In addition, all correlations were in predicted directions.

**Table 1. Product-moment correlations  
between MMPI scales and ADS scales (N=100, 1985)**

<b>MMPI SCALES (MEASURES)</b>	<b>ADS SCALES (MEASURES)</b>			
	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Drug</b>	<b>Stress Mgmt.</b>
<b>L (Lie) Scale</b>	0.72	-0.38	-0.41	0.53
<b>Psychopathic Deviant</b>	-0.37	0.52	0.54	-0.59
<b>Psychasthenia</b>	-0.34	0.38	0.41	-0.68
<b>Social Maladjustment</b>	-0.25	0.34	0.26	-0.54
<b>Authority Conflict</b>	-0.43	0.31	0.47	-0.46
<b>Manifest Hostility</b>	-0.45	0.34	0.47	-0.58
<b>Taylor Manifest Anxiety</b>	-0.58	0.47	0.46	-0.78
<b>MacAndrew</b>	-0.40	0.58	0.62	-0.33
<b>Social Alienation</b>	-0.47	0.35	0.45	-0.67

**NOTE:** All correlations were significant at  $p < .001$ .

The **Truthfulness Scale** correlates significantly with all of the represented MMPI scales in Table 1. Of particular interest is this scale's highly significant positive correlation with the MMPI Lie (L) Scale. A high L Scale score on the MMPI invalidates other MMPI scale scores due to untruthfulness. This helps in understanding why the Truthfulness Scale is significantly, but negatively, correlated with the other represented MMPI scales. Similarly, the MMPI L Scale correlates significantly, but negatively, with the other ADS scales.

The **Alcohol Scale** correlates significantly with all represented MMPI scales. This is consistent with the conceptual definition of the Alcohol Scale and previous research that has found that alcohol abuse is associated with mental, emotional and physical problems. Of particular interest are the highly significant correlation's with the MacAndrew ( $r = 0.58$ ) Scale and the Psychopathic Deviant ( $r = 0.52$ ) Scale. High

MacAndrew and Psychopathic Deviant scorers on the MMPI are often found to be associated with substance abuse. Similarly, the **Drug Scale** correlates significantly with the MacAndrew ( $r = 0.62$ ) Scale and the Psychopathic Deviant ( $r = 0.54$ ) Scale.

The **Stress Management Scale** is inversely related to MMPI scales which accounts for the negative correlations shown in Table 1. The positive correlation with the L scale on the MMPI was discussed earlier, i.e., Truthfulness Scale. It should be noted that stress exacerbates symptoms of impaired adjustment and even psychopathology. The Stress Management Scale correlates most significantly with the Taylor Manifest Anxiety ( $r = -0.78$ ) Scale, the Psychasthenia ( $r = -0.68$ ) Scale and the Social Alienation ( $r = -0.67$ ) Scale.

These findings strongly support the validity of the represented ADS scales. All of the ADS scales were highly correlated with the MMPI. Their large correlation coefficients support the validity of the ADS. All product-moment correlation coefficients testing the relation between ADS scales and MMPI scales were significant at the  $p < .001$  level.

**Validation Study 12: Polygraph Examinations.** A measure that has often been used in business or industry for employee selection is the Polygraph examination. The polygraph exam is most often used to determine the truthfulness or honesty of an individual while being tested. The Polygraph examination is more accurate as the area of inquiry is more "situation" specific. Conversely, the less specific the area of inquiry, the less reliable the Polygraph examination becomes.

Three ADS scales were chosen for this study (1985); Truthfulness Scale, Alcohol Scale and Drug Scale. The Truthfulness Scale was chosen because it is used in the ADS to measure the truthfulness or honesty of the respondent while completing the ADS. The Alcohol and Drug scales are well suited for comparison with the polygraph exam because of the situation specific nature of the scales. Alcohol and Drug Scale items are direct and relate specifically to alcohol and drug use. The comparison with the Truthfulness Scale is less direct because of the subtle nature of the Truthfulness Scale items as used in the ADS. The Truthfulness Scale is affected by the respondent's attitude, emotional stability and tendencies to fake good. It was expected that the Alcohol and Drug Scales would be highly correlated with the polygraph results and the Truthfulness Scale would show a somewhat less but nonetheless significant correlation.

#### Method

One hundred and eighty-nine (189) job applicants were administered both the ADS scales and the Polygraph examination (1985). Tests were given in a counterbalanced order, half of the applicants were given the ADS scales first and the other half of the applicants were administered the polygraph first. The subjects were administered the ADS scales and polygraph exam in the same room in the same session with the examiner present for both tests.

#### Results

The product-moment correlation results between the Polygraph exam and ADS scales indicated there was a significant positive correlation between the Truthfulness Scale and Polygraph exam ( $r = 0.23, p < .001$ ). Similarly, significant positive relationships were

observed between the Polygraph exam and the Alcohol Scale ( $r = 0.54$ ,  $p < .001$ ) and the Drug Scale ( $r = 0.56$ ,  $p < .001$ ).

In summary, this study supports the validity of the ADS Truthfulness, Alcohol and Drug Scales. There were strong positive relationships between the selected ADS scales and the Polygraph examination. The highly significant product-moment correlations between ADS scales and Polygraph examinations further demonstrate the validity of the ADS Truthfulness, Alcohol and Drug Scales.

These results are important because the Polygraph exam is a direct measure obtained from the individual being tested rather than a rating by someone else. This is similar to self-report such as utilized in the ADS. The fact that there was a very strong relationship between Polygraph results and ADS scales shows that this type of information can be obtained accurately in self-report instruments or tests.

These results indicate that the ADS Truthfulness Scale is an accurate measure of the respondent's truthfulness or honesty while completing the ADS. The Truthfulness Scale is an essential measure in self-report instruments. It is a means to determine the honesty or "truthfulness" of the respondents answers. It's also very helpful to adjust scores when the respondent is less than honest. The ADS Truthfulness Scale addresses both of these issues. The Truthfulness Scale ensures accurate assessment. The results of this study shows that the ADS is a valid assessment instrument.

**Validation Study 13: ADS Scales.** The ADS is an adult chemical dependency and substance (alcohol and other drugs) abuse assessment instrument. It is designed for use in chemical dependency and substance abuse settings. The ADS is a test designed for substance use and abuse screening. The present study (1987) was conducted to validate the ADS scales in a sample of substance abuse inpatients.

Selected scales in the Minnesota Multiphasic Personality Inventory (MMPI) were used as criterion measures for the different ADS scales. The Truthfulness Scale was validated with MMPI L-Scale ("Lie"), F-Scale ("Faking Good") and K-Scale ("Defensiveness"). The Alcohol Scale was validated with MMPI MacAndrew Scale (MAC) and Psychopathic Deviate-Obvious (PD-O). The Drug Scale was validated with MMPI MacAndrew Scale and Psychopathic Deviate-Obvious. The Stress Management Scale was validated with MMPI Psychasthenia (PT), Anxiety (A), Taylor Manifest Anxiety (MAS) and Tension/Worry (TSC-VII). The MMPI scales were chosen to compare to the ADS scales because they measure similar attributes.

### Method

The subjects used in the study (1987) were 212 substance (alcohol and other drugs) abuse inpatients in chemical dependency programs. The ADS and MMPI scales were administered in counterbalanced order.

## Results and Discussion

The product-moment correlation results are summarized in Table 2. Since this study is important in understanding ADS validity, each ADS scale is briefly summarized below. (N=212):

The Truthfulness Scale correlates significantly in predicted directions with selected MMPI criterion scales, L-Scale (lie,  $p < .001$ ), F-Scale (validity,  $p < .001$ ) and K-Scale (validity correction,  $p < .001$ ). Other significant correlations with traditional MMPI scales include: PD (Psychopathic deviate,  $p < .001$ ), ES (Ego Strength,  $p < .001$ ), and RE (Social responsibility,  $p < .001$ ); Harris MMPI subscales: PD2 (Authority Problems,  $p < .001$ ), PD4 (Social Alienation,  $p < .001$ ), SCIA (Social Alienation,  $p < .001$ ); Wiggins MMPI content scales: SOC (Social Maladjustment,  $p < .001$ ), HOS (Manifest Hostility,  $p < .001$ ); Wiener-Harmon MMPI subscales: PDO (Psychopathic Deviant-Obvious,  $p < .001$ ); Tryon, Stein & Chu MMPI cluster scales: TSC-V (Resentment/Aggressive,  $p < .001$ ).

The Alcohol Scale correlates significantly in predicted directions with selected MMPI criterion scales: MAC (MacAndrew scale,  $p < .001$ ), and PD-O (Psychopathic Deviate Obvious,  $p < .021$ ). The Drug Scale correlates significantly in predicted directions with selected MMPI criterion scales: MAC (MacAndrew scale,  $p < .001$ ), and PD-O (Psychopathic Deviate Obvious,  $p < .001$ ).

The Stress Management Scale correlates significantly in predicted directions with selected MMPI criterion scales: PT (Psychasthenia,  $p < .001$ ), A (Anxiety,  $p < .001$ ), MAS (Taylor Manifest Anxiety,  $p < .001$ ), PD4 (Social Alienation,  $p < .001$ ) and TSC-VII (Tension/Worry,  $p < .001$ ).

These findings support the validity of ADS scales in this sample of chemical dependency inpatients. All ADS scales were highly correlated with the MMPI criterion scales they were tested against. The correlation coefficients reported in Table 2 support the ADS validity. Inpatients in chemical dependency facilities have substance abuse problems and these results confirm the validity of the ADS scales. These findings support the validity of the ADS.

**Table 2. ADS-MMPI Product-Moment Correlations  
Inpatients, Chemical Dependency Facilities (N = 212, 1987)**

<b>MMPI SCALES (MEASURES)</b>	<b>ADS SCALES (MEASURES)</b>			
	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Drug</b>	<b>Stress Mgmt.</b>
<b>L</b>	0.60	-0.24	-0.15	-0.30
<b>F</b>	-0.34	0.32	0.32	0.49
<b>K</b>	0.39	-0.28	-0.29	-0.51
<b>MAC</b>	-0.30	0.35	0.37	0.28
<b>PD-O</b>	-0.35	0.22	0.33	0.53
<b>PD2</b>	-0.26	0.18	0.17	0.07
<b>PD</b>	-0.33	0.21	0.33	0.39
<b>HOS</b>	-0.45	0.25	0.33	0.46
<b>TSC-V</b>	-0.46	0.34	0.28	0.58
<b>ES</b>	0.25	-0.27	-0.25	-0.51
<b>RE</b>	0.41	-0.27	-0.34	-0.45
<b>SOC</b>	-0.19	0.17	0.08	0.39
<b>PD4</b>	-0.41	0.20	0.28	0.55
<b>SCIA</b>	-0.36	0.27	0.32	0.39
<b>PT</b>	-0.39	0.27	0.24	0.58
<b>A</b>	-0.41	0.31	0.31	0.68
<b>MAS</b>	-0.44	0.25	0.18	0.65
<b>TSC-VII</b>	-0.41	0.33	0.29	0.66

The ADS Alcohol and Drug Scales are direct measures of alcohol and drug use or abuse, respectively, whereas the MacAndrew Scale was developed from discriminant analysis and does not include a truthfulness scale. The MacAndrew Scale items do not relate specifically to alcohol and drugs. Hence, the correlations between the MacAndrew Scale and the Alcohol and Drug Scales could be affected by the lack of a truthfulness measure which is a deficiency of the MacAndrew Scale when used alone.

Where MMPI scales are closely related (by definition) to ADS scales the correlation coefficients were highly significant. For example, the ADS Truthfulness Scale and the MMPI L Scale both measure tendencies to fake good, and the correlation was highly significant at  $r = .60$ . The correlation between the Stress Management Scale and MMPI Tension/Worry Scale was  $r = -.66$ . This study supports the validity of the Alcohol-Drug-Screen (ADS).

**Validation Study 14: ADS Scales Using DRI Scales as the Criterion Measures.** This study was conducted in 1988 and was designed to examine relationships (correlations) between the Alcohol-Drug-Screen (ADS) and the Driver Risk Inventory (DRI) on incarcerated DWI offenders. The DRI has been demonstrated to be a valid, reliable and accurate assessment instrument for evaluation of Driving While Intoxicated (DWI) offenders.

The ADS is designed for adult chemical (alcohol and other drugs) dependency assessment. It contains six measures or scales: Truthfulness, Alcohol, Drug, DSM-IV Substance Dependency and Abuse, and Stress Management. Four of these six ADS scales are analogous (although independent) and directly comparable to Driver Risk Inventory (DRI) scales. The DRI is designed for DWI (Driving While Intoxicated) and DUI (Driving Under the Influence) offender assessment. The DRI contains five measures or scales: Truthfulness, Alcohol, Drug, Driver Risk and Stress Management.

Although the scales designated Truthfulness, Alcohol, and Drug are independent and differ in the ADS and DRI, they were designed to measure similar behaviors or traits. The Stress Management Scale in both ADS and DRI contains the same 30 test items.

Method

The ADS and DRI scales were administered in group settings to 154 DWI offender inmates, in counter balanced order, at Arizona State Department of Corrections (ADOC) facilities. All of the subjects in this study were male inmates. The demographic composition was as follows. There were 98 Caucasians, 25 Hispanics, 13 American Indians, 12 Blacks and six other ethnicities'. Five age categories were represented: 16-25 years (N = 26), 26-35 years (N = 74), 36-55 years (N = 38), 46-55 years (N = 11) and 56 or older (N = 5). Six educational levels were represented: Eighth grade or less (N = 7), Partially completed high school (N = 50), High school graduates (N = 70), Partially completed college (N = 16), College graduates (N = 9), and Professional/graduate school (N = 2). Each inmate completed both the ADS and DRI scales. Although all inmates volunteered to participate in this study, inmate motivation varied.

Results and Discussion

The results of this study are presented in Table 3. The results demonstrate highly significant relationships between the analogues ADS and DRI scales. The DRI has been shown to be a valid measure of substance (alcohol and drug) abuse in DUI/DWI offenders; hence, these correlation results support the validity of the ADS as a valid measure of substance abuse.

**Table 3. Product-moment correlations study of DWI inmates (N = 154, 1988).  
All product-moment correlations are significant at p<.001.**

<b><u>DRI versus ADS Scales</u></b>	<b><u>Agreement Coefficients</u></b>
Truthfulness Scale	.6405
Alcohol Scale	.3483
Drug Scale	.3383
Stress Management Scale	.7642

It was noted that inmate motivation varied widely. This is evident in the Stress Management Scale correlation coefficient of .7642. Even though this is a highly significant correlation (p<.001), the Agreement Coefficient might be expected to be even higher because these were identical scales consisting of the same items. It is reasonable to conclude that low motivation on the part of many inmate volunteers contributed to lower Agreement Coefficients. Inmate volunteers were serving DWI-related sentences and these



tests had no bearing on their incarcerated status or sentences. However, in spite of widely varied inmate motivation, Agreement Coefficients for all four sets of scale comparisons were highly significant.

These results are important for another reason. This study extends the ADS normative (standardization sample) population to include inmates and incarcerated individuals.

**Validation Study 15: Vocational Rehabilitation Clients.** The Alcohol-Drug-Screen (ADS) was investigated in a sample of individuals that are not generally associated with substance abuse but who have other co-occurring handicaps. The participants in the present study (1991) were Vocational Rehabilitation clients. These are individuals that have some form of handicap and require assistance in obtaining and/or maintaining employment.

Selected scales in the Minnesota Multiphasic Personality Inventory (MMPI) were used as criterion measures for the different Alcohol-Drug-Screen (ADS) scales. Comparisons to previous validating studies that used substance (alcohol and other drugs) abuse clients will be made to extend the applicability of the ADS to additional adult samples.

#### Method

The subjects used in the present study consisted of 74 Vocational Rehabilitation clients. The ADS and MMPI scales were administered in counterbalanced order. Product-moment correlations were calculated between ADS scales and selected criterion MMPI scales. The Truthfulness Scale was validated with the MMPI L-Scale, F-Scale and K-Scale. The Alcohol Scale was validated with the MMPI MacAndrew Scale (MAC) and Psychopathic Deviate (PD). The Drug Scale was validated with the MMPI MacAndrew Scale, Psychopathic Deviate. The Stress Management Scale was validated with the MMPI Psychasthenia (PT), Taylor Manifest Anxiety (MAS) and Tension (TSC-VII).

#### Result and Discussion

There were 74 Vocational Rehabilitation clients used in this study. There were 49 males and 25 females. Age was distributed (frequency given in parentheses) as follows: 18 to 21 years (11), 22 to 25 years (7), 26-29 years (11), 30-33 years (14), 34-37 years (10), 42-45 years (9), 46-49 years (8), 50 or more years (4). Six education categories were represented: 8th grade or less (11), Partially completed High School (18), GED (14), High School Graduate (21), Some College (6), and College Graduate (4). There were 47 Caucasians, 12 Blacks, 8 Hispanics, 6 American Indians and 1 other ethnicity. Correlation results are summarized in Table 4. For clarity, ADS scales are summarized individually and their MMPI scale correlations discussed.

The **Truthfulness Scale** was significantly correlated with the MMPI scales that are associated with truthfulness measures. The ADS Truthfulness Scale was significantly correlated with the MMPI L-Scale ( $p < .001$ ), F-scale ( $p < .01$ ) and K-scale ( $p < .01$ ). When a person attains severely elevated L, F or K scales on the MMPI, other MMPI scale scores are invalidated. Similarly, severely elevated Truthfulness Scale score on the ADS invalidates other ADS scale scores.

**Table 4. Product-moment correlations.  
Vocational Rehabilitation Clients (N=74, 1991)**

<u>MMPI SCALES</u>	<u>ADS SCALES</u>			
	<u>Truthfulness</u>	<u>Alcohol</u>	<u>Drug</u>	<u>Stress Mgmt.</u>
L	.493**	.001	-.141	-.105
F	-.344*	.435**	.334*	.440**
K	.344*	-.257	-.079	-.308*
PD	-.109	.454**	.292*	.568**
MAC	-.177	.303*	.145	.168
TSC-VII	.480**	.295*	.189	.441**
PT	-.135	.273*	.244	.501**
MAS	-.245	.396**	.240	.574**

NOTE: level of significance, \* < .01, \*\* < .001

The **Alcohol Scale** significantly correlated with the MMPI MacAndrew Scale ( $p < .01$ ) and the PD scale (Psychopathic Deviate,  $p < .001$ ). High MMPI PD and MAC scores are often associated with substance abuse. The **Drug Scale** was significantly correlated with the PD Scale (Psychopathic Deviate,  $p < .01$ ). The ADS Drug Scale did not correlate significantly with the MMPI MacAndrew Scale. Substance (alcohol and other drugs) abusers have a close identity with their substance of choice. Without independent scales on the MacAndrew Scale for alcohol and drugs, many substance abusers could remain undetected. The MacAndrew Scale does not have its own truthfulness scale. The low correlation between ADS Drug Scale and MacAndrew Scale may have been in part due to problem minimization, lying or faking on the MacAndrew Scale.

The Stress Management Scale correlates most significantly with the MMPI MAS (Taylor Manifest Anxiety,  $r = .574$ ,  $p < .001$ ), PT (Psychasthenia,  $r = .501$ ,  $p < .001$ ) and TSC-VII (Tension,  $r = .568$ ,  $p < .001$ ). These findings are consistent with earlier research.

These results are consistent with earlier research involving the administration of both the ADS and MMPI in that ADS scales are significantly correlated in expected directions with criterion MMPI scales. These findings support the validity of the ADS.

Comparisons between the present study and previous research that tested substance abusers (inpatient clients at chemical dependency facilities) shows some interesting results which may reflect sample differences. As stated above, there was a somewhat lower correlation between the Truthfulness Scale and L Scale. There was a higher correlation between the Drug Scale and MacAndrew Scale in the substance abuser study and a lower correlation between the Alcohol Scale and Psychopathic Deviate Scale.

**Validation Study 16: Adult Probationers.** The present study (1992) was conducted to validate the Alcohol-Drug-Screen (ADS) on adult (male and female) probationers. Participants completed both the Minnesota Multiphasic Personality Inventory (MMPI) and the ADS. Participants were probationers.

## Method

There were 171 adult probationers included in the present study (1992). There were 129 males and 42 females. Age was distributed (frequency given in parentheses) as follows, Under 17 years (2), 18-21 years (20), 22-25 years (25), 26-29 years (27), 30-33 years (24), 34-37 years (22), 38-41 years (17), 42-45 years (13), 46-49 years (5), 50-53 years (8), over 54 years (8). Education was represented as follows: 8th grade or less (20), Partially completed High School (43), GED (16), High School Graduate (53), Some College (36) and College Graduate (3).

The ADS and MMPI were administered in counterbalanced order. Product-moment correlations were calculated between ADS scales and selected MMPI scales. The MMPI scales used for criterion measures were as follows. The Truthfulness Scale was validated with the MMPI L-Scale, F-Scale and K-Scale. The Alcohol Scale was validated with the MMPI MacAndrew Scale and PD Scale. The Drug Scale was validated with the MMPI MacAndrew Scale and PD Scale. The Stress Management Scale was validated with the MMPI PT Scale, MAS Scale and TSC-VII Scale.

Key to MMPI Scales: **L** (Lie Scale), **F** (Validity), **K** (Validity Correction), **PD** (Psychopathic Deviate), **PT** (Psychasthenia), **MAS** (Taylor Manifest Anxiety) **MAC** (MacAndrew), **TSC-VII** (Tension).

## Results and Discussion

The results of this study (1992, N = 171) are summarized in Table 5.

**Table 5. Product-moment correlations.  
Adult Probation Clients (N=171, 1992)**

<b>MMPI SCALES</b>	<b>ADS Scales</b>			
	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Drug</b>	<b>Stress Mgmt.</b>
L	.511**	.022	-.186*	-.065
F	-.293**	.379**	.269*	.462**
K	.458**	-.201*	-.151	-.319**
PD	-.241**	.312**	.190*	.491**
PT	-.279**	.202*	.115	.470**
MAS	-.394**	.288**	.151	.536**
MAC	.005	.051	.090	.076
TSC-VII	-.431**	.222*	.168	.446**

NOTE: level of significance \*  $p < .01$ , \*\*  $p < .001$

The **Truthfulness Scale** was highly significantly correlated with the MMPI L-Scale, F-Scale and K-Scale. The scales in the MMPI that relate to truthfulness correlate significantly with the ADS Truthfulness Scale. This supports the validity of the ADS Truthfulness Scale.

The **Alcohol Scale** correlates significantly with the MMPI PD Scale. The correlation with the MAC Scale was not significant. Similarly, the **Drug Scale** correlated significantly with

the MMPI PD Scale but not with the MAC Scale. These results support the validity of the ADS Alcohol Scale and Drug Scale while raising questions concerning the MacAndrew's (MAC) lack or absence of a Truthfulness Scale.

The **Stress Management Scale** correlated highly significantly with the MMPI PT Scale, MAS Scale and TSC-VII Scale. These results support the validity of the ADS Stress Management Scale.

**This study supports the validity of ADS scales in a sample of adult probationers.** ADS scales correlated significantly, in predicted directions with criterion MMPI scales. The MMPI was selected for this criterion-related validity study because it is the most widely used and respected personality test in the United States. A short coming of the MMPI MAC Scale (MacAndrew) is that it discriminates between known substance abusers and non-abusers. However, none of the MacAndrew items relate to alcohol or drugs per se. And the MacAndrew Scale lacks a Truthfulness Scale. The ADS Alcohol and Drug Scales correlate with the PD Scale which has been shown to be a valid measure of substance abusers and substance abusing adult probationers.

With the exception of the MacAndrew Scale, these correlation results are in close agreement with previous studies that validated ADS scales with criterion measures selected from the MMPI. The results of this study support the validity of the ADS.

**Validation Study 17: Substance Abuse/Dependency Scale.** The Substance Abuse/Dependency Scale incorporates the seven DSM-IV criteria (symptoms) for substance dependency classification and the four DSM-IV criteria (symptoms) for substance abuse classification. When a person admits to three or more of the seven DSM-IV symptoms for substance dependence they are classified as substance dependent. Similarly, when a person admits to one or more of the four DSM-IV criteria for substance abuse they are classified as substance abuse. A study (1997) conducted by Dr. Fred Marsteller of Emory University and Dr. Donald Davignon of Behavior Data Systems entitled "A Validation Study of the DRI-II in a Large Sample of DUI Offenders" investigated the validity of this Substance Abuse/Dependency Scale along with the predictive accuracy of the Alcohol and Drug Scales in identifying offenders classified as dependent or abuse.

The ADS Truthfulness Scale, Alcohol Scale and Drug Scale, as well as the Substance Dependency/Abuse Scale, were validated using criterion measures selected for this study. The following tests were done: the Truthfulness Scale was validated with the MMPI-2 L-Scale. The Alcohol Scale was validated with the MMPI-2 MacAndrew Scale. The Drug Scale was validated with the Drug Abuse Screening Test (DAST). The Substance Abuse/Dependency Scale was validated with a DSM-IV Substance Use Dependency Scale devised for this study.

### Method

For concurrent validity comparisons the following tests were incorporated into a 159 item "criterion test." MMPI-2 L-Scale, MacAndrew, Drug Abuse Screening Test (DAST), MMPI F-Scale, and the DSM-IV substance dependency items. All criterion test items were written in a True/False format. The MMPI-2 F Scale was included in the criterion

test because it indicates a haphazard approach to testing or a wish to put self in a bad light. The ADS scales and the criterion test were administered in counterbalanced order to all participants as part of their normal DUI screening procedure.

There were 1,014 DUI offenders included in the present study (1997). There were 811 males (80%) and 203 females (20%). The offenders are broadly defined as Caucasian (83.3%), between the ages of 21 and 40 (65.7%), High School graduate or better (75.2%) and single (49.4%).

### Results and Discussion

Product-moment correlation coefficients are presented in Table 6. Intraclass correlations were also computed but the correlations were identical to the product-moment correlations to the second decimal place when the product-moment correlations were positive and the intraclass correlation is undefined when the product-moment correlations were negative.

**Table 6. Product-moment correlations. DUI Offenders (N = 1,014, 1997)**  
**All product-moment correlations shown are significant at p<.001.**

<u>ADS Scales</u>	<u>MMPI-2 L</u>	<u>MacAndrew</u>	<u>DAST</u>	<u>DSM-IV</u>
Truthfulness	.668	-.371	-.289	-.324
Alcohol	-.154	.291	.508	.625
Drug	n.s.	.152	.618	.276
Abuse/Dependency	-.251	.352	.371	.964

The correlation between the **Truthfulness Scale** and the MMPI-2 L Scale is highly significant ( $r = .668$ ,  $p < .001$ ) and in the expected positive direction. It is rare to find correlation coefficients in validation testing above .60. Usually they are much lower. These results support the validity of the ADS Truthfulness Scale.

The **ADS Alcohol Scale** correlates significantly with the MacAndrew Scale ( $r = .291$ ,  $p < .001$ ), in the predicted direction. The MacAndrew Alcoholism Scale (MacAndrew, 1965) was derived from the MMPI as a measure of alcoholism. The MacAndrew Scale used in this study is the revised version applicable to the current version of the MMPI, the MMPI-2. MacAndrew Scale items were selected because, as a group, they successfully discriminated alcoholics from non-alcoholics in validation samples. The MacAndrew Scale items have little face validity with respect to alcohol use, with only one item referring directly to alcohol. The opinion of researchers using the MacAndrew Scale is that it reflects both a) behaviors and symptoms which are common among alcoholics. The Alcohol Scale measures alcohol use and identifies alcohol-related problems. The ADS Alcohol Scale items specifically refer to alcohol use and alcohol-related symptoms. The correlation between the ADS Alcohol Scale and the MacAndrew Scale was significant and in the positive direction.

The relatively small correlation coefficient with the MacAndrew Scale may reflect several differences between the scales. The MacAndrew Scale was developed to detect alcoholism per se. Its items are generally not directly related to alcohol use and alcohol-related problems, but refer instead to secondary symptoms and characteristics which

have successfully discriminated alcoholics from non-alcoholics in clinical validation samples. The MacAndrew Scale was also devised to identify alcoholism among White males (Greene, 1991) and females and ethnic minorities have been shown to respond differently from White males.

The ADS Alcohol Scale is very direct in asking about alcohol use and alcohol-use related symptoms. It is also designed to assess alcohol-related problems across a broad range of severity, not just differentiate alcoholics from non-alcoholics. Furthermore, the ADS Alcohol Scale incorporates truth-correction, whereas the MacAndrew Scale does not.

The **ADS Drug Scale** correlates significantly with the DAST ( $r = .618, p < .001$ ) in the predicted direction. The DAST is a drug use questionnaire that directly refers to drug use and abuse. It was designed to screen clinical populations for significant drug abuse problems. The ADS Drug Scale measures drug (marijuana, crack, cocaine, barbiturates, amphetamines, heroin, etc.) use and abuse problems. The ADS Drug Scale provides assessment across the full spectrum, while the DAST focuses on major problems or extreme cases. These results support the validity of the ADS Drug Scale. The ADS Drug Scale accurately measures illicit drug use and abuse. Again, the truth-corrected scores of the Drug Scale may reduce the correlation with the DAST which is not truth-corrected.

There was a high positive correlation between the **Substance Abuse/Dependency Scale** and the DSM-IV Criterion items ( $r = .964, p < .001$ ). This high correlation reflects their very strong overlap. This result supports the validity of the ADS Substance Abuse/Dependency Scale. This finding suggests that clients answer DSM-IV substance dependency criteria items in the same way they answer ADS Substance Abuse/Dependency Scale items.

These results support the validity of the ADS scales used in this study. There were very strong positive correlations between the ADS scales and the criterion scales used to test the different ADS scales.

To assess the ability of the different scales used in this study to distinguish among subjects rated as “no classification”, “substance abuse” or “substance dependent” based on the criterion DSM-IV scale, ANOVAs comparing the mean scores for each scale among the classification groups were computed. The question addressed here is whether the different scales used in this study can discriminate among the classification groups. Mean scale scores for each classification group is presented in Table 7.

The ANOVA comparison among the “no classification”, “abuse” and “dependence” groups found that for each scale, the classification groups were very significantly different (all  $p$ 's  $< .001$ ). It is noteworthy that for the ADS Alcohol Scale, the differences among the “classification” groups are larger than those for the MacAndrew Scale. This finding supports the conclusion that the ADS Alcohol Scale accurately discriminates between “classification” categories and does so better than the MacAndrew Scale.

**Table 7. Mean scale scores for each classification group.  
Court clients (N=100, 1997).  
ANOVA comparisons between groups are significantly different at p<.001.**

	<u>no classification</u>	<u>abuse</u>	<u>dependent</u>
Truthfulness Scale	12.7	9.1	8.1
MMPI-2 L Scale	7.3	5.7	5.0
Alcohol Scale	9.4	12.5	28.7
MacAndrew Scale	20.2	21.7	24.0
Drug Scale	4.1	3.8	8.5
DAST	3.4	4.1	7.2

Each of the ADS scales (Truthfulness, Alcohol, Drug and Substance Dependency/Abuse) correlate highly significantly with their respective criterion tests. These large correlation coefficients support the validity of ADS scales. ANOVA results support the discriminant validity of the ADS scales.

*Greene, R.L. (1991). The MMPI-2/MMPI: An Interpretive Manual. Boston: Allyn and Bacon.*

**Validation Study 18: ADS Scales Reliability.** This study (1997) was conducted to test the reliability of the ADS scales in two samples of probationers. Within-test reliability measures to what extent a test with multiple scales measuring different factors, measures each factor independent of the other factors (scales) in the test. It also measures to what extent items in each scale consistently measure the particular trait (or factor) that scale was designed to measure. Within-test reliability measures are referred to as inter-item reliability. The most common method of reporting within-test (scale) inter-item reliability is with coefficient alpha.

Any approach to detection, assessment, or measurement must meet the criteria of reliability and validity. Reliability refers to an instrument's consistency of results regardless of who uses it. This means that the outcome must be objective, verifiable, and reproducible. Ideally, the instrument or test must also be practical, economical, and accessible.

#### Method and Results

There were two samples of adult probationers included in this study (1997). **The subjects in Group 1 consisted of 850 adult probationers.** There were 663 males (78%) and 187 females (22%). Demographic composition of these probationers is as follows: Age: 19 & under (21%); 20-29 (43%); 30-39 (23%); 40-49 (9%); 50-59 (2%) and 60 & over (1%). Ethnicity: Caucasian (74%); Black (11%); Hispanic (10%); Asian (1%); Native American (3%) and Other (1%). Education: Eighth grade or less (7%); Some H.S. (30%); H.S. graduate (47%); Some college (11%) and College graduate (4%). Marital Status: Single (61%); Married (19%); Divorced (13%); Separated (5%) and Widowed (1%).

**Group 2 consisted of 2,331 adult probationers.** There were 1,847 males (79%) and 484 females (21%). Demographic composition of these probationers is as follows: Age: 19 &

under (15%); 20-29 (40%); 30-39 (28%); 40-49 (13%); 50-59 (3%) and 60 & over (1%). Ethnicity: Caucasian (58%); Black (25%); Hispanic (15%); Asian (1%); Native American (1%) and Other (1%). Education: Eighth grade or less (9%); Some H.S. (31%); H.S. graduate (44%); Some college (9%) and College graduate (3%). Marital Status: Single (55%); Married (25%); Divorced (12%); Separated (5%) and Widowed (1%).

Reliability coefficient alphas for the two groups (total N = 3,181) are presented in Table 8.

**Table 8. Reliability Coefficient Alphas (N = 3,181, 1997).**  
All coefficient alphas are significant at p<.001.

<b>ADS SCALES</b>	<b>1 Probationers N = 850</b>	<b>2 Probationers N = 2,331</b>
Truthfulness Scale	.87	.88
Alcohol Scale	.95	.95
Drug Scale	.93	.92
Stress Management	.93	.92

The results of the study support the reliability of ADS scales. All coefficient alphas are significant at p<.001. All scale reliability coefficients attained very high levels. These results show that the ADS is a reliable risk assessment instrument.

**Validation Study 19: Risk Range Accuracy Study.** The ADS is designed for a wide range of substance (alcohol and drug) abuse assessments. The ADS measures substance (alcohol and drugs) use and abuse. The present study (1998) was conducted to analyze the reliability of the ADS in a court defendant sample. The study also involved analysis of risk assessment and summary of client self-perceptions of alcohol and drug problems.

In assessment, a measurement can sometimes be considered a prediction. For example, the Alcohol Scale is a measure of alcohol abuse or severity of abuse. Alcohol Scale scores would predict if an individual has an alcohol problem. A benchmark that can be used for the existence of an alcohol problem is treatment. If an individual has been in alcohol treatment then the individual is known to have had an alcohol problem. Therefore, the Alcohol Scale should predict if an individual has been in treatment.

Statistical decision-making is closely related to predictive validity of a test. The quality of statistical decision-making and test validity are both assessed by the accuracy with which the test (Alcohol Scale) classifies “known” cases (treatment). In the present study predictive validity was evaluated in the Alcohol-Drug-Screen (ADS) by using contingency tables defined by scale scores and either treatment or number of arrests. Treatment was used with the Alcohol Scale and Drug Scale.

Risk range percentile scores are calculated for each ADS scale. These risk range percentile scores are derived from scoring equations based on responses to scale items, Truth-Corrections and prior criminal history information. These scores are then converted to percentile scores. There are four risk range categories: **Low Risk** (zero to 39th percentile), **Medium Risk** (40 to 69th percentile), **Problem Risk** (70 to 89th percentile)



and **Severe Problem or Maximum Risk** (90 to 100th percentile). Risk range percentile scores represent degree of severity.

Analysis of the accuracy of ADS risk range percentile scores involves comparing the risk range percentile scores obtained from client ADS test results to the predicted risk range percentages as defined above. The percentages of clients expected to fall into each risk range is as follows: Low Risk (**39%**), Medium Risk (**30%**), Problem Risk (**20%**) and Severe Problem or Maximum Risk (**11%**). The actual percentage of respondents scoring in each of the four risk ranges, based on their risk range percentile scores, was compared to these predicted percentages.

### Method and Results

The ADS was administered to 100 court defendants (1998) as part of routine evaluation in a municipal substance abuse screening program. There 86 (86%) males and 14 (14%) females. Demographic composition of the subjects was as follows: Age in years: 19 & under (15%); 20-29 (38%); 30-39 (28%); 40-49 (12%); 50-59 (5%); 60 & over (1%). Ethnicity: Caucasian (10.5%); Black (4.2%); Hispanic (78.9%); Native American (5.3%); Other (1.1%). Education: 8th grade or less (9%); Some High School (25%); H.S. graduate (52%); Some college (2%); College graduate (7%). Marital Status: Single (76.1%); Married (18.2%); Divorced (3.4%); Separated (2.3%).

Reliability coefficient alphas are presented in Table 9.

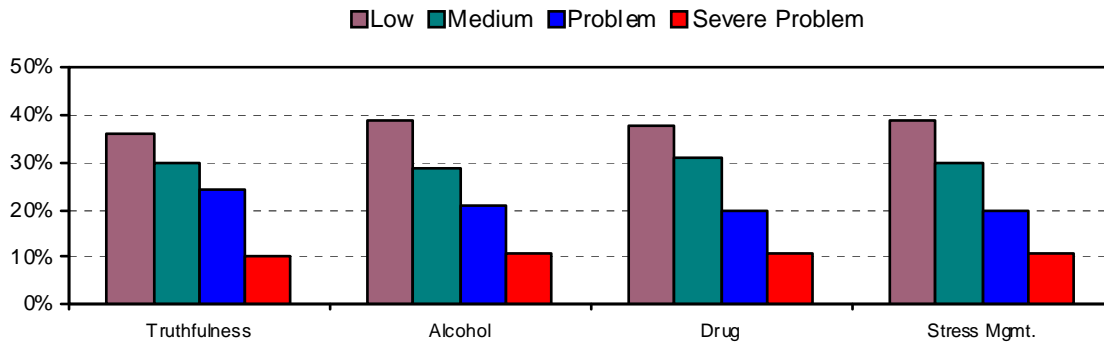
**Table 9. Reliability Coefficient Alphas (N = 100, 1998).**  
**All coefficient alphas are significant at p<.001.**

<b><u>ADS SCALE</u></b>	<b><u>Drug court clients N = 100</u></b>
Truthfulness Scale	.89
Alcohol Scale	.93
Drug Scale	.89
Stress Management	.93

These results support the reliability of the ADS. All reliability coefficient alphas were significant at p<.001. The court defendants clients used in the present study reveal similar reliability statistics that have been found in probationers used in other studies. The ADS is a statistically reliable screening instrument for assessment of court and substance (alcohol and drugs) abuse defendants.

Risk analysis is presented in Table 10.

**Table 10. Risk Range Percentile Scores for Drug Court Clients (N = 100, 1998).**



<u>Risk Range</u>	<u>Truthfulness</u>	<u>Alcohol</u>	<u>Drug</u>	<u>Stress Mgmt.</u>	<u>Predicted</u>
Low	36.0	39.0	38.0	39.0	<b>39%</b>
Medium	30.0	29.0	31.0	30.0	<b>30%</b>
Problem	24.0	21.0	20.0	20.0	<b>20%</b>
Maximum	10.0	11.0	11.0	11.0	<b>11%</b>

These results show that obtained risk range percentile scores closely approximated the predicted risk range percentile scores for each of the ADS scales presented in Table 10. These results support the accuracy of ADS risk assessment.

The results of the comparisons between obtained risk percentages and predicted percentages shows that all obtained scale scores were within 4.0 percent of predicted. The largest difference between obtained and predicted risk range percentages occurred on the Truthfulness Scale. All other scales were within one percentage point of predicted. This is very accurate defendant assessment.

**Validation Study 20: ADS Court Clients.** This study (1998) investigated the ADS in a sample of court defendants and replicated an earlier study that reported scale accuracy, discriminant and predictive validity, as well as reliability tests. The earlier study validated the ADS on a sample (N=100) of court defendants. The present study consisted of a larger sample of 300 court defendants.

Within-test **reliability** statistics were performed on the Alcohol-Drug-Screen (ADS) as was done in the earlier investigation. The within-test reliability measures, or inter-item reliability, are reported with coefficient alpha. Reliability coefficient alphas for the ADS scales are presented.

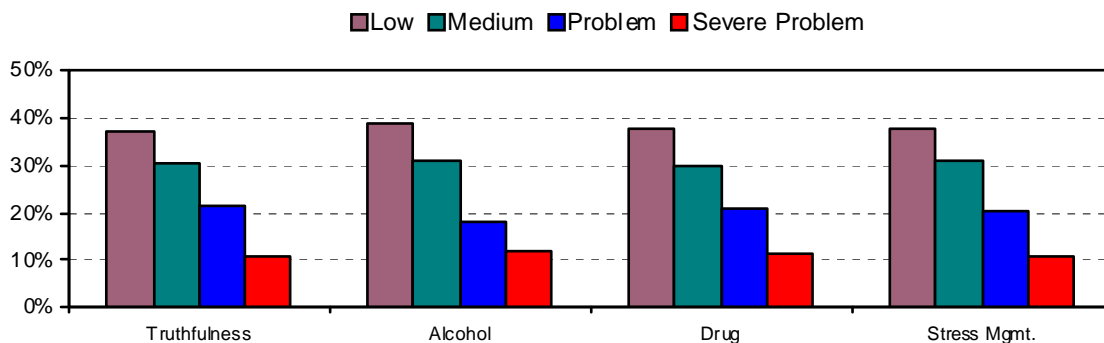
The validation procedure for predictive validity determines the accuracy of the ADS in identifying cases with “known” problems. For this procedure, known cases are defined as clients who have been in treatment for alcohol or drugs. This procedure is used to validate the Alcohol Scale and Drug Scale.

## Method and Results

The ADS was administered to 300 court defendants (1998) as part of routine evaluation in a southwestern municipal court substance abuse screening program. There were 242 (80.7%) males and 58 (19.3%) females. The demographic composition of the drug court clients was as follows: Age in years: 19 & under (17.7%); 20-29 (36%); 30-39 (29.3%); 40-49 (10.3%); 50-59 (5.3%); 60 & over (0.7%). Ethnicity: Caucasian (25.6%); Black (2.4%); Hispanic (64.7%); Native American (5.2%); Other (2.1%). Education: 8th grade or less (7.3%); Some High School (28.7%); H.S. graduate (47.3%); Some college (8%); College graduate (6.3%). Marital Status: Single (69.6%); Married (20.4%); Divorced (7.8%); Separated (1.5%); Windowed (0.7%).

Comparisons of obtained ADS risk range percentile scores to predicted percentages are presented in the figure and table below. Predicted risk range percentages are presented in the right hand column of Table 11.

**Table 11. Risk Range Percentile Scores for Defendants (N = 300, 1998).**



<u>Risk Range</u>	<u>Truthfulness</u>	<u>Alcohol</u>	<u>Drug</u>	<u>Stress Mgmt.</u>	<u>Predicted</u>
Low	37.0	38.7	38.0	38.0	<b>39%</b>
Medium	30.3	31.0	30.0	30.7	<b>30%</b>
Problem	21.7	18.3	20.7	20.3	<b>20%</b>
Maximum	11.0	12.0	11.3	11.0	<b>11%</b>

Comparisons between obtained risk range percentages and predicted percentages show that all obtained risk range percentile scores were within 2.0 percent of predicted. 21 of the 24 possible risk range percentages (6 scales x 4 risk ranges) were within one percentage point of predicted. This is accurate defendant risk assessment.

These results show that obtained risk range percentile scores closely approximated the predicted risk range percentile scores for the ADS scales presented in Table 11. These results support the ADS's assessment accuracy.

Reliability coefficient alphas are presented in Table 12.

**Table 12. Reliability coefficient alphas (N = 300, 1998).  
All coefficient alphas are significant at p<.001.**

<b><u>ADS SCALE</u></b>	<b><u>Drug court clients N = 300</u></b>
Truthfulness Scale	.90
Alcohol Scale	.93
Drug Scale	.91
Stress Management	.92
<hr/>	
DSM-IV Dependency Items*	.92
DSM-IV Abuse Items*	.87

\*The Substance Abuse/Dependency Scale is a classification (as opposed to measurement) scale derived from DSM-IV criteria. The dependency and abuse items are used to determine whether or not clients meet dependency or abuse criteria. They do not measure the extent to which criteria are met. However, they are included here because they demonstrate that client responses on these DSM-IV dependency and abuse scales are also reliable.

These results strongly support the reliability of the ADS. All of the coefficient alphas for the ADS scales are well above generally accepted standards (.78) for reliability. Most of the ADS scales are at or above .90. These high coefficient alpha results are similar to results found in previous studies. The ADS is a statistically reliable screening instrument.

The test of predictive validity for the Alcohol Scale is presented in the table below. Defendants Alcohol Scale scores are used to determine if the Alcohol Scale can accurately identify defendants that have been in alcohol treatment. Alcohol treatment information is obtained from defendants answers to ADS test items (#57 & #110) concerning alcohol treatment. In this analysis, it was predicted that clients that score at or above the 70th percentile (Problem and Severe Problem risk) would indicate that the defendants had alcohol treatment. Defendants that scored between the 40th and 69th percentile are not included in the table because the table distinguishes between problem and no problem behavior. No problem is defined as an Alcohol Scale score at or below the 39th percentile, whereas alcohol-related problematic behavior is defined as an Alcohol Scale score in the 70th or above percentile range.

As an indicator of “known” cases, treatment is not as accurate as a medical diagnosis. However, in assessment screening, treatment information is often obtained from the client. This emphasizes the importance of the Truthfulness Scale. Unfortunately, it is highly likely that there are defendants that have alcohol problems but who have not been in alcohol treatment. Nevertheless, the ease by which this procedure can be done using the ADS database makes it worthwhile.

**Table 13. Predictive validity for the Alcohol Scale using scale scores and alcohol treatment.**

Alcohol Scale	Alcohol Treatment		Number in each category
	No treatment	One or more treatments	
Low Risk (zero to 39th percentile)	107 (88%)	9 (11%)	116
Problem or Severe Problem Risk (70 to 100th percentile)	15 (12%)	76 (89%)	91
	122 (59%)	85 (41%)	N = 207

These results show that for the 85 defendants that reported having been in alcohol treatment, 76 defendants, or 89 percent, had Alcohol Scale scores at or above the 70th percentile. The ADS Alcohol Scale was very accurate in identifying clients with known alcohol problems. In decision-making terms these are called “hits.” Nearly 90 percent of the clients that had alcohol treatment scored in the Problem or Severe Problem risk range on the Alcohol Scale.

Of the 122 defendants that reported no alcohol treatment, 107 defendants or 88 percent had Alcohol Scale scores in the Low Risk or no problem range. These are called “correct rejections.” Combining the results of hits and correct rejections gives an overall accuracy of the Alcohol Scale of 88 percent. This is very accurate assessment. These results show there is a strong positive correlation between Alcohol Scale scores and alcohol treatment.

The predictive validity test for the Drug Scale was done in the same way using drug treatment as the criterion and is presented in the table below. Of the 78 defendants who reported having been in drug treatment 68 (hits) or 87 percent had Drug Scale scores in the 70th percentile or higher (Problem Risk and above) range. The Drug Scale is 87 percent accurate in identifying clients that have known drug problems as defined by having been in drug treatment.

**Table 14. Predictive validity for the Drug Scale using scale scores and drug treatment.**

Drug Scale	Drug Treatment		Number in each category
	No treatment	One or more treatments	
Low Risk (zero to 39th percentile)	104 (79%)	10 (13%)	114
Problem or Severe Problem Risk (70 to 100th percentile)	28 (21%)	68 (87%)	96
	132 (63%)	78 (37%)	N = 210

Of the 132 defendants that did not have treatment 104 (correct rejections) or 79 percent had Drug Scale scores in the Low Risk (no problem) range. This lower percentage is

reasonable because clients could have a drug problem without having been in treatment. Combining hits and correct rejections, the overall accuracy of the Drug Scale in predicting drug treatment was 82 percent. These results show there is a strong positive correlation between the Drug Scale and drug treatment.

**Validation Study 21: Reliability, Validity and Accuracy.** This study (1999) replicated the previous study. As more ADS tests are administered they are evaluated on an ongoing basis. Until a database is built up test results may reflect regional biases rather than be representative of court defendants as a general population.

Method and Results

The ADS was administered to 337 court defendants (1999). There were 234 (69.4%) males and 103 (30.6%) females. The demographic composition of the participants was as follows: Age in years: 19 & under (13.9%); 20-29 (39.2%); 30-39 (29.4%); 40-49 (13.9%); 50-59 (3.0%); 60 & over (0.3%). Ethnicity: Caucasian (50.6%); Black (14.2%); Hispanic (31.3%); Native American (3.0%); Other (0.9%). Education: 8th grade or less (7.7%); Some High School (31.8%); H.S. graduate (45.7%); Some college (10.1%); College graduate (3.9%). Marital Status: Single (62.0%); Married (22.7%); Divorced (9.7%); Separated (5.3%); Widowed (0.3%).

ADS risk range accuracy for the four risk range categories (low, medium, problem and high) is presented in Table 15. Predicted risk range percentages are presented in the top row of the table in bold print.

<b>Table 15. Accuracy of ADS Risk Range Percentile Scores (N = 337, 1999).</b>								
<b>Scale</b>	<b>Low Risk (39% Predicted)</b>		<b>Medium Risk (30% Predicted)</b>		<b>Problem Risk (20% Predicted)</b>		<b>Severe Problem (11% Predicted)</b>	
<b>Truthfulness</b>	39.3	<b>(0.3)</b>	30.1	<b>(0.1)</b>	19.6	<b>(0.4)</b>	11.0	<b>(0.0)</b>
<b>Alcohol</b>	40.1	<b>(1.1)</b>	29.3	<b>(0.7)</b>	19.9	<b>(0.1)</b>	10.7	<b>(0.3)</b>
<b>Drug</b>	39.4	<b>(0.4)</b>	29.7	<b>(0.3)</b>	19.9	<b>(0.1)</b>	11.0	<b>(0.0)</b>
<b>Stress Mgmt.</b>	39.5	<b>(0.5)</b>	29.6	<b>(0.4)</b>	20.2	<b>(0.2)</b>	10.7	<b>(0.3)</b>

ADS obtained risk range percentages were within 1.1 percent of predicted percentages on all ADS scales and risk range categories. These results mean that ADS risk range percentile scores are over 98 percent accurate. This is accurate defendant risk assessment.

Reliability coefficient alphas are presented in Table 16.

<b>Table 16. Reliability of the ADS (N=337, 1999)</b>	
<b>ADS SCALES</b>	<b>Coefficient Alphas</b>
Truthfulness Scale	<b>.90</b>
Alcohol Scale	<b>.94</b>
Drug Scale	<b>.93</b>
Stress Management Scale	<b>.94</b>
Substance Abuse/ Dependency Scale	<b>.95</b>

All coefficient alphas are significant at  $p < .001$ .

The inter-item reliability (alpha) coefficients for the ADS scales were highly reliable. Reliability coefficient alphas for all ADS scales were at or above 0.90. These results demonstrate that the ADS is statistically reliable.

**Validation Study 22: Chemical Dependency Outpatients.** This study (2000) investigated the reliability, validity and accuracy of the ADS in a sample of chemical dependency outpatients. Data for this study was collected in the year 2000 from adult outpatients. This ADS data adds to the ADS patient database. ADS tests are analyzed regularly to evaluate test statistics and scoring accuracy. This study closely follows methodology of the previous studies that report ADS reliability, validity and accuracy. However, this study focused upon adult outpatients.

#### Method and Results

The ADS was administered to 363 adult outpatients (2000). There were 254 (70.0%) males and 109 (30.0%) females. The demographic composition of participants was as follows: Age in years: 19 & under (13.5%); 20-29 (39.4%); 30-39 (29.2%); 40-49 (14.3%); 50-59 (2.8%); 60 & over (0.6%). Ethnicity: Caucasian (50.4%); Black (13.7%); Hispanic (31.9%); Native American (2.8%); Other (1.1%). Education: 8th grade or less (7.4%); Some High School (31.7%); H.S. graduate (46.6%); Some college (9.6%); College graduate (3.9%). Marital Status: Single (62.2%); Married (23.3%); Divorced (9.3%); Separated (4.9%); Widowed (0.3%).

ADS risk range accuracy for the four risk range categories (low, medium, problem and high) is presented in Table 17. Predicted risk range percentages are presented in the top row of the table in bold type.

<b>Scale</b>	<b>Low Risk (39% Predicted)</b>		<b>Medium Risk (30% Predicted)</b>		<b>Problem Risk (20% Predicted)</b>		<b>Severe Problem (11% Predicted)</b>	
<b>Truthfulness</b>	40.2	<b>(1.2)</b>	30.9	<b>(0.9)</b>	19.4	<b>(0.6)</b>	9.5	<b>(1.5)</b>
<b>Alcohol</b>	39.4	<b>(0.4)</b>	30.3	<b>(0.3)</b>	19.6	<b>(0.4)</b>	10.7	<b>(0.3)</b>
<b>Drug</b>	40.3	<b>(1.3)</b>	28.6	<b>(1.4)</b>	20.3	<b>(0.3)</b>	10.8	<b>(0.2)</b>
<b>Stress Mgmt.</b>	38.8	<b>(0.2)</b>	29.5	<b>(0.5)</b>	21.2	<b>(1.2)</b>	10.5	<b>(0.5)</b>

Obtained risk range percentages on all ADS scales were within 1.5 percent of predicted percentages. These results empirically demonstrate that ADS risk range percentile scores are accurate. Small differences between patient-obtained percentages and predicted percentages attest to the ADS's accuracy.

Reliability coefficient alphas for ADS scales are presented in Table 18.

<b>ADS SCALES</b>	<b>Coefficient Alphas</b>	<b>Significance Level</b>
Truthfulness Scale	<b>.90</b>	p < .001
Alcohol Scale	<b>.94</b>	p < .001
Drug Scale	<b>.93</b>	p < .001
Stress Management Scale	<b>.94</b>	p < .001
Substance Abuse/Dependency Scale	<b>.95</b>	p < .001

Reliability coefficient alphas for all ADS scales were at or above 0.90 and empirically demonstrate that the ADS is a statistically reliable test.

Mean (average) scale scores of first time outpatients were significantly lower than scores for patients with an outpatient history on all ADS scales with the exception of the Truthfulness Scale. ADS scales accurately differentiated between first time patients and patients that were in more than one treatment program.

Predictive validity results for the correct identification of problem behavior (substance abuse attitudes, and drinking and drug abuse problems) are as follows. The Alcohol Scale identified **93.2** percent of the patients that had alcohol problems. Patients that had been in alcohol treatment (problem drinkers) had Alcohol Scale scores at or above the 70th percentile. The Drug Scale was also accurate in identifying patients that have drug problems. Over 93 percent (**93.4%**) of the patients who had been in drug treatment had Drug Scale scores at or above the 70<sup>th</sup> percentile. The validity of the ADS Alcohol and Drug Scales is demonstrated by these results. The ADS is fundamentally sound and research has replicated statistics across different patient samples.



**Validation Study 23: Ongoing Analysis.** This study (2001) continues the analyses of ADS reliability, validity and accuracy in a sample of outpatients. Data for this study was collected in the year 2001 from program outpatients that were administered the ADS. This study follows previous studies methodology that report ADS reliability, validity and accuracy statistics.

Method and Results

The ADS was administered to 427 outpatients (2001). There were 326 (76.3%) males and 101 (23.7%) females. The demographic composition of participants was: Age: 19 & under (17.3%); 20-29 (37.2%); 30-39 (26.5%); 40-49 (15.5%); 50-59 (2.1%); 60 & over (1.2%). Ethnicity: Caucasian (70.2%); Black (3.6%); Hispanic (22.9%); Native American (1.7%); Other (1.7%). Education: 8th grade or less (7.7%); Some High School (23.4%); H.S. graduate (53.4%); Some college (9.8%); College graduate (2.8%). Marital Status: Single (61.2%); Married (26.9%); Divorced (7.4%); Separated (3.8%); Widowed (0.8%).

Nearly three-fourths (71.6%) of the patients reported having been in two or more substance abuse programs. Over half (50.9%) of the patients had been in three or more substance abuse treatment programs. Over one-fourth (27.8%) of the patients had two or more alcohol program placements and 9.5 percent had two or more drug program placements. Nearly half (44.4%) of the patients were referred for chemical dependency treatment one or more times and 7.8 percent were referred for chemical dependency treatment one or more times.

ADS risk range accuracy for the four risk range categories (low, medium, problem and high) is presented in Table 19. Predicted risk range percentages are presented in the top row of the table. The differences between obtained and predicted risk range percentages are presented in parentheses (bold type) in the table.

<b>Table 19. Accuracy of ADS Risk Range Percentile Scores (N = 427, 2001).</b>								
<b>Scale</b>	<b>Low Risk (39% Predicted)</b>		<b>Medium Risk (30% Predicted)</b>		<b>Problem Risk (20% Predicted)</b>		<b>Severe Problem (11% Predicted)</b>	
<b>Truthfulness</b>	40.7	<b>(1.7)</b>	28.8	<b>(1.2)</b>	21.1	<b>(1.1)</b>	9.4	<b>(1.6)</b>
<b>Alcohol</b>	39.3	<b>(0.3)</b>	29.6	<b>(0.4)</b>	20.1	<b>(0.1)</b>	11.0	<b>(0.0)</b>
<b>Drug</b>	39.7	<b>(0.7)</b>	29.3	<b>(0.7)</b>	20.0	<b>(0.0)</b>	11.0	<b>(0.0)</b>
<b>Stress Mgmt.</b>	39.3	<b>(0.3)</b>	30.0	<b>(0.0)</b>	19.7	<b>(0.3)</b>	11.0	<b>(0.0)</b>

ADS scale risk range percentages closely approximate their predicted percentages. The obtained risk range percentages were within 1.7 percent of the predicted percentages and are accurate. The ADS accurately assesses substance (alcohol and other drugs) abuse in chemical dependency outpatients.

Reliability coefficient alphas are presented in Table 20.

<b>ADS SCALES</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	<b>.89</b>	p < .001
Alcohol Scale	<b>.94</b>	p < .001
Drug Scale	<b>.92</b>	p < .001
Stress Management	<b>.92</b>	p < .001
Substance Abuse/Dependency Scale	<b>.92</b>	p < .001

Reliability coefficient alphas for all ADS scales were at or above 0.89. ADS scales are statistically reliable.

<b>ADS Scale</b>	<b>First Placement Mean</b>	<b>Multiple Placement Mean</b>	<b>T-value</b>	<b>Level of Significance</b>
Truthfulness Scale	12.17	10.59	t = 2.70	p=.008
Alcohol Scale	6.15	12.40	t = 4.96	p<.001
Drug Scale	8.79	12.73	t = 3.35	p<.001
Stress Management	131.26	115.49	t = 3.45	p<.001

\*Note: The Stress Management Scale is reversed in that higher scores are associated with better stress coping skills.

Average scale scores of first treatment placement patients were significantly lower than average scores for multiple placement patients on all ADS scales except the Truthfulness Scale. These results are consistent with those reported in previous ADS studies. Patients that have substance abuse problems (multiple placements) score higher on ADS scales than patients that have only one treatment placement.

Predictive validity results for the correct identification of problem behavior (drinking and drug abuse problems) are as follows. The Alcohol Scale identified **100** percent of the patients that had alcohol problems. Patients that had been in alcohol treatment (problem drinkers) had Alcohol Scale scores at or above the 70th percentile. The Drug Scale was also accurate in identifying patients that had drug problems. Over 95 percent (**95.6%**) of the patients that had been in drug treatment had Drug Scale scores at or above the 70<sup>th</sup> percentile.

The results of this study demonstrate that ADS reliability, validity and scale score accuracy meet or exceed professional standards. The ADS accurately and reliably assesses chemical dependency patients' risk and needs.

**Validation Study 24: Test Statistics.** This study (2002) continued the analyses of ADS reliability, validity and accuracy in a sample of substance abuse outpatients. Data for this study was collected in the year 2002.

Method and Results

The ADS was administered to 736 chemical dependency outpatients (2002). There were 537 (73.0%) males and 199 (27.0%) females. The demographic composition of the participants was as follows: Age.: 19 & under (16.3%); 20-29 (36.3%); 30-39 (23.5%); 40-49 (16.2%); 50-59 (6.8%); 60 & over (0.8%). Ethnicity: Caucasian (85.7%); Black (6.2%); Hispanic (5.7%); Native American (1.7%); Other (0.7%). Education: 8th grade or less (2.3%); Some High School (24.5%); H.S. graduate (48.8%); Some college (13.6%); College graduate (7.6%). Marital Status: Single (58.3%); Married (25.8%); Divorced (10.1%); Separated (4.2%); Widowed (1.7%).

ADS risk range accuracy for the four risk range categories (low, medium, problem and high) is presented in Table 22. Predicted risk range percentages are presented in the top row of the table.

<b>Scale</b>	<b>Low Risk (39% Predicted)</b>	<b>Medium Risk (30% Predicted)</b>	<b>Problem Risk (20% Predicted)</b>	<b>Severe Problem (11% Predicted)</b>
<b>Truthfulness</b>	39.6 (0.6)	29.3 (0.7)	19.5 (0.5)	11.6 (0.6)
<b>Alcohol</b>	40.6 (1.6)	30.3 (0.3)	18.5 (1.5)	10.6 (0.4)
<b>Drug</b>	39.4 (0.4)	31.3 (1.3)	18.7 (1.3)	10.6 (0.4)
<b>Stress Mgmt.</b>	39.5 (0.5)	29.5 (0.5)	20.4 (0.4)	10.6 (0.4)

ADS scale scores are within 1.6 percent of predicted percentages and are highly accurate. The ADS accurately assesses outpatient substance (alcohol and drug) abuse patients.

Reliability coefficient alphas are presented in Table 23.

<b>ADS SCALES</b>	<b>Coefficient Alphas</b>	<b>Significance Level</b>
Truthfulness Scale	<b>.89</b>	p < .001
Alcohol Scale	<b>.94</b>	p < .001
Drug Scale	<b>.89</b>	p < .001
Stress Management	<b>.93</b>	p < .001
Substance Abuse/Dependency Scale	<b>.91</b>	p < .001

Reliability coefficient alphas for all ADS scales were at or above 0.89 and these findings support ADS scale reliability.

Discriminant validity results are presented in Table 24. T-test comparisons between first treatment program placement (one placement) and multiple treatment program placement (2 or more placements) indicate that ADS scales successfully differentiated

between first and multiple treatment program placement. There were 292 first time placement patients and 444 multiple treatment placement patients.

<b>Table 24. Comparisons between first treatment placement and multiple placement patients (N=736, 2002).</b>				
<b>ADS Scale</b>	<b>First Placement Mean</b>	<b>Multiple Placements Mean</b>	<b>T-value</b>	<b>Level of Significance</b>
Truthfulness Scale	13.03	11.08	t = 4.73	p<.001
Alcohol Scale	4.40	10.02	t = 7.87	p<.001
Drug Scale	4.62	8.05	t = 5.66	p<.001
Stress Management	134.48	124.76	t = 2.76	p<.001

\*Note: The Stress Management Scale score is reversed in that higher scores are associated with better stress coping skills.

First treatment placement patients scored significantly lower than multiple treatment placement patients on all ADS scales, the exception being the Truthfulness Scale. These results replicate previous studies and support ADS discriminant validity. ADS scales measure what they purport to measure.

Predictive validity results also support ADS scales. The Alcohol Scale identified **100** percent of the patients that had been in alcohol treatment (problem drinkers). The Drug Scale identified patients with drug problems. Over 95 percent (**95.6%**) of the patients that had been in drug treatment had Drug Scale scores at or above the 70<sup>th</sup> percentile.

This study supports the reliability, validity and accuracy of the ADS.

**Validation Study 25: ADS Accuracy, Reliability, and Validity.** This study (2009) examined Alcohol-drug-Screen (ADS) test statistics in a sample of outpatient substance (alcohol and drug) abuse patients from February, 2006 and ending January, 2009. There were 867 outpatients included. ADS reliability, validity and accuracy were examined.

#### Method

Participants in this study (2009) consisted of 867 outpatients. There were 664 (76.6%) males and 203 (23.4%) females. Demographic composition of the sample follows. Age: 20 & under (12.0%); 21-30 (36.3%); 31-40 (25.3%); 41-50 (16.4%); 51-60 (5.9%); 61 & Over (1.2%). Ethnicity: Caucasian (66.6%); African American (10.3%); Hispanic (12.5%); Asian (1.0%); Native America (4.4%); Other (2.3%). Education: Eighth grade or less (3.9%); Some H.S. (28.7%); H.S. graduate (36.0%); Some college (18.5%); College graduate (8.5%). Marital Status: Single (53.7%); Married (23.6%); Divorced (13.4%); Separated (4.4%); and Widowed (0.9%).

#### History and ADS Scale Scores

Correlations give information regarding the strength of relationships. They show how closely two variables are associated with one another. Higher correlation coefficients signify strong relationships between the variables being correlated. Alcohol Scale

scores were most closely associated with the number of DUI arrests. A strong positive correlation indicated that higher Alcohol Scale scores are associated with a higher number of DUI arrests,  $r(785)=.51$ ,  $p<.001$ . Drug Scale scores were most highly correlated with the number of drug-related arrests,  $r(783)=.43$ ,  $p<.001$ . Higher Drug Scale scores are strongly associated with a higher number of drug-related arrests. Stress Management Scale scores were most highly correlated with age at first arrest,  $r(756)=-.18$ ,  $p<.001$ . Higher Stress Management Scale scores are associated with a younger age at first arrest.

Reliability

Test reliability refers to a scale’s consistency of measurement. A scale is reliable if a person gets the same score when re-tested as he/she did when originally tested. Table 25 shows the reliability scores for each ADS scale. Perfect reliability is 1.00.

**Table 25. ADS Reliability (N=867, 2009)**

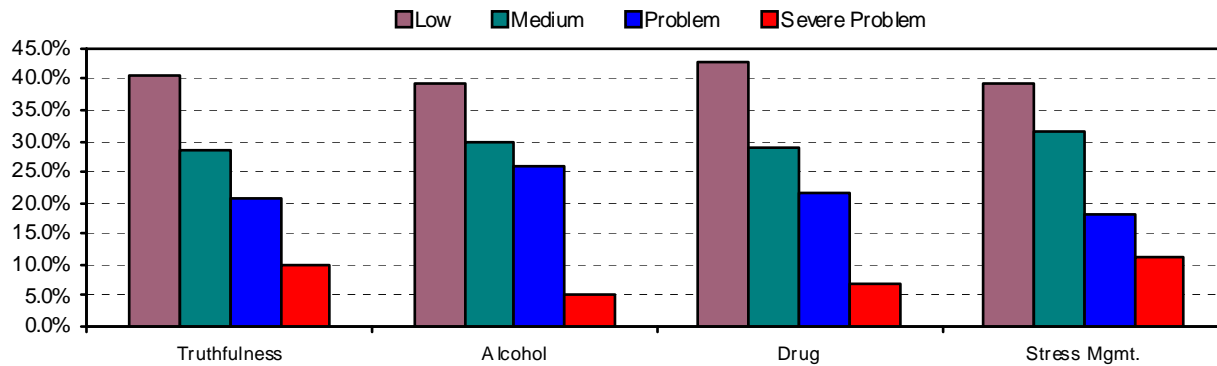
<u>Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.89</b>
Alcohol Scale	<b>.92</b>
Drug Scale	<b>.93</b>
Stress Management Scale	<b>.92</b>
DSM-IV Substance Abuse/Dependency Scale	<b>.90</b>

All ADS scales have a reliability of .89 or higher. The professionally accepted reliability standard is .75. All ADS scales demonstrate impressive reliability coefficients.

Accuracy

Test accuracy is demonstrated by how close attained scale scores come to predicted scores. Four categories of risk are assigned: Low Risk (zero to 39<sup>th</sup> percentile), Medium Risk (40 to 69<sup>th</sup> percentile), Problem (70 to 89<sup>th</sup> percentile), and Severe Problem Risk (90 to 100<sup>th</sup> percentile). The top row of Table 26 shows the percentages of clients that were predicted to score within each risk range. The body of Table 26 presents actual attained risk category percentages. Differences between attained and predicted percentages are shown in bold in parentheses. For example, in terms of the Low Risk range for the Truthfulness Scale: 39% of clients were predicted to score within this range; the attained percentage of respondents that scored in this range was 40.8%, which is a difference of 1.8 percentage points from what was predicted.

**Table 26. ADS Accuracy (N=867\*, 2009)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.8 (1.8)	28.5 (1.5)	20.5 (0.5)	10.1 (0.9)
Alcohol	39.3 (0.3)	29.7 (0.3)	26.0 (6.0)	5.0 (6.0)
Drug	42.6 (3.6)	28.7 (1.3)	21.6 (1.6)	7.1 (3.9)
Stress Management	39.4 (0.4)	31.3 (1.3)	18.3 (1.7)	11.0 (0.0)

\*Note: For respondents who scored in the 95<sup>th</sup> percentile or higher on the Truthfulness Scale (thereby invalidating other scale scores), only their Truthfulness Scale scores were included in this analysis; thus, the sample size was less 39 protocols.

Fourteen (14) out of 16 attained risk range percentiles were within **3.9** points of predicted percentages. (The two exceptions- the Problem and Severe Problem Risk percentiles for the Alcohol Scale- were within 6.0 points of the predicted percentages.) These results support the accuracy of the ADS as an outpatient-assessment instrument.

### Validity

Validity refers to a test's ability to measure what it is purported to measure. The quality of a test is largely determined by its validity. Concurrent validity correlates the independent scales of the test being validated with corresponding measures from another established test. This type of validation (concurrent validation) has been conducted in numerous studies on ADS scales, which were presented earlier in this document.

Predictive validity refers to a test's ability to predict observable "criterion" behaviors. In this analysis, our prediction criterion was whether or not patients had been treated for alcohol and/or drug problems. It was predicted that the "treated" patients would be identified by their higher scores on the Alcohol and/or Drug Scales. More specifically, it was predicted that a large percentage of "treated" patients would have Alcohol and/or Drug Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the elevated score range). The possibility of "treated" patients scoring in the Low Risk range (zero to 69<sup>th</sup> percentile) was not discounted altogether; however, it was expected that a significantly higher percentage of these individuals would score within the elevated (70<sup>th</sup> percentile or higher) range on the Alcohol and/or Drug Scales than the Low Risk range. The results of the analysis confirmed these predictions. The majority (**91.7%**) of patients that had been treated for alcohol problems scored in the elevated score range on the

Alcohol Scale. Additionally, the majority (**91.3%**) of patients that had been treated for drug problems scored in the elevated (70<sup>th</sup> percentile and higher) range on the Drug Scale. These findings indicate that the Alcohol and Drug Scales accurately identify patients who have been treated for alcohol and/or drug problems.

In a second validity analysis, the prediction criterion was patient treatment status. By comparing the scale scores of First and Multiple treatment program placements, the analysis examined whether test scales could distinguish between patients with known treatment histories. It was predicted that Multiple treatment placement patients would obtain significantly higher scale scores than First treatment placement patients. *T*-test results (presented in Table 27) revealed that Multiple treatment placement patients did indeed score significantly higher than First treatment placement patients on the Alcohol Scale, Drug Scale and Stress Management Scale.

**Table 27. Independent Samples *t*-test Results (N=867\*, 2009)**

Scale	Mean Scores		<i>t</i> -value	Cohen's <i>d</i> (effect size)
	First Trtmt. Patients	Multiple Trtmt. Patients		
Truthfulness	53.0	45.5	3.38	0.26*
Alcohol	28.5	53.0	-9.92	0.77**
Drugs	32.9	56.6	-8.34	0.67**
Stress Mgmt.	44.6	52.5	-3.51	0.29*

\*Small effect; \*\*Medium effect; \*\*\*Large effect

\*Note: For patients that scored in the 95<sup>th</sup> percentile or higher on the Truthfulness Scale (thereby invalidating other ADS scale scores), only their Truthfulness Scale scores were included in this analysis; thus, the sample size for the remaining scales was slightly smaller- less by 40 (the number of patients with invalid scale scores).

**These results support the validity of the Alcohol-Drug-Screen (ADS).** This is important because it shows that the Alcohol, Drugs and Stress Management Scales accurately measure levels of problem severity. The scales effectively discriminate between patients that are known to have more severe problems (Multiple treatment placements) and First time treatment programs.

#### Substance Abuse/Dependency Scale

The ADS Substance Abuse/Dependency Scale classifies patients as “substance dependent”, “substance abuse” or non-problematic according to their DSM-IV responses. Patients are classified “substance abuse” if they admit to one or more of the four abuse criteria (symptoms). These DSM-IV criteria are discussed in the ADS Training Manual. Patients are classified “substance dependent” if they admit to three or more of the seven dependency criteria (symptoms) or if they have ever been diagnosed “substance dependent” in the past. (According to DSM-IV methodology, once an individual is diagnosed “dependent”, that diagnosis applies for the rest of his/her life.)

DSM-IV Classification				
Classification	Males %	Females %	Total N	%
Non-Problematic	33.1	29.1	277	31.9
Substance Abuse	22.5	13.3	175	20.2
Substance Dependent	44.4	57.6	409	47.2
Diagnosed dependent in past	30.0	33.2	265	30.6

The table above shows that almost half of the sample was classified as “substance dependent” according to DSM-IV criteria. Additionally, 30.6 percent of the sample had been diagnosed “substance dependent” in the past. Just over twenty percent of patients were classified as substance abusers, and just over thirty percent were classified as non-problematic. More than two thirds of patients were classified as either “substance dependent” or “substance abuse”.

When patient status is considered, 55.8% of Multiple treatment placement patients were diagnosed “substance dependent”, and 20.2 percent were diagnosed “substance abuse”. Additionally, 38.8 percent had been diagnosed “substance dependent” in the past. Twenty-four percent of Multiple treatment placement patients were classified as non-problematic.

Unlike Multiple placement patients, the majority of First placement patients (50.7%) were classified as non-problematic. An additional 22.4 percent of First placement patients were diagnosed “substance abuse”, and only 26.9 percent were diagnosed “substance dependent”. The percentage of Multiple placement patients that had been diagnosed “substance dependent” in the past was almost four times that of First treatment placement patients (10.0%).

The results of chi-square analyses indicated that the differences between the percentages of First placement patients and Multiple placement patients that were classified “substance dependent”,  $\chi^2(1) = 53.43$ ,  $p < .001$ ,  $V = .26$ , “substance dependent” in the past,  $\chi^2(1) = 61.72$ ,  $p < .001$ ,  $V = .28$ , and non-problematic,  $\chi^2(1) = 53.31$ ,  $p < .001$ ,  $V = .26$ , were all statistically significant.

**Validation Study 26: ADS Accuracy, Reliability, and Validity in a Large Sample.** This study (2010) examined Alcohol-drug-Screen (ADS) test statistics in a sample of patients tested in outpatient chemical dependency treatment programs. Test data was gathered from April of 2008 through April of 2009. There were 3,681 patients included. ADS reliability, validity and accuracy were examined.

#### Method

Participants in this study (2010) consisted of 3,681 patients. There were 2,684 (73.1%) males and 987 (26.9%) females [there were 10 cases with missing gender information]. Demographic composition of the sample follows. Age: 20 & under (15.3%); 21-30 (40.2%); 31-40 (22.3%); 41-50 (16.5%); 51-60 (4.8%); 61 & Over (0.9%). Ethnicity: Caucasian (72.8%); African American (12.4%); Hispanic (4.3%); Asian (0.9%); Native American (8.8%); Other (0.8%). Education: Eighth grade or less (3.5%); Some H.S. (20.5%); H.S. graduate/GED (58.5%); Trade/technical school (9.7%); Some college (7.0%); College



graduate (0.8%). Marital Status: Single (56.6%); Married (21.1%); Divorced (16.8%); Separated (4.5%); and Widowed (1.0%).

History and ADS Scale Scores

Correlations give information regarding the strength of relationships. They show how closely two variables are associated with one another. Higher correlation coefficients signify strong relationships between the variables.

Alcohol Scale scores were most closely associated with the number of DUI arrests. A strong positive correlation indicated that higher Alcohol Scale scores are associated with a higher number of DUI arrests,  $r(3623) = .44, p < .001$ .

Drug Scale scores were most highly correlated with the number of drug-related arrests,  $r(3674) = .37, p < .001$ . Higher Drug Scale scores are strongly associated with a higher number of drug-related arrests.

Reliability

Test reliability refers to a scale’s consistency of measurement. A scale is reliable if a person gets the same score when re-tested as he/she did when originally tested. Reliability ranges from zero (no reliability) to 1.0 (perfect reliability). The professionally accepted standard for reliability is .75. Reliability coefficients for each ADS scale are presented in Table 28.

**Table 28. ADS Reliability (N=3,681, 2010)**

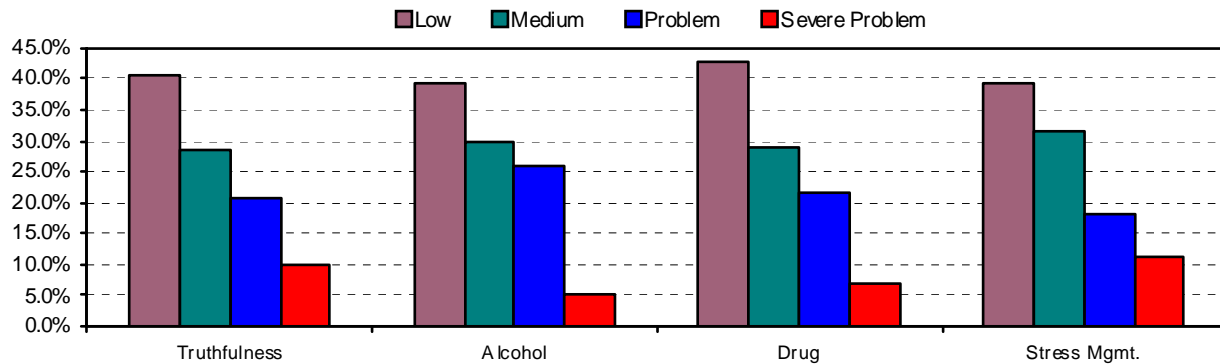
<u>Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.88</b>
Alcohol Scale	<b>.92</b>
Drug Scale	<b>.90</b>
Stress Management Scale	<b>.92</b>

**All ADS scales have a reliability coefficient of .88 or higher.** All scales’ coefficients exceed the professionally accepted standard of .75. ADS scales are reliable.

Accuracy

Test accuracy is demonstrated by how close attained scale scores are to predicted scores. Four categories of risk are assigned: Low Risk (zero to 39<sup>th</sup> percentile), Medium Risk (40 to 69<sup>th</sup> percentile), Problem Risk (70 to 89<sup>th</sup> percentile), and Severe Problem Risk (90 to 100<sup>th</sup> percentile). The top row of Table 29 shows the percentages of clients that were predicted to score within each risk range, this is in bold type. The body of Table 29 presents actual attained risk category percentages. Differences between attained and predicted percentages are shown in bold in parentheses. For example, in terms of the Low Risk range for the Truthfulness Scale: 39% of clients were predicted to score within this range; the attained percentage of clients who scored in this range was 40.8%, which is a difference of 1.8 percentage points from what was predicted.

**Table 29. ADS Accuracy (N=3,681\*, 2010)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	41.4 (2.4)	27.8 (2.2)	21.2 (1.1)	9.6 (1.4)
Alcohol	38.4 (0.6)	31.3 (1.4)	20.0 (0.0)	10.3 (0.7)
Drug	40.4 (1.4)	30.5 (0.5)	18.7 (1.3)	10.4 (0.6)
Stress Management	39.8 (0.8)	30.0 (0.0)	19.7 (0.3)	10.5 (0.5)

Sixteen out of 16 (all) attained risk range percentiles were within **2.4** points of predicted percentages. These results strongly support the accuracy of the ADS as a patient assessment instrument.

### Validity

Validity refers to a test’s ability to measure what it is purported to measure. The quality of a test is largely determined by its validity. Concurrent validity correlates the scales of the test being validated with corresponding measures from another established test. This type of validation (concurrent validation) has been conducted in numerous studies on ADS scales, many of which were presented earlier in this document.

Predictive validity refers to a test’s ability to predict observable “criterion” behaviors. In this analysis, our prediction criterion was whether or not patients had been treated for alcohol and/or drug problems. It was predicted that the “treated” clients would be identified by their higher scores on the Alcohol and/or Drug Scales. More specifically, it was predicted that a large percentage of “treated” patients would have Alcohol and/or Drug Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the “Risk” range). The possibility of “treated” patients scoring in the Low Risk range (zero to 69<sup>th</sup> percentile) was not discounted altogether; however, it was expected that a significantly higher percentage of these individuals would score within elevated (70<sup>th</sup> percentile or higher) score range on the Alcohol and/or Drug Scales than the Low Risk range. The results of this analysis confirmed these predictions. The majority (74.5%) of patients that had been treated for alcohol problems scored in the High Risk range on the Alcohol Scale. Additionally, the majority (87.4%) of the patients that had been treated for drug problems scored in the High Risk range on the Drug Scale. These findings support the

position that the Alcohol and Drug Scales accurately identify patients that have been treated for alcohol and/or drug problems.

In a second validity analysis, the prediction criterion was patient status. By comparing the scale scores of First treatment placement and Multiple treatment placement patients, this analysis examined whether test scales could distinguish between patients with known treatment histories (versus no treatment history). It was predicted that Multiple treatment placement patients would obtain significantly higher scale scores than First treatment placement patients. *T*-test results (presented in Table 30) reveal that Multiple treatment placement patients did indeed score significantly higher than First treatment placement patients on the Alcohol Scale, Drug Scale and Stress Management Scale (on which higher scores indicate poorer stress coping abilities).

**Table 30. Independent Samples *t*-test Results (N=3,681\*, 2010)**

<b>Scale</b>	<b>Mean Scores First Trtmt. Placement</b>	<b>Mean Scores Multiple Trtmt. Placement</b>	<b><i>t</i>-value</b>	<b>Cohen's <i>d</i> (effect size)</b>
Truthfulness	9.84	9.50	1.49	0.06
Alcohol	6.84	8.44	-4.09	-0.16*
Drugs	14.08	15.54	-2.99	-0.12*
Stress Management	131.83	133.34	-.828	-0.03

\*Small effect; \*\*Medium effect; \*\*\*Large effect

\*Note: For patients that scored in the 95<sup>th</sup> percentile or higher on the Truthfulness Scale (thereby invalidating other scale scores), only their Truthfulness Scale scores were included in this analysis.

These results strongly support the predictive validity of the Alcohol-drug-Screen.

#### Substance Abuse/Dependency Scale

The ADS Substance Abuse/Dependency Scale classifies patients as “substance dependent”, “substance abuse” or non-problematic according to their responses regarding DSM-IV criteria. Patients are classified “substance abuse” if they admit to one or more of the four abuse criteria (symptoms).

Clients are classified “substance dependent” if they admit to three or more of the seven dependency criteria (symptoms) or if they have ever been diagnosed “substance dependent” in the past. (According to DSM-IV methodology, once an individual is diagnosed “dependent”, that diagnosis applies for the rest of his/her life.)

**Table 31. Independent Samples t-test Results (N=3,681, 2010)**

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	28.5	35.0	1,102	30.2
Substance Abuse	70.8	63.3	2,529	68.7
Substance Dependent	28.1	31.0	1,057	29.0
Diagnosed dependent in past	17.1	20.8	665	18.1

The table above shows that almost one-third of the sample was classified as “substance dependent” according to DSM-IV criteria. Additionally, 18.1 percent of the sample had been diagnosed “substance dependent” in the past. Nearly 70 percent of clients were classified as substance abusers, and thirty percent were classified as non-problematic. The majority of clients were classified as either “substance dependent” or “substance abuse”.

When patient status is considered, 35.6 percent of Multiple treatment placement patients were diagnosed “substance dependent”, and 64.5 percent were diagnosed “substance abuse”. Additionally, 21 percent had been diagnosed “substance dependent” in the past. Less than one-fourth (21.4%) of Multiple treatment placement patients were classified as non-problematic.

Similar to Multiple treatment placement patients, the majority of First treatment placement patients (72.8%) were classified as substance abusers, but unlike Multiple treatment placement patients, the second-largest proportion of First treatment placement patients (32.6%) was classified as non-problematic. An additional 27.4 percent of First treatment placement patients were diagnosed “substance dependent”. Only 17.2 percent of First treatment placement patients had been diagnosed “substance dependent” in the past.

The results of chi-square analyses indicated that the differences between the percentages of First treatment placement patients and Multiple treatment placement patients that were classified “substance dependent”,  $\chi^2(1) = 20.18$ ,  $p < .001$ ,  $V = .10$ , “substance abuse”,  $\chi^2(1) = 20.94$ ,  $p < .001$ ,  $V = .10$ , and non-problematic,  $\chi^2(1) = 37.38$ ,  $p < .001$ ,  $V = .11$ , were all statistically significant.

## **SUMMARY**

The Alcohol-drug-Screen (ADS) is an evidence based assessment instrument that is focused exclusively upon substance (alcohol and drug) abuse. The ADS has six (6) scales (measures): **1.** Truthfulness Scale, **2.** Alcohol Scale, **3.** Drug Scale, **4.** DSM-IV Substance Abuse Scale, **5.** DSM-IV Substance Dependency Scale and **6.** Stress Management Scale. The most complete source of Alcohol-Drug-Screen (ADS) information is its website [www.alcohol-drug-screen.com](http://www.alcohol-drug-screen.com).

The ADS consists of 116 items and can be completed in 20 minutes. From data (answers) input, the ADS is scored online with typed reports available on-site within 2½ minutes. Client (patient, defendant, probationer or offender) assessment should not be taken lightly as the decisions based upon ADS research can be vitally important as they effect people lives. ADS research is ongoing in nature. ADS research began in 1980 and continues to date. The most representative ADS research is the most recent. Consistent with this emphasis upon evidence based research substance (alcohol and other drugs) abuse researchers are encouraged to include the Alcohol-Drug-Screen (ADS) in their investigation. Interested parties should contact Behavior Data Systems, Ltd. (BDS) at [info@bdsltd.com](mailto:info@bdsltd.com). BDS's toll free number telephone number is **1 (800) 231-2401**. BDS offices are open 7:30 a.m. to 4:00 p.m. Mountain Standard Time.

The Alcohol-Drug-Screen (ADS) is available for use at [www.online-testing.com](http://www.online-testing.com).