

# **DRIVER RISK INVENTORY-II**

## **DRI-II: An Inventory of Scientific Findings**

### **VOLUME 1**

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## PREFACE

The Driver Risk Inventory-II (DRI-II) is a brief, easily administered and automated (computer-scored) test that is designed for DUI/DWI offender risk and needs assessment. It includes true/false and multiple choice items and can be completed in 30 minutes. The original Driver Risk Inventory (first released in 1985) contained five empirically based scales: Truthfulness, Alcohol, Drug, Driver Risk, and Stress Coping Abilities. A sixth “classification” scale, the Substance Dependency/Abuse Scale, was added to the DRI in 1998, to create the improved “Driver-Risk Inventory-II” (or DRI-II). The DRI-II has been researched on DUI/DWI offenders, college students, outpatients, inpatients, job applicants, chemical dependency clients and others.

This document is the first of two volumes that present a cumulative record of the evolution of the DRI-II. The DRI-II database has been compiled since 1980, in over 34 states and two foreign countries. In this Volume (Volume 1), research is presented chronologically from 1980 to 2008. (Research conducted from 2009 on is presented in Volume 2). Study results demonstrate the reliability, validity and accuracy of the DRI-II. The DRI-II has been researched and standardized on over 1.3 million DUI/DWI offenders. Its database is now one of the largest DUI/DWI offender databases in the United States.

The U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) reviewed all major DUI tests in a two-year study (DOT HS 807 475). NHTSA highly rated the DRI. As reported in *Government Technology* (Vol. 3, #5, May 1990), “The Driver Risk Inventory was rated as the best.”

The DRI-II report explains client's attained scores and makes specific intervention and treatment recommendations. It also presents Truth-Corrected scores, significant items, multiple choice items and much more. The DRI is designed to measure the severity of DUI/DWI offender problems with respect to driver risk, substance (alcohol and drugs) abuse and mental health. It is a risk and needs assessment instrument. It has demonstrated reliability, validity and accuracy, and it correlates impressively with both experienced staff judgment and other recognized tests. DRI-II research is ongoing in nature, so that evaluators can be provided with the most accurate information possible.

DRI-II tests can be given directly on the computer screen or in paper-pencil test booklet format. All tests are computer scored on-site. DRI-II reports are available within three minutes of test completion. Diskettes contain all of the software needed to score tests, build a database, and print reports. The DRI-II Windows version also has an optional human voice audio presentation that presents the test with accompanying auditory presentation of the text seen on the computer screen. Additionally, the DRI-II is available on Professional Online Testing Solution's online testing platform.

DRI-II users are typically not clinicians or diagnosticians. Their role is usually to identify client risk, substance (alcohol and other drugs) abuse problems, and client need prior to recommending intervention, supervision levels, and/or treatment. The DRI-II is to be used in conjunction with a review of available records and respondent interview. No decision or diagnosis should be based solely on DRI-II results. Client assessment is not to be taken lightly, as the resulting decisions drastically affect people's lives.

## **INTRODUCTION**

### **DRIVER RISK INVENTORY (DRI)**

Increased public awareness of substance (alcohol and other drugs) abuse as a nationwide health problem has clarified the need for identification and treatment of these disorders. Rising health care costs have placed increasing responsibilities on all persons working with substance abusers. Workers in the field must now document and substantiate their intervention and treatment. Patients, clients, their families, probation departments, the courts, diversion programs, corrections programs and funding agencies are now requiring substantiation and documentation of staff decision making. Substance (alcohol and other drugs) abuse and dependency problems must now be measured in terms of degree of severity, with quantitative statements substantiating intervention and treatment.

The Driver Risk Inventory (DRI) was developed to help meet these needs. The DRI is designed for adult chemical dependency and substance (alcohol and other drugs) abuse assessment. The DRI is particularly useful in court-related assessments, diversion programs, intake-referral settings, and probation departments. The DRI report is designed for court and DUI/DWI offender assessment. In this report quantitative information is obtained by empirically based measures (scales) which independently generate risk (percentile) scores. Scale development is based upon nearly 20 years of research. In addition, explanatory paragraphs describe attained scores and contain specific score-related recommendations. And each scale is presented graphically in the DRI profile.

#### **DRI MEASURES OR SCALES**

- 1. Truthfulness Scale**
- 2. Alcohol Scale**
- 3. Drug Scale**
- 4. Driver Risk Scale**
- 5. Stress Coping Abilities Scale**
- \*6. Substance Dependency/Abuse Scale**

\*NOTE: the Substance Dependency/Abuse Scale is a classification that is based on DSM-IV criteria.

The DRI is a brief, easily administered and interpreted test that is specifically designed for use with **DWI (Driving While Intoxicated)** and **DUI (Driving Under the Influence)** offenders. The acronyms **DWI** and **DUI** are used **interchangeably** in this document. The DRI is a test uniquely suited for identifying problem drinkers, substance (alcohol and other drugs) abusers and high risk drivers. The DRI represents the latest developments in psychometric techniques and computerized technology. The DRI can be administered on a computer (PC compatible) screen or by using paper-pencil test booklets. Regardless of how the DRI is administered, all tests are scored and interpreted with a computer which generates DRI reports.

The DRI requires 25 to 30 minutes for completion. The DRI can be administered individually or in groups and is appropriate for people with sixth grade or higher reading abilities (available in English and Spanish). The DRI is composed of true/false and multiple-choice items. The language is direct, non-offensive and uncomplicated. Automated scoring and interpretive procedures help ensure objectivity and accuracy. The DRI is to be used in conjunction with a review of available records, a focused interview and experienced staff judgment.

The DRI was designed to provide relevant driver risk-related information for DUI/DWI staff decision-making. The DRI measures (or scales) were chosen to further the understanding of behavioral patterns and traits relevant to understanding problem drinkers, substance (alcohol and other drugs) abusers, and high risk drivers.

## UNIQUE FEATURES

**Truth Correction:** A sophisticated psychometric technique permitted by computerized technology involves "truth-corrected" scores which are calculated individually for DRI scales. Since it would be naive to assume everybody responds truthfully while completing any self-report test, the Truthfulness Scale was developed. **The Truthfulness Scale establishes how honest or truthful a person is while completing the DRI.** Correlations between the Truthfulness Scale and all other scales permit identification of error variance associated with untruthfulness. This error variance can then be added back into scale scores, resulting in more accurate "Truth-Corrected" scores. Unidentified denial or untruthfulness produces inaccurate and distorted results. Raw scores may only reflect what the client wants you to know. Truth-Corrected scores reveal what the client is trying to hide. Truth-Corrected scores are more accurate than raw scores.

**Risk Range Percentile Scores:** Each DRI scale is scored independently of the other scales. DRI scale scoring equations combine client pattern of responding to scale items, Truthfulness Scale and prior history that is contained on the DRI answer sheet. The Truthfulness Scale applies a truth-correction factor so that each scale score is referred to as a Truth-Corrected scale score. These Truth-Corrected scale scores are converted to the percentile scores that are reported in the client DRI report.

DRI scale percentile scores represent "degree of severity." Degree of severity is defined as follows: **Low Risk** (zero to 39th percentile), **Medium Risk** (40th to 69th percentile), **Problem Risk** (70th to 89th percentile), and **Severe Problem** or **Maximum Risk** (90th to 100th percentile). Severe problems include dependency.

Standardization data is statistically analyzed where percentile scale scores are derived from obtained scale scores from offender populations. The cumulative distributions of truth-corrected scale scores determine the cut-off scores for each of the four risk range categories. Individual scale score calculations are automatically performed and results are presented in the DRI report numerically (percentile), by attained risk category (narrative) and graphically (DRI profile).

**DRI Database:** Every time a DRI is scored the test data is automatically stored on the diskette for inclusion in the DRI database. This applies to DRI diskettes used anywhere in the United States and Canada. When the preset number of tests are administered (or used up) on a DRI diskette, the diskette is returned for replacement and the test data contained on these used diskettes is input, in a confidential (no names) manner, into the DRI database for later analysis. This database is statistically analyzed annually, at which time future DRI diskettes are adjusted to reflect demographic changes or trends that might have occurred. This unique and proprietary database also enables the formulation of annual summary reports that are descriptive of the populations tested. Summary reports provide important testing information, for budgeting, planning, management and program description.

**Confidentiality (Delete Client Names):** Many agencies and programs are rightfully concerned about protecting their client's confidentiality. The proprietary Delete Client Names option is provided to allow deletion of client names from test diskettes prior to their being returned to Risk & Needs Assessment.

This is optional and once the names have been deleted they are gone and cannot be retrieved. Deleting client names does not delete demographic information or test data. It only deletes the client names when the option is used. The option is available at any time and can be used whether the diskette is full or not. Once the client names are deleted there can be no further editing of the client names. This ensures client confidentiality.

## **DESCRIPTION OF EMPIRICALLY BASED MEASURES OR SCALES**

DRI scales were developed from large item pools. Initial item selection was a rational process based upon clearly understood definitions of each scale. Subsequently, items and scales were analyzed for final test selection. The original pool of potential test items was analyzed and the items with the best statistical properties were retained. **Final test and item selection was based on each item's statistical properties.** It is important that users of the DRI familiarize themselves with the definition of each scale. For that purpose a description of each DRI scale follows.

**Truthfulness Scale:** The Truthfulness scale measures how "truthful" the client was while completing the DRI. This type of a scale is a necessary, if not essential, requirement for any test involved in court-related procedures. Since the outcome of a person's test score could affect their driving privileges at the very least, or result in more serious consequences, it would be naive to believe that DUI/DWI offenders answer all questions truthfully. All interview and self-report test information is subject to the dangers of untrue answers due to defensiveness, guardedness, or deliberate falsification. The Truthfulness Scale identifies these self-protective, recalcitrant and guarded people who minimize or even conceal self report information. The Truthfulness Scale also establishes that the client understood the test items that he or she was responding to.

Drinking drivers frequently attempt to falsify their answers or minimize alcohol-related problems if the test outcome plays a major part in sentencing (Keistner and Speight, 1975). DUI/DWI offenders have been demonstrated to substantially under-report alcohol use when being evaluated for referral (Jalazo, et al., 1978). DUI/DWI offenders' self-assessments about whether they are "problem drinkers" often do not match those made by trained personnel (Sandler, et al., 1975). Nancy Hammond and Leslie Tamble's *DWI Assessment: A Review of the Literature* (1983) emphasized that DUI/DWI offenders tend to minimize or even conceal information regarding their alcohol-related problems.

**Alcohol Scale:** The Alcohol Scale is a measure of the client's alcohol proneness and alcohol related problems. Frequency and magnitude of alcohol use or abuse are important factors to be considered when evaluating DUI/DWI clients. DUI/DWI risk evaluation and screening programs are based upon the concept of an objective, reliable and accurate measure of alcohol use or abuse. Alcohol is a major licit or legal drug. The burgeoning awareness of the impact of illicit drugs on licensed drivers emphasizes the need for a DUI/DWI test to also discriminate between licit and illicit drugs.

**Drug Scale:** The Drug scale is an independent measure of the client's drug abuse-related problems. Illicit (or illegal) drug abuse and its effects are important factors to be considered when evaluating DUI/DWI offenders. Without this type of a drug scale, many drug abusers would remain undetected. Thus, the DRI differentiates between "alcohol" and "drug" abuse or licit versus illicit drugs. Increased public awareness of illicit drug (marijuana, cocaine, ice, crack, heroin, etc.) abuse emphasizes the importance of including an independent measure of drug use or abuse in any DUI/DWI risk assessment instrument.

The national outcry in the 1980's concerning cocaine use momentarily obscured the fact that Americans also abuse a number of other substances--including marijuana. Marijuana can be an intoxicant, depressant, hallucinogen, stimulant, or all of the above. The principal mind-altering ingredient in marijuana (THC) may linger for days or even weeks. Studies have shown that THC intoxication can return--for no apparent reason--even when a person has not recently smoked marijuana (University of California, Berkeley, Wellness Letter, May 1987). Dr. Adrian Williams of the Insurance Institute for Highway Safety estimates that as many as three-fourths of those arrested for driving under the influence of alcohol have been using marijuana as well.

**Driver Risk Scale:** The Driver Risk scale is an independent measure of the respondent being a driver risk, independent of that person's involvement with alcohol or drugs. Mortimer, et. al. (1971)<sup>1</sup> concluded that alcoholics were significantly more involved in inappropriate driving behavior and moving violations. Selzer (1971)<sup>2</sup> concluded that for maximal screening effectiveness, test results and arrest records be used jointly. Identification of driver risk independent of chemical dependency also is helpful in detecting the abstaining, yet aggressively irresponsible driver. The National Council on Alcoholism, (NCA Newsletter, 1984) noted that "research results indicated drivers' potential for risk-taking behavior may exist independently of alcohol use, and manifest itself as aggressive irresponsibility."

The National Highway Traffic Safety Administration (NHTSA) concluded "**One of the DRI scales is designed to detect irresponsible driving and provides an assessment for driver risk, a particularly useful feature for evaluating the DWI offender that does not exist in any other instrument we reviewed**" (DOT HS 807 475).

**Stress Coping Abilities Scale:** The Stress Quotient Scale (renamed the Stress Coping Abilities Scale) is a measure of the respondent's ability to cope with stress. How effectively one copes with stress determines whether or not stress affects one's overall adjustment and driving abilities. Stress exacerbates other symptoms of emotional as well as substance abuse-related problems. Markedly impaired stress coping abilities are frequently correlated with other emotional and psychological problems. A high risk (90 to 100 percentile) score on the Stress Quotient scale is indicative of markedly impaired stress coping abilities and likely reflects other identifiable mental health problems. The Stress Quotient scale is also significantly correlated with other indices of emotional problems that affect a person's driving abilities.

Many states are beginning to consider requiring DUI/DWI risk evaluation and screening procedures to include screening of "mental health problems." The Stress Quotient scale facilitates evaluation in these important areas of inquiry in a non-offensive and non-intrusive manner. The purpose or intent of the Stress Quotient scale is not obvious or threatening to the respondent. DUI/DWI client defensiveness and resistance is minimized. Thus, important information regarding DUI/DWI offender's stress coping abilities is obtained and made available to the screening agency in an objective and timely manner.

**Substance Dependency/Abuse Classification Scale:** Psychoactive substance use, abuse and dependency are discussed and defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). And it is from this source that the Substance Dependency/Abuse Scale evolved.

Dependency as used in the DRI is defined as admission to three or more of the seven DSM-IV symptoms of dependency. Substance Abuse is defined as admission to one or more of the four DSM-IV symptoms. The Substance Dependency/Abuse Scale incorporates the seven DSM-IV Substance Dependency criteria items and the four DSM-IV Substance Abuse criteria items. The DRI Alcohol Scale and Drug Scale measure risk or severity level and include DSM-IV equivalent items to support DSM-IV criteria items.

**Defendant admission of three of the seven DSM-IV dependency items results in Substance Dependence classification. Similarly, defendant admission to one of the four DSM-IV abuse items results in Substance Abuse classification.**

DRI items are personal. The straightforward nature of the DRI may appear to some people as intrusive. Although perhaps discomfoting to some, such criticism is directly related to the DRI's strength in assessing substance abuse and related problems objectively. Information deemed personal by some is necessary in acquiring information relevant to each DUI/DWI client's situation. Extensive efforts were made to word the DRI in a non-offensive, non-intrusive and easily understood manner.

**DRI-Short Form:** The **DRI-Short Form** is designed for use with the reading impaired, in high volume DUI/DWI agencies, and as an alternative retest instrument. It can be administered directly on the computer screen, given in paper-and-pencil test booklet format or read to the client in 15 minutes. The DRI-short form has a fifth (5th) grade reading level. DRI-Short Form scales correlate significantly with comparable scales on the DRI. The DRI-Short Form contains five scales: Truthfulness, Alcohol, Drug, Driver Risk and Substance Dependency/Abuse. DRI-Short Form tests can be administered in individual or group testing settings.

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<sup>1</sup>Mortimer, R.G., Filkins, L.D., and Lower, J.S. 1971 Court Procedures for identifying problem drinkers: Phase 11 (U.S. Department of Transportation, Report No. HSRI 71-120, HUF-1 1) Ann Arbor, Michigan: University of Michigan Highway Safety Research Institute.

<sup>2</sup>Selzer, M.L., 1971. Differential risk among alcoholic drivers. Proceedings of the American Association for Automotive Medicine 14: 107-213.

## **EMPIRICAL RESEARCH**

The Driver Risk Inventory (DRI) validation studies were conducted with established Minnesota Multiphasic Personality Inventory (MMPI) scales as well as Polygraph examinations and other reports. Reliability and validity studies have been conducted on substance abuse inpatients, outpatients, college students, job applicants, defendants, diversion program attendees, probationers, inmates and counseling patients. The DRI has been studied in court settings and DUI/DWI programs.

Empirically based DRI scales (or measures) were developed by statistically relating scale item configurations to known substance (alcohol and other drugs) abuse groups. The DRI was then normed against DUI offender populations. A summary of much of this DRI research follows.

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

## **STRESS QUOTIENT**

The Stress Quotient (SQ) or Stress Coping Abilities Scale is based upon the following mathematical equation:

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

The Stress Quotient (SQ) 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 SQ equation to establish SQ score ranges. The SQ includes measures of both stress and coping skills in the derivation of the Stress Quotient (SQ) score. The better an individual's coping skills, compared to the amount of experienced stress, the higher the SQ score.

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

**Validation Study 1:** This study was conducted (1980) to compare SQ between 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 SQ scores ranged from 32 to 97, with a mean of 64.2. Low Stress group SQ 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 SQ scores than the Low Stress group ( $t = 4.9, p < .001$ ). This study shows that the SQ or Stress Coping Abilities Scale is a valid measure of stress coping. The Stress Coping Abilities Scale significantly discriminates between high stress individuals and low stress individuals.

**Validation Study 2:** This study (1980) evaluated the relationship between the SQ 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 SQ or Stress Coping Abilities Scale is correlated with these measures it would indicate that the SQ or Stress Coping Abilities 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 SQ were expected because high SQ 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, SQ 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 Coping Abilities Scale is a valid measure of stress coping abilities. The reliability of the SQ was investigated in ten subjects (5 male and 5 female) randomly chosen from this study. A split-half correlation analysis was conducted on the SQ items. The product-moment correlation coefficient ( $r$ ) was  $.85$ , significant at the  $p < .01$  level. This correlation indicates that the SQ or Stress Coping Abilities Scale is a reliable measure. These results support the Stress Coping Abilities Scale as a reliable and valid measure.

**Validation Study 3:** In this study (1981) the relationship between the SQ 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 SQ scores and separately with two components of the SQ scale: Coping Skill (CS) scores and Stress (S) scores. It was hypothesized that the SQ and SRRS correlation would be negative, since subjects with lower SQ 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 SQ and the SRRS were administered in counterbalanced order. The results showed there was a significant positive correlation (product-moment correlation coefficient) between SQ 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 SQ and SRRS as well as S and SRRS support the construct validity of the SQ or Stress Coping Abilities 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 SQ in a sample of juveniles. High scores on factor C indicate high ego strength and emotional stability, whereas high SQ 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 SQ 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 SQ scores ( $r = .695$ ,  $p < .01$ ). Results were significant and in the predicted direction. These results support the SQ or Stress Coping Abilities 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 SQ 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 indicated 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 SQ scores as well as factor Q4 and S scores support the construct validity of the SQ scale.

**Validation Study 5:** Psychotherapy outpatient clients were used in this validation study (1982) that evaluated the relationship between selected Wiggins' MMPI (Minnesota Multiphasic Personality Inventory) supplementary content scales (ES & MAS) as criterion measures and the SQ 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 SQ 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 SQ scale was evaluated. The Pt scale in

the MMPI reflects neurotic anxiety, whereas the S component of the SQ 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 SQ 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 SQ scale components (CS, S) support the construct validity of the SQ or Stress Coping Abilities Scale.

**Reliability Study 6:** The reliability of the Stress Quotient (SQ) or Stress Coping Abilities 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 SQ 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 Coefficient Alpha of 0.81 was highly significant ( $F = 46.74$ ,  $p < .001$ ). Highly significant inter-item scale consistency was demonstrated.

**Reliability Study 7:** (1985) The reliability of the Stress Quotient (SQ) or Stress Coping Abilities Scale was investigated in a sample of 189 job applicants. There were 120 males and 69 females with an average age of 31. The SQ was administered at the time of pre-employment screening. The reliability analysis indicated that the Coefficient Alpha of 0.73 was highly significant ( $F = 195.86$ ,  $p < .001$ ). Highly significant Cronbach Coefficient Alpha reveals that all SQ 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 Quotient (SQ) Scale or Stress Coping Abilities Scale. The SQ is inversely related to other MMPI scales, consequently, negative correlation's were predicted. The participants were 100 chemical dependency inpatients. There were 62 males and 38 females with an average age of 41. The SQ and the MMPI were administered in counterbalanced order. The reliability analysis results indicated 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 Quotient (SQ) and selected MMPI scales were significant at the  $p < .001$  level and in predicted directions. The SQ 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 SQ 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 Quotient or Stress Coping Abilities 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 Quotient (SQ). The participants were 212 inpatients in chemical dependency programs. There were 122 males and 90 females with an average age of 44. The SQ and MMPI were administered in counterbalanced order. Reliability analysis of the SQ 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 SQ was 0.99**.

In the same study (1986, inpatients), product-moment correlations were calculated between the Stress Quotient (SQ) and selected MMPI scales. The SQ 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 SQ correlations with selected MMPI scales were significant (at the .001 level of significance) and in predicted directions.** These results support the SQ scale or Stress Coping Abilities Scale as a valid measure of stress coping abilities.

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

## **DRI RESEARCH**

DRI research is reported in a chronological format, reporting studies as they occurred. This gives the reader the opportunity to see how the DRI evolved in to a state-of-the-art risk and needs assessment instrument. For current information refer to the more recent studies near the end of this research document.

DRI scales were developed from large item pools. Initial item selection was a rational process based upon clearly understood definitions of each scale. Subsequently, scales and test items were analyzed for scale item selection. Final item selection (and inclusion of scale items) was based upon each items statistical properties. Empirically based DRI scales (or measures) were developed by statistically relating scale item configurations to known DUI/DWI offender groups. The DRI was then normed against an identified DUI/DWI offender population, i.e., people convicted of a DUI/DWI violation or offense.

### **10. Validation of the DRI Using Evaluator Ratings of DWI Offenders**

This 1987 study was designed to demonstrate the relationship between DWI evaluator ratings and DRI scales, i.e., concurrent validity. Four established DWI screening agencies participated in this DWI offender validity study. All participating DWI screening agencies' staff were experienced in providing DWI screening services and recommendations to the Courts.

DWI evaluation staff were instructed to "complete their normal and usual screening procedures" prior to rating DWI offender's risk levels (Low Risk, Medium Risk, Problem Risk, and High Risk) on the following behaviors: Truthfulness, Alcohol, Driver Risk, Drugs, and Stress Coping Abilities. The DRI was administered to DWI offenders as part of each DWI screening agency's usual screening procedure.

The "usual or normal" screening procedures used by the four screening agencies varied. All participating agencies utilized an interview, reported BAC levels at the time of arrest, and reported the number of prior DWI's for offenders. One DWI evaluation agency used the MAST, one agency used the MAST in combination with the Sandler, one agency relied on interview procedures, and one agency used a Court Scoring Procedure that incorporated the MAST, Sandler, BAC level and number of prior DWI's.

DWI examiners rated each DWI offender, as described above, without any knowledge of offender's DRI test scores. Thus, DWI evaluators had no knowledge of DRI test scores at the time of their ratings. In addition, the contracted Arizona State University statistician had no knowledge of DWI screener's ratings when the DRI items were selected and the DRI scoring keys were established.

This study was also conducted (1987) to establish the reliability or internal consistency of the DRI scales. Reliability refers to consistency of results regardless of who uses the DRI test. DRI scales were developed from large item pools. After item selection was completed, Cronbach's Coefficient Alpha, as well as the Standardized Alpha (considered the two most important indices of internal consistency or reliability), were computed on the remaining DRI scale items.

Method and Results

The DRI was administered to 563 convicted DWI offenders being screened and processed by the courts. There were 458 males (81.3%) and 105 females (18.7%). The demographic composition of the offender sample is as follows: Age ranged from 16 to 75 years. Education varied from 8 to 19 years. Ethnicity: Caucasians (80.1%), Hispanics (11.2%), American Indians (5.5%), Blacks (2.7%), and Other (0.5%).

Reliability coefficient alphas are presented in Table 1.

**Table 1. Reliability coefficient alphas. DWI Offenders (1987, N=563)**  
All coefficient alphas are significant at p<.001.

<b><u>DRI Scales</u></b>	<b><u>Coefficient Alpha</u></b>	<b><u>Standardized Alpha</u></b>
Truthfulness Scale	.81	.81
Alcohol Scale	.89	.90
Drug Scale	.74	.77
Driver Risk Scale	.75	.75
Stress Coping Abilities Scale	.89	.90

These results support the reliability (internal consistency) of the DRI scales. All coefficient alphas were significant at p<.001. DRI results are objective, verifiable and reproducible.

The original pool of test items for each DRI scale was re-analyzed and the items with the best statistical properties, i.e., "item-whole correlation coefficient" with the remaining scale items, were selected and retained. Four of the DRI scales (Truthfulness, Alcohol, Driver Risk and Drug) contain 20 items each; and the Stress Coping Abilities Scale contains 40 items. Additional self-report multiple choice items are included in the DRI test booklet. The resulting test items comprise the Driver Risk Inventory.

The results of this validity study demonstrates the relationship between staff ratings and DRI scales (measures), as determined by Product-moment correlation coefficients computed between corresponding variables. The correlation coefficients are presented in Table 2.

**Table 2. Product-moment correlations (1987, N=563)  
Staff Ratings of DWI Offenders**

<b><u>DRI Scales</u></b>	<b><u>Agreement Coefficient</u></b>	<b><u>Significance Level</u></b>
Alcohol Scale	.63	p < .001
Drug Scale	.54	p < .001
Driver Risk Scale	.44	p < .001
Truthfulness Scale	.09	p < .02
Stress Coping Abilities Scale	.02	n.s.

In reviewing the criteria above, it should be remembered that, in order to arrive at their ratings, the highly trained and experienced DWI evaluators invested considerable time interviewing each offender. In addition, DWI evaluator judgment was aided by reference to other indices such as Blood Alcohol Content (BAC) levels, number of prior DWI's and other objective test results. In contrast, DRI scores were arrived at after approximately 25 minutes of test administration time, and the computer analysis of DRI tests was not given additional information regarding other indices, e.g., BAC, number of prior DWI's, etc. However, the agreement between DRI scales (Alcohol, Drug and Driver Risk) and DWI evaluator ratings was impressive and highly statistically significant.

The less significant Agreement Coefficient obtained between the DRI Truthfulness Scale and DWI evaluator-client truthfulness ratings was not surprising. Nancy Hammond and Leslie Tamble's DWI Assessment: A Review of the Literature (1983) noted that drinking drivers may attempt to falsify their answers to DWI evaluators. Keistner and Speight (1975) pointed out that drinking drivers tend to minimize alcohol-related problems if the test outcome plays a major factor in sentencing. DWI offenders have been demonstrated to substantially under-report alcohol use when being evaluated for referral (Jalazo, et al., 1978). DWI offenders' self-assessments about whether they are problem prone often do not match those made by trained personnel (Sandler, et. al., 1975). **These findings emphasize the need for any test used with the DUI/DWI offender population to be able to determine how truthful the offender was at the time of evaluation.** Without a Truthfulness measure, the DWI evaluators have no scientific basis on which to base their judgments regarding the truthfulness of the DWI offender. The Truthfulness Scale methodology, as represented in the DRI, is based upon principles similar to those incorporated in the Minnesota Multiphasic Personality Inventory (MMPI), which is widely regarded as one of the most psychometrically sophisticated personality tests existing today.

The non-significant correlation coefficient obtained between the Stress Coping Abilities Scale and DWI evaluator ratings of offenders' stress coping abilities is interesting because it is in marked contrast to the Stress Quotient (Stress Coping Abilities) Scale's impressively demonstrated concurrent validity with clinical and chemical dependency populations. This SQ research was cited earlier. When the Stress Quotient Scale is compared to other objective instruments designed to measure stress, anxiety, and impaired adjustment, highly significant correlation coefficients are demonstrated. Historically, attention in DUI/DWI evaluation has been focused almost exclusively on problem drinkers. Only recently, in the 1980's, have DWI evaluators been required to explore other areas of inquiry, e.g., mental health and stress-related problems. It's possible that many DWI evaluators have simply not had the experience or training upon which to base judgments about DWI offenders' "stress coping abilities."

The product-moment correlation coefficient relating the DRI Alcohol scale to offender's Blood Alcohol Content (BAC) level was highly significant ( $r = .24, p < .001$ ). **Discriminant Validity for the Alcohol scale is demonstrated by the fact that no other DRI scale correlated significantly with BAC.**

Moreover, both the Driver Risk Scale and the Alcohol Scale correlated highly ( $r = .43$  and  $r = .48$ , respectively) significantly with the number of prior DWI's. Both of these relationships were significant ( $p < .001$ ).

The DRI scoring methodology utilizes a psychometrically sophisticated technique of "truth-correcting" the raw scores by adding back a portion of the score attributable to the respondent's "untruthfulness." This is based upon each DRI scale's correlation with the Truthfulness Scale. In this DWI study, each of the three Truthfulness Scale correlation coefficients (Truthfulness Scale with Alcohol, Drug and Driver Risk scales), were higher (or more significant) when the "truth-corrected" rather than raw scores were statistically analyzed (.25, .44, and .49, respectively). These findings support the validity of the "truth-correction" technique.

Product-moment correlation coefficients were computed between each of the DRI scales and the MAST, Sandler, and Court Scoring Procedure used by the DWI screening agencies that participated in this study. These coefficients are reported in Table 3.

**Table 3. Product-moment correlations. 1987 (N=563)**  
**DRI Scales and The Mast, Sandler And Court Procedures**

<u>DRI Scales</u>	<u>Mast</u>	<u>Sandler</u>	<u>Court</u>
Driver Risk Scale	.24	.22	.46
Drug Scale	.37	.11	.32
Alcohol Scale	.68	.46	.80

These coefficients are very substantial, demonstrating very acceptable concurrent (criterion-related) validity for the DRI scales. As expected, the correlations are of the greatest significance with the DRI Alcohol scale, as it is this DRI scale which most closely relates to what is being measured by the other evaluation procedures. The highest coefficient is between the DRI Alcohol scale and the Court Scoring Procedure, indicating that both of these alcohol evaluation procedures are essentially reflecting the same information.

**This DRI research (1987) on the DUI/DWI offender population demonstrated significant correlations between number of prior DUI's/DWI's and both the Driver Risk Scale and the Alcohol Scale ( $r = .43$  and  $.48$ , respectively). Both of these relationships were significant ( $p < .001$ ). In addition, the product-moment correlation coefficient relating the DRI Alcohol Scale to offender's BAC (Blood Alcohol Content) level at the time of arrest was highly significant ( $r = .24$ ,  $p < .001$ ). Discriminant validity for the DRI is demonstrated by the fact that only the DRI Alcohol Scale correlates significantly with the BAC (Blood Alcohol Content) level obtained at time of arrest.**

These findings strongly support the validity and reliability of the DRI. All of the DRI scales were highly correlated with the criterion measures they were tested against. The large correlation coefficients between evaluator ratings and DRI scales support validity of the DRI. **The results of this study show that the DRI is a valid and reliable DUI/DWI offender risk assessment instrument.**

## 11. A Study of DRI Reliability and Sex Differences in DRI Scale Scores

This study (1988) was conducted as an expansion of earlier DRI validation research to further study the reliability of the DRI and to test for sex differences in DRI scale scores. People often develop firm masculine and feminine identifications that contribute to consistent “sex differences” or gender differences on psychometric tests. The DRI is a risk assessment instrument that measures risk from a variety of perspectives, notably, risk of alcohol and drug abuse, aggressive driver risk and mental health. If sex differences exist in these areas then male and female respondents are likely to score differently on these DRI scales. The purpose of the present study (1988) was to investigate DRI reliability and sex differences in DRI scale scores.

### Method and Results

The DRI was administered to 1,899 convicted DWI offenders who were being screened and evaluated for the courts. There were 1,583 males (83.4%) and 316 females (16.6%). The demographic composition of this sample is as follows: Age: 16 to 25 (30.5%); 26 to 35 (41.5%); 36 to 45 (18.3%); 46 to 55 (7.2%); and 56 + years (2.5%). Ethnicity: Caucasians (84.8%), Blacks (5%), Hispanics (2.1%), American Indians (7%), Asians (0.4%) and Other (0.7%). Educational: Eighth grade or less (3.7%); Some High School (16.3%); GED (6.8%); High School Graduate (36.8%); Some College (27.7%); Technical/Business School (1.2%); College Graduate (6.9%); and Professional/Graduate School (1.1%).

Reliability coefficient alphas are presented in Table 4.

**Table 4. Reliability coefficient alphas. DWI Offenders (1988, N=1,899)**  
**All coefficient alphas are significant p<.001.**

<b><u>DRI Scales</u></b>	<b><u>Coefficient Alpha</u></b>	<b><u>Standardized Alpha</u></b>
Truthfulness Scale	.82	.82
Alcohol Scale	.90	.90
Drug Scale	.73	.76
Driver Risk Scale	.77	.77
Stress Coping Ability Scale	.90	.91

These results are consistent with reliability coefficients previously found in an earlier study. These results support the reliability of the DRI. All coefficient alphas were significant at  $p<.001$ . The DRI is a reliable instrument for DWI offender assessment.

T-tests were calculated for all DRI scales to evaluate possible gender differences. Significant gender differences were found on three DRI scales, i.e., Truthfulness Scale, Alcohol Scale and the Driver Risk Scale. The t-test results are presented in Table 5.

**Table 5. Gender Differences, 1988**

<u>DRI Scale</u>	<u>t value</u>	<u>Significance Level</u>
Truthfulness Scale	7.61	p<.01
Alcohol Scale	5.33	p<.05
Driver Risk Scale	11.13	p<.01

Based on this (1988) research, gender specific norms (or separate male and female scoring procedures) have been established in the DRI software program for men and women on the Truthfulness Scale, Alcohol Scale, and Driver Risk Scale. Significant gender differences were not observed on the Drug Scale or the Stress Coping Abilities Scale.

Since DRI scale scores are truth-corrected, gender differences on the Truthfulness Scale are of interest. Females had a mean score on the Truthfulness Scale of 23.61 and males 22.26. In general, corrected male scores were higher on all scales.

High risk male scores on these three DRI scales (i.e., Truthfulness, Alcohol and Driver Risk) are likely stemming from straightforward admission of these items by men. High Risk female scores appear to be associated with defensiveness and guardedness. A female's high score on these three DRI scales is more likely to be related to truth-correction, as opposed to male's high scores on these three scales. With more accurate measures the DUI/DWI evaluation agency can make more accurate risk-related recommendations.

No significant sex differences were found on the Drug Scale. These results suggest an equal level of guardedness among men and women when answering questions about illegal substances or related illicit behaviors in a court setting. Similarly, no significant gender differences were found on the Stress Coping Abilities Scale. This result suggests that people appear to be so open (or honest) in their responses to the Stress Coping Abilities Scale that gender differences are minimal or non-significant.

## **12. Validation of the DRI Using Criterion Measures in Three Samples of DUI Offenders**

This study was conducted (1988) to further test the reliability of the DRI and concurrently examine DRI-related correlations with a wide number of variables. These variables included staff member risk level ratings, Mortimer-Filkins, MAST, and the MacAndrew Scale. Three established DUI screening agencies participated in this research. All respondents (N=1,299) were DUI offenders being screened and processed by the courts.

DUI evaluation staff were instructed to "complete their normal and usual screening procedures" prior to rating DUI offenders' risk levels (Low Risk, Medium Risk, Problem Risk and High Risk or Severe Problem) on the following behaviors: Truthfulness, Alcohol, Driver Risk, Drugs and Stress. The DRI was administered to DUI offenders as part of each agencies usual assessment procedure.

The "usual or normal" screening procedures used by the agencies varied. All participating agencies used an interview, reported BAC (Blood Alcohol Content) levels at time of arrest, reported the number of prior DUI/DWI offenses, number of prior moving violations, and number or prior at-fault accidents. Two agencies used the Mortimer-Filkins and the MAST, whereas one agency did not report other test scores, and one agency also used the MacAndrew Scale.



## Method and Results

There were three samples of DUI offenders included in this study. The total number of DUI offenders was 1,299. **The first sample consisted of 600 offenders.** There were 503 males (83.8%) and 97 females (16.2%). The demographic composition of this sample is as follows: Age: 16-25 years (N=139); 26-35 years (N=235); 36-45 years (N=136); 46-55 years (N=56); and 56 years or older (N=34). Ethnicity: Caucasians (530), Hispanics (17), American Indians (3), Blacks (46), and Other (4). Education: Eighth grade or less (57); Partially completed High School (100); GED (21); High School Graduate (263); Partially completed College (125); Technical/Business School (3); College Graduate (45); and Professional/Graduate School (13).

**The second sample consisted of 428 offenders.** There were 348 males (81.3%) and 80 females (18.7%). The demographic composition of this sample is as follows: Age: 16-25 (26.4%); 26-35 (41.9%); 36-45 (19.4%); 46-55 (8.6%); and 56 or older (3.7%). Ethnicity: Caucasians (91.6%), Blacks (4.9%), Hispanics (3.3%), American Indian (0.1%). Education: Eighth grade or less (3.3%); Some High School (20.8%); GED (4.4%); High School graduate (46%); Some College (12.9%); Technical/Business school (1.2%); College graduate (9.3%); and Professional/ Graduate school (2.1%).

**The third sample consisted of 271 offenders.** There were 216 males (79.7%) and 55 females (20.3%). The demographic composition of this sample is as follows: Age: 16-25 (27.7%); 26-35 (41.3%); 36-45 (20.3%); 46-55 (6.3%); and 56 or older (4.4%). Ethnicity: Caucasians (90.4%), 20 Blacks, Hispanics (0.1%), Asian (0.1%), American Indian (0.1%), and Other (0.1%). Education: Eighth grade or less (4.4%); Some High School (21.8%); High School Graduate (42.1%); and Some College (31.7%).

Reliability coefficient alphas were computed on the combined sample (N=1,299). These results are presented in Table 6.

**Table 6. Reliability coefficient alphas. DUI offenders (1988, N=1,299)**  
**All coefficient alphas are significant at p<.001.**

<b><u>DRI Scales</u></b>	<b><u>Coefficient Alpha</u></b>	<b><u>Standardized Alpha</u></b>
Validity (Truthfulness)	.81	.81
Alcohol	.91	.91
Drugs	.74	.77
Driver Risk	.79	.79
Stress Quotient	.89	.90

The results of this study support the reliability (internal consistency) of the DRI measures or scales. These findings correspond very closely with previous research on other samples of DUI offenders. Reliability refers to consistency of test results regardless of who uses the test. DRI results are objective, verifiable, reproducible and reliable.

The results of the product-moment correlations between staff member ratings and DRI scales are presented in Table 7.

**Table 7. Product-moment correlations. (1988, N=1,299)  
Staff Member Risk Level Ratings and DRI Scores**

<b>DRI Scales</b>	<b>1 DUI Offenders N = 600</b>	<b>2 DUI Offenders N = 428</b>	<b>3 DUI Offenders N = 271</b>
Truthfulness Scale	.2976	.3560	.0764*
Alcohol Scale	.6837	.5612	.6724
Drug Scale	.5002	.4376	.5321
Driver Risk Scale	.6754	.3870	.4737
Stress Coping Ability Scale	.4903	.3047	.3957

\*p < .05, all other values p<.001

In reviewing these coefficients, it should be noted that staff members, in order to arrive at their ratings, invested considerable time interviewing each offender, had access to other indices such as BAC levels, number of prior DUI/DWI offenses and other objective test results. In contrast, DRI scores were arrived at after approximately 25 minutes of test administration. The agreement coefficients between staff member ratings and DRI scale scores are statistically significant.

Some staff members in one of the samples may have had access to some DRI results (summary reports) prior to completing their offender ratings. These results are in agreement with a previous study, similar highly significant correlations were found between staff member ratings and the DRI Alcohol, Drugs and Driver Risk scales. The Truthfulness scale ratings were less significant compared to the other scales. With regard to the significant Stress Coping Abilities correlations, these stress coping ratings were not significant in the previous study. A possible explanation of these differences may involve staff instructions. In the earlier study, staff were instructed to rate the offender's "stress coping ability", whereas in the present study staff were instructed to rate the offender's "stress." It is possible that these different instructions account for the different results. For example, rating a person's experienced stress level differs from rating that person's ability to cope with stress. These instructional and possible procedural differences were inadvertent.

Historically DUI/DWI evaluations have focused almost exclusively on alcohol-related problems. The "percentage of agreement" between staff member ratings of offender's alcohol risk (i.e., Low, Medium, Problem, Severe Risk) and the DRI Alcohol scale scores for 1,098 respondents compared as follows: 62 percent in exact agreement, 32.5 percent differed by one adjacent rating category, 4 percent differed by two rating categories, and .5 percent differed by three rating categories. These results are impressive since the staff members rating the offenders' alcohol risk were relying on their established interview and evaluation procedures. The strengths of two evaluation procedures, i.e., a focused interview in combination with objective DRI findings, could be combined to even further enhance the accuracy of DUI/DWI risk assessment.

Although we look for high coefficients, any positive correlation indicates that predictions from the test will be more accurate than guesses. Whether a validity coefficient is high enough to permit use of the test as a predictor, depends upon numerous factors, such as the importance of prediction and assessment cost.

Product-moment correlation coefficients relating the DRI Alcohol scale to offender's Blood Alcohol Content (BAC) level was found to be highly significant in all three samples ( $r = .597$ ,  $r = .657$ ,  $r = .336$ ,  $p < .001$ ). The correlations between BAC and the other DRI scales were not significant. These findings

support **discriminant validity of the Alcohol Scale, no other DRI scale correlated significantly with the BAC (Blood Alcohol Content) obtained at time of arrest.**

Correlations between test and criterion are called validity coefficients, coefficients of productivity and concurrent validity. A concurrent - validation procedure involves administering the test and comparing test results with identifiable criterion performance. This type of concurrent validity has been demonstrated with the DRI and criteria's such as staff ratings, BAC level and number of prior DUI/DWI convictions.

Product-moment correlation coefficients relating the offender's number of prior DUI's/DWI's to DRI scales or measures are presented in Table 8.

**Table 8. Product-moment correlations. DUI Offenders (1988, N=1,299)**

<u>DRI Scales</u>	<u>Prior DUI's/DWI's vs. DRI Scales</u>		
	<u>1 DUI Offenders</u> <u>N = 600</u>	<u>2 DUI Offenders</u> <u>N = 428</u>	<u>3 DUI Offenders</u> <u>N = 271</u>
Truthfulness Scale	n.s.	n.s.	n.s.
Alcohol Scale	.2949**	.1811*	.3573**
Drug Scale	n.s.	.2827**	n.s.
Driver Risk Scale	.3268**	.2508**	.3946**
Stress Coping Abilities Scale	n.s.	.3307**	n.s.

\*\* p < .001, \* p < .01

Both the Alcohol Scale and Driver Risk Scales correlated highly significantly with the number of prior DUI's/DWI's. These findings are similar to those reported (1987, N= 563) earlier. However, in the second group, both the Drug and Stress Coping Abilities scales correlated significantly with number of prior DUI's/DWI's. These findings may reflect a trend and warrant careful analysis in future DRI research. Illicit drug (marijuana, cocaine, heroin, etc.) abuse convictions may be becoming more prevalent due to increased incidence, improved detection, or poly-drug differentiation. However, it is important to note that high correlations do not show that "one variable causes another".

One of the participating agencies did not provide other test scores. Consequently, only two of the participating agencies reported MAST scores and Mortimer-Filkins scores. Product-moment correlation coefficients are presented in Table 9. Only those DRI scales with significant correlations are presented.

**Table 9. Product-moment correlations. (1988)**  
**MAST versus DRI Alcohol and Drug Scales**

<u>DRI Scales</u>	<u>1 DUI Offenders (N = 600)</u>	<u>2 DUI Offenders (N = 428)</u>
Alcohol Scale	.3778**	.1754*
Drug Scale	.2013**	.2492**

\*\* p < .001, \* p < .01

The MAST total score correlated significantly with the DRI Alcohol scale and the DRI Drug scale. Perhaps it's of equal importance to mention the DRI scales or measures that the MAST did **not** correlate with, i.e., DRI Truthfulness Scale, DRI Driver Risk Scale, and the DRI Stress Coping Abilities Scale. **The MAST does not contain a truthfulness measure, nor does it contain independent Drug, Driver Risk or Stress Coping Abilities measures.**

While the correlations between the DRI Alcohol and Drugs scales and the MAST are significant, there are some concerns regarding the MAST (Jacobson, 1976, Hammond and Tamble, 1983) that must be carefully considered. The most frequent criticisms of the MAST are: the MAST's obvious face validity with no way of telling if the respondent was truthful. Also, the MAST score indicates little else other than presumptive evidence of alcoholism.

Historically, the two most widely used DUI/DWI screening instruments or tests were the Michigan Alcoholism Screening Test (MAST) and the Mortimer-Filkins screening procedures. The MAST and the Mortimer-Filkins tests were used for criterion validity comparisons. The source document for the MAST: Selzer, M.L., The Michigan Alcoholism Screening Test, the Quest for a New Diagnostic Instrument. American Journal of Psychiatry, 127 (1971: 89-94). The source document for the Mortimer-Filkins: Kerlan, M.W., Mortimer, R.G., Mudge, B., and Filkins, L.D. Court Procedures of Identifying Problem Drinkers. Volume 1: Manual. Ann Arbor, Michigan: Highway Safety Research Institute, University of Michigan, 1971 (Pub. No. DDT-HS-800-632).

Product-moment correlation coefficients between Mortimer-Filkins total scores and DRI scale scores were statistically significant are presented in Table 10.

**Table 10. Product-moment correlations. (1988)**  
**Mortimer-Filkins versus DRI Scales**

<u><b>DRI Scales</b></u>	<u><b>1 DUI Offenders (N = 600)</b></u>	<u><b>2 DUI Offenders (N = 428)</b></u>
Alcohol Scale	.4508**	.3232**
Drug Scale	.2404**	.2368**
Driver Risk Scale	.2459**	n.s.

\*\* p < .001

The Mortimer-Filkins total score correlated highly significantly with the DRI Alcohol Scale and to a lesser extent the DRI Drug Scale. In sample one, the Driver Risk Scale correlated significantly with the Mortimer-Filkins. Historically, the Mortimer-Filkins has been the most widely used DUI/DWI screening procedure. The highly significant correlations between the DRI Alcohol and DRI Drug scales and the Mortimer-Filkins is strongly supportive of Driver Risk Inventory (DRI) validity.

In their reviews of the Mortimer-Filkins (Jacobson, 1976, Hammond and Tamble, 1983), it is emphasized that the Mortimer-Filkins test is to be used in conjunction with the **structured Mortimer-Filkins interview** which must be conducted individually. The Mortimer-Filkins interview alone requires more than an hour (some estimate 90 minutes or more), which makes the Mortimer-Filkins a very lengthy and time-consuming DUI/DWI screening or evaluation procedure. Indeed, the most common criticism of the Mortimer-Filkins is that it is a very time-consuming evaluation. **The Mortimer-Filkins test does not contain a Truthfulness scale, nor does it contain independent Drug, Driver Risk or Stress Coping measures.**

Perhaps it is important to note that neither the MAST nor the Mortimer-Filkins have the following features: a validity or truthfulness measure to determine how honest the respondent was while completing these tests; independent measures for alcohol (licit) and drug (illicit) use or abuse; a measure of driver risk independent of substance abuse; a stress coping abilities measure to determine emotional stability; and current (1980's and 1990's) research as well as norms based on the DUI/DWI population itself.

One of the agencies participating in this study utilized the MacAndrew Scale in their screening procedures. Product-moment correlation coefficients between the MacAndrew Scale and DRI scale scores with significant correlations are presented in Table 11.

**Table 11. Product-moment correlations. DUI Offenders (1988)**  
MacAndrew Scale versus DRI Scales

<u>DRI Scales</u>	<u>1 DUI Offenders</u> <u>N = 600</u>	<u>Significance</u> <u>Level</u>
Truthfulness	-.2698	p < .001, negative
Alcohol	.1660	p < .02
Drugs	.1694	p < .02

The highly significant **negative** correlation between the MacAndrew Scale and the DRI Truthfulness Scale suggests many low scoring MacAndrew offenders are either defensive, recalcitrant or untruthful in their self-report. If the MacAndrew Scale is removed from the 566-item Minnesota Multiphasic Personality Inventory (MMPI) test, then it would only contain an alcoholism scale. In other words, the MacAndrew Scale would not contain an independent Truthfulness Scale. It would also have to be standardized and normed on the DUI/DWI population. These findings emphasize the importance of the DRI Truthfulness Scale and the DRI Truth-Corrected scores, especially in court-related evaluation settings.

DRI Driver Risk scale scores were found to positively correlate with both prior moving violation and prior at-fault accidents. Product-moment correlation coefficients between number of prior moving violations and at-fault accidents and the DRI Driver Risk Scale are presented in Table 12. **Discriminant validity is demonstrated by the fact that the only DRI measure or scale to correlate significantly with prior moving violations and at-fault accidents is the DRI Driver Risk Scale.**

**Table 12. Product-moment correlations. DUI Offenders (1988, N=1,299)**  
Moving Violations versus Driver Risk Scale

<u>DRI Scale</u>	<u>1 DUI Offenders</u> <u>N = 600</u>	<u>2 DUI Offenders</u> <u>N = 428</u>	<u>3 DUI Offenders</u> <u>N = 271</u>
Driver Risk (Lifetime)	.3742***	.1688*	.3490***
Driver Risk (Past 5 years)	N.A.	.2302**	.2561***

At-Fault Accidents versus Driver Risk Scale

<u>DRI Scale</u>	<u>1 DUI Offenders</u> <u>N = 600</u>	<u>2 DUI Offenders</u> <u>N = 428</u>	<u>3 DUI Offenders</u> <u>N = 271</u>
Driver Risk (Lifetime)	.2695***	.2578***	.1648*
Driver Risk (Past 5 years)	N.A.	.3364***	.0359

\*\*\* p < .001, \*\* p < .01, \* p < .02, p < .05, N.A. not available

It is interesting to note the marginal correlation in the third sample. This is in agreement with a similar marginal, yet significant negative correlation (r= -.1655, P < .02) between accident self report and the DRI Truthfulness Scale. This suggests defensiveness in reporting one's accident history. A similar finding, although not as strong, was observed in the second sample's moving violation data which was cited earlier.

This study (1988, N=1,299) replicated earlier DRI reliability and validity research. Results strongly support the reliability and internal consistency of the DRI scales. It's reasonable to conclude that DRI results are objective, verifiable, reproducible, and reliable. These results also support the validity of the DRI. The relationship between DUI/DWI evaluator risk level ratings of offenders and DRI scale scores had very highly significant agreement coefficients (validity). The DRI also correlates significantly with other DUI/DWI tests. It's reasonable to conclude that DRI results are valid. Both the MAST and the Mortimer-Filkins scores correlated significantly with the DRI Alcohol and Drugs scales. The DRI does measure what it purports to measure.

**The discriminant validity of the DRI Alcohol Scale was demonstrated by the fact that no other DRI scale or measure correlated significantly with the Blood Alcohol Content (BAC) level, obtained at the time of arrest. Both the DRI Alcohol Scale and the DRI Driver Risk Scale were the only DRI scales that correlated significantly with the offender's number of prior DUI's/DWI's.**

**The discriminant validity of the DRI Driver Risk Scale is demonstrated by the fact that no other DRI scale or measure correlated significantly with these variables, i.e., moving violations, or at fault accidents.**

The Driver Risk Inventory (DRI) provides comprehensive DUI/DWI offender-related information in a timely (25 minutes) manner, which facilitates a "focused" offender interview. The savings in staff time is significant with no compromise in the quality of DUI/DWI offender assessment. This study demonstrates that the DRI is a reliable and valid instrument for DUI/DWI offender risk assessment. The DRI has high concurrent validity with other recognized and accepted DUI/DWI evaluation procedures and tests. **For maximum screening effectiveness DRI results should be used jointly with arrest/motor vehicle records and a focused (or time efficient) interview.** The DRI provides a sound empirical foundation for responsible DUI/DWI decision making. Staff report writing, substantiation of decision-making, and record-keeping needs are met with DRI reports.

### **13. A Study Comparing the DRI with the SAQ**

This study (1988) was designed to examine relationships between the Substance Abuse Questionnaire (SAQ) and the Driver Risk Inventory (DRI) in an inmate population of incarcerated DWI offenders. The SAQ is an automated (computerized) test designed for adult chemical (alcohol and other drugs) dependency screening and evaluation. The SAQ contains six scales: Truthfulness, Alcohol, Drug, Aggressivity, Resistance and Stress Coping Abilities. Five of these six SAQ scales are similar (although independent) and directly comparable to DRI scales.

The DRI is an automated test designed for DWI (Driving While Intoxicated) and DUI (Driving Under the Influence) assessment. The DRI contains five scales: Truthfulness, Alcohol, Drug, Driver Risk and Stress Coping Abilities. Although the scales designated Truthfulness, Alcohol, and Drug are independent and differ in content on the SAQ and DRI, they were designed to measure the same behaviors or traits. Thus, although composed of different test questions, these comparable scales are similar in intent. In addition, the Stress Coping Abilities Scale in the SAQ is the same as the Stress Coping Abilities Scale in the DRI.

### Method and Results

The SAQ and DRI were administered in group settings to 154 DWI inmate offenders, at Arizona Department of Corrections (ADOC) facilities. The administration was counterbalanced. The inmates included in this study were all male. The demographic composition of this sample is as follows: Age: 16-25 years (16.9%), 26-35 years (48.1%), 36-45 years (24.7%), 46-55 years (7.1%), and 56 or older (3.2%). Ethnicity: Caucasians (63.6%), Blacks (7.8%), Hispanics (16.2%), American Indians (8.4%), and Other 3.9%. Education: Eighth grade or less (4.5%), Some High School (32.5%), High School graduates (45.5%), Some College (10.2%), College graduates (5.8%), and Professional/Graduate school (1.3%). Each inmate completed both the SAQ and the DRI. Although all inmates volunteered to participate in this research study, inmate motivation varied widely.

Product-moment correlation coefficients are presented Table 13.

**Table 13. Product correlations. Incarcerated DWI offenders (1988, N=154)**  
**All correlations are significant at  $p < .001$ .**

<b><u>SAQ versus DRI Scales</u></b>	<b><u>Agreement Coefficients</u></b>
Truthfulness Scale	.6405
Alcohol Scale	.3483
Drug Scale	.3383
Driver Risk (DRI) versus Aggressivity (SAQ)	.4070
Stress Coping Abilities Scale	.7642

These results show that agreement coefficients between DRI scales and SAQ scales were highly significant ( $p < .001$ ). These results support the validity of the DRI in this sample of convicted DWI offenders.

It was noted that inmate motivation varied widely. This is evident in the Stress Coping Abilities agreement coefficient of .7642. Even though this is a highly significant correlation ( $p < .001$ ), the agreement coefficient would be expected to be even higher because these are identical scales consisting of the same 40 items. It is reasonable to conclude that low motivation on the part of many inmate volunteers contributed to these 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 there was very high agreement for all five sets of scale comparisons.

The Substance Abuse Questionnaire (SAQ) has been extensively researched on the chemical (alcohol and other drugs) dependency treatment population. In contrast, the Driver Risk Inventory (DRI) has been extensively researched on the convicted DWI (Driving While Intoxicated) and DUI (Driving Under the Influence) offender population. In both of these instances (patients and DWI/DUI offenders) test results have a bearing on subsequent patient/offender recommendations and decisions. The present study is important in integrating these SAQ and DRI research findings. The present study provides strong support for the validity of the DRI and SAQ.

#### 14. A Study of Risk Range Percentile Scores Accuracy in Three Samples of DWI Offenders

This study (1989) was done to further evaluate reliability in different samples of DWI offenders and to examine the accuracy of risk range percentile scores. Risk range percentile scores are calculated for each DRI 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 DRI risk range percentile scores involves comparing the risk range percentile scores obtained from client DRI test results to the predicted risk range percentages as defined above. The percentages of clients expected to fall into each risk range is the following: Low Risk (**39%**), Medium Risk (**30%**), Problem Risk (**20%**) and Severe Problem or Maximum Risk (**11%**). The actual percentage of clients falling in each of the four risk ranges, based on their risk range percentile scores, was compared to these predicted percentages.

##### Method and Results

The DRI was administered to three different samples of convicted DWI offenders being screened and processed by the courts. There were a total of 3,064 offenders included in the study. **Group 1 consisted of 480 DWI offenders.** There were 402 males (83.8%) and 78 females (16.2%). The demographic composition of this sample is as follows: Age: 16-25 (32.5%), 26-35 (35.6%), 36-45 (16.7%), 46-55 (9.2%) and 56 and over (6%). Ethnicity: Caucasians (88.3%), Blacks (10%), Hispanics (0.4%), and Other (1.3%). Education: Eighth grade or less (11%); Some High School (24.6%); GED (5.8%); High School graduate (41.5%); Some College (10.8%); Technical/Business school (1%); College graduate (3.8%) and Professional or Graduate School (1.5%).

**Group 2 consisted of 1,487 DWI offenders.** There were 1,223 males (82.2%) and 264 females (17.8%). The demographic composition of this sample is as follows: Age: 16-25 (28.4%), 26-35 (38.5%), 36-45 (20.9%), 46-55 (8.4%) and 56 and over (3.8%). Ethnicity: Caucasians (71.8%), Blacks (4.1%), Hispanics (15.1%), Native Americans (6.5%) and Other (0.4%). Education: Eighth grade or less (4%); Some High School (17.8%); GED (6.8%); High School graduate (35.4%); Some College (26.8%); Technical/Business School (2%); College graduate (5.7%) and Professional or Graduate School (1.5%).

**Group 3 consisted of 1,097 DWI offenders.** There were 884 males (80.6%) and 213 females (19.4%). The demographic composition of this sample is as follows: Age: 16-25 (28.5%), 26-35 (38.1%), 36-45 (20.4%), 46-55 (8.2%) and 56 and over (4.6%). Ethnicity: Caucasians (71.1%), Blacks (3.4%), Hispanics (17.4%), Native Americans (7.8%) and Other (0.3%). Education: Eighth grade or less (3.5%); Some High School (15.5%); GED (17.4%); High School graduate (37.5%); Some College (26.1%); Technical/Business School (0.8%); College graduate (8.1%) and Professional or Graduate School (1.1%).

Reliability coefficient alphas for the three samples (total N = 3,064) are presented in Table 14.



**Table 14. Reliability coefficient alphas. Two samples of DWI offenders. (1989, N=3,064)**  
**All coefficient alphas are significant at p<.001**

<b>DRI Scales</b>	<b>1 DWI Offenders N = 480</b>	<b>2 DWI Offenders N = 1,487</b>	<b>3 DWI Offenders N = 1,097</b>
Truthfulness Scale	.79	.82	.81
Alcohol Scale	.90	.92	.91
Drug Scale	.83	.86	.86
Driver Risk Scale	.74	.76	.75
Stress Coping Abilities Scale	.91	.91	.92

These results support the reliability of the DRI. Both DWI offender samples had very highly significant coefficient alphas at p<.001. These results with reliability statistics obtained in earlier studies and shows that the DRI is a reliable DWI offender assessment instrument. Correlations between DRI scales and court-related variables are presented in Table 15.

**Table 15. Correlations between DRI scales and court history.**  
**Group 1 DWI Offenders (1989, N=480)**

<b><u>DRI Scales</u></b>	<b><u>BAC</u></b>	<b><u>Prior DWI</u></b>	<b><u>Accident</u></b>
Truthfulness Scale	n.s.	n.s.	n.s.
Alcohol Scale	.1505**	.4107**	.1346*
Drug Scale	n.s.	.1426*	n.s.
Driver Risk Scale	n.s.	.4465**	.4333**
Stress Coping Abilities Scale	n.s.	n.s.	n.s.

**Group 2 DWI Offenders (1989, N=1,487)**

<b><u>DRI Scales</u></b>	<b><u>BAC</u></b>	<b><u>Prior DWI</u></b>	<b><u>Accident</u></b>
Truthfulness Scale	n.s.	n.s.	-.1565**
Alcohol Scale	.0758**	.4112**	.1821**
Drug Scale	n.s.	.1051**	.0971**
Driver Risk Scale	n.s.	.3947**	.4049**
Stress Coping Abilities Scale	n.s.	n.s.	n.s.

**Group 3 DWI Offenders (1989, N=1,097)**

<b><u>DRI Scales</u></b>	<b><u>BAC</u></b>	<b><u>Prior DWI</u></b>	<b><u>Accident</u></b>
Truthfulness Scale	n.s.	n.s.	-.1311**
Alcohol Scale	.0801**	.4226**	.1438**
Drug Scale	n.s.	.1172**	n.s.
Driver Risk Scale	n.s.	.3929**	.3864**
Stress Coping Abilities Scale	n.s.	.1054**	n.s.

\*= p < .01, \*\*= p < .001, No asterisk = not significant

These results agree with previous studies that found similar patterns of correlations. Only the Alcohol Scale correlates with BAC level. The Driver Scale correlates highest with traffic-related variables. The Alcohol, Drug and Driver Risk scales correlate with number of prior DWI's.

The percentages of subjects falling into each risk range category are presented in Table 16. Only males in Group 1 are shown due to the relative low number of females in the samples, all offenders were included in Groups 2 and 3.

**Table 16. Risk range percentile scores.  
Group 1 males (1989, N=402)**

<u>DRI Scales</u>	<u>Low</u>	<u>Medium</u>	<u>Problem</u>	<u>High</u>
Truthfulness Scale	41.3	29.3	19.0	10.4
Alcohol Scale	39.6	29.8	19.4	11.2
Drug Scale	35.1	33.1	19.9	11.9
Driver Risk Scale	38.1	30.6	20.6	10.7
Stress Coping Abilities Scale	39.3	30.4	19.4	10.9
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>

**Group 2 all offenders (1989, N=1,487)**

<u>DRI Scales</u>	<u>Low</u>	<u>Medium</u>	<u>Problem</u>	<u>High</u>
Truthfulness Scale	46.6	24.3	21.6	7.5
Alcohol Scale	38.9	31.0	19.2	10.9
Drug Scale	36.7	36.2	17.3	9.8
Driver Risk Scale	39.7	31.4	20.2	8.7
Stress Coping Abilities Scale	39.3	31.5	18.6	10.6
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>

**Group 3 all offenders (1989, N=1,097)**

<u>DRI Scales</u>	<u>Low</u>	<u>Medium</u>	<u>Problem</u>	<u>High</u>
Truthfulness Scale	45.9	40.4	3.7	9.3
Alcohol Scale	41.0	29.9	18.2	10.9
Drug Scale	36.7	36.5	16.5	10.3
Driver Risk Scale	41.3	29.3	19.9	9.5
Stress Coping Abilities Scale	39.9	30.1	19.5	10.5
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>

Gender differences were revealed in risk range percentile scores. These findings suggest that separate scoring equations are needed of male and female scale scores. Scale scores are based on cumulative percentages of raw risk scores. The results of this study indicate that males and females score differently on some DRI scales. This is an empirical finding that will be addressed in future DRI data research.

### 15. A Study of DRI Reliability in a Large Sample of DUI Offenders

This study (1990) investigated the reliability of the DRI in a large sample of convicted DUI offenders. This study was intended to help determine the nature and affects of regional factors in the DUI population sampled.

Method and Results

The DRI was administered to 6,434 convicted DUI offenders. There were 5,405 (84%) men and 1,029 (16%) women. The demographic composition of this sample is as follows: Age: 16 to 25 years (29%), 26 to 35 years (35%), 36 to 45 years (21%), 46 to 55 years (9%) and over 55 (6%). Ethnicity: Caucasian (92%), Black (7%) and Other (1%). Education: 8th grade or less (9%) some High School (21%), GED (3%), High School Graduate (43%), some College (14%), College Graduates (6%) and advanced degrees (3%). There were no significant differences between gender with respect to percent distributions of age, ethnicity, education or offender status (first or multiple offender). Prior court-related information is presented in Table 17.

**Table 17. DUI Prior Convictions (1990, N=6,434)  
Previous Five Years**

<b>Number of Incidents</b>	<b>DUI's % (#)</b>	<b>Moving Violations % (#)</b>	<b>At-Fault Accidents % (#)</b>	<b>Drug-Related Offenses % (#)</b>
0	74.3 (4,782)	46.8 (3,012)	69.6 (4,479)	84.6 (5,441)
1	19.0 (1,221)	24.2 (1,554)	19.7 (1,264)	6.9 (444)
2	3.3 (214)	12.7 (819)	4.2 (272)	1.5 (94)
3	0.8 (49)	7.0 (449)	0.9 (60)	0.5 (33)
Over 3	0.2 (13)	6.0 (389)	0.5 (33)	0.4 (27)
Unreported	2.4 (155)	3.3 (211)	5.1 (326)	6.1 (395)
<b>Lifetime</b>				
0	55.3 (3,558)	25.0 (1,608)	51.9 (3,337)	78.9 (5,079)
1	25.5 (1,640)	17.5 (1,126)	27.1 (1,747)	10.0 (644)
2	9.8 (628)	16.6 (1,069)	11.4 (733)	2.8 (180)
3	4.0 (260)	13.8 (883)	3.6 (230)	1.1 (69)
4	1.6 (105)	7.3 (471)	1.3 (83)	0.4 (26)
5	0.7 (42)	6.7 (443)	0.6 (39)	0.3 (17)
Over 5	0.7 (48)	0.3 (663)	0.4 (28)	0.7 (42)
Unreported	2.4 (153)	2.8 (181)	3.7 (237)	5.8 (377)

Under each offense category, the column on the left is the **percent** of clients reporting that number of prior incidents, and the column on the right, in parentheses, is the **number** of clients reporting.

Blood Alcohol Content (BAC) levels obtained at time of arrest were reported by 5,324 DUI offenders, 4,488 were male and 839 were female. There were 4,167 first offenders and 351 were multiple offenders. There were no statistically significant differences between the average BAC values obtained for men and women. In other words, on average, male and female DUI offenders had similar BAC levels at time of arrest. However, a statistically significant difference was observed between average BAC values for first and multiple offenders. It can be observed, with a high degree of confidence, that, on average, multiple DUI offenders demonstrate higher BAC levels than first offenders. These findings are consistent with increased tolerance theories for alcoholics.

Of these 5,324 DUI offenders who reported their BAC, 3,395 (64%) were categorized as low risk with the Driver Risk Inventory (DRI), whereas 1,932 (36%) were categorized as high risk with the DRI. These two categories, i.e., low risk and high risk demonstrated a statistically significant difference in terms of average BAC values. For these comparative purposes the "low" and "low medium" risk ranges on the DRI

were combined as low risk, and the "problem" and "severe problem" risk ranges were combined as high risk. These findings again demonstrate a positive correlation between BAC, alcohol abuse and the Alcohol scale on the DRI. These findings have practical significance when considering physical and judgmental deterioration which accompanies increased alcohol consumption.

Obtained cumulative percent distributions for each DRI scale are presented in Table 18. Male and female percentages were averaged together.

**Table 18. Cumulative Percent Distributions (1990, N=6,434)**

<u>DRI Scales</u>	<u>Low Risk</u>	<u>Medium Risk</u>	<u>Problem Risk</u>	<u>Severe Risk</u>
Truthfulness Scale	39.5%	28.4%	23.7%	8.4%
Alcohol Scale	38.5%	31.1%	22.6%	8.8%
Driver Risk Scale	42.0%	28.8%	20.0%	9.2%
Drug Scale	42.8%	31.8%	19.2%	8.8%
Stress Coping Abilities	39.6%	31.9%	19.4%	9.1%
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>

The accuracy of these cumulative percentages for each DRI scales risk range classification is clearly demonstrated when compared to the "expected" risk range classifications. Predicted cumulative percentages for each risk range are presented at the bottom of the table.

The obtained risk range percentages approximate the "predicted percentages" very closely. The largest deviation are in the Low Risk on the Drug Scale and Problem Risk on the Truthfulness Scale, and these are only 3.8% and 3.7%, respectively. These results demonstrate a high degree of accuracy for DRI scale risk ranges, i.e., Low, Medium, Problem and Severe Problem ranges.

Included in the Driver Risk Inventory (DRI) are questions designed to obtain the client's own perceptions of his or her problems as well as their motivation for help. Denial regarding drug-related matters is commonly observed in court-related settings. This is dramatically evident when we look at the percentage distribution of DUI client responses to questions about alcohol and drugs. Client responses to alcohol and drug problems are presented in Table 19 and responses to emotional problems are presented in Table 20.

These results reaffirm the fact that substance (alcohol and other drugs) abusers tend to deny their problem. The dramatic differences between DUI offender's answers to alcohol versus drug-related questions is noteworthy. These results emphasize the importance of both Truthfulness Scales and Truth Corrected scores. DUI/DWI offenders tend to under report the severity of their substance (alcohol and other drugs) abuse problems. Of 4,167 DUI first offenders, 1,119 either admitted to drug-related problems or reported prior drug-related offenses.

**Table 19. Client self-perceptions of alcohol and drug problems. (1990, N=6,434)**  
**#125 How would you describe your alcohol-related problem?**

<u>Responses</u>	<u>All Clients</u>	<u>Multiple Offenders</u>	<u>High Risk Clients</u>
Severe Problem	5%	10.7%	12.6%
Moderate Problem	15.9%	20.4%	34.3%
Slight Problem	29.3%	33.5%	33.5%
No Problem	49.8%	35.4%	18.8%

**#126 How would you describe your drug-related problem?**

<u>Responses</u>	<u>All Clients</u>	<u>Multiple Offenders</u>	<u>High Risk Clients</u>
Severe Problem	3.1%	4.8%	4.2%
Moderate Problem	7.3%	9.1%	7.7%
Slight Problem	14.9%	15.5%	10.6%
No Problem	74.7%	70.6%	77.5%

**Table 20. Client self-perceptions of emotional problems. (1990, N=6,434)**  
**#127 During the past 6 months I have felt: dangerous to myself, dangerous to others or both (suicidal and homicidal)**

<u>Responses</u>	<u>Male Clients</u>	<u>Female Clients</u>	<u>First Offenders</u>	<u>Multiple Offenders</u>	<u>Low Risk Clients</u>	<u>High Risk Clients</u>
Suicidal	3.5%	6.2%	3.7%	5.6%	3.1%	7.1%
Homicidal	2.8%	2.3%	2.5%	3.9%	2.6%	4.9%
Both	3.1%	3.8%	3.2%	4.9%	2.8%	5.5%

**#128 During the past 6 months I have had serious emotional and/or mental health problems**

<u>Responses</u>	<u>Male Clients</u>	<u>Female Clients</u>	<u>First Offenders</u>	<u>Multiple Offenders</u>	<u>Low Risk Clients</u>	<u>High Risk Clients</u>
Serious problems	5.1%	8.3%	4.7%	7.7%	4.8%	9.1%

These results clearly demonstrate the importance of DUI assessment instruments identifying serious mental health or emotional problems, in addition to substance (alcohol and other drugs) abuse. According to DUI offender self-report and scores on the DRI, multiple offenders and High Risk scorers have a much higher probability of manifesting suicidal, homicidal, emotional and mental health problems. Gender differences are also apparent.

## **16. Reliability and Gender Differences of the DRI**

This study (1991) was conducted to assess demographic differences and regional sampling affects in a different sample of DUI offenders. Most DUI offender samples tested thus far consisted mainly of males, usually about 80 percent of the sample. The present study attempted to gather a larger percentage of females in order to study gender differences.

## Method

There were 1,202 DUI offenders included in this study. There were 781 males (65%) and 421 females (35%). The demographic composition of the sample is as follows: Age: Under 16 (.3% male, .5% female), 16 to 25 (29.1% male, 34.9% female), 26 to 35 (39.8% male, 41.6% female), 36 to 45 (20.3% male, 15.7% female), 46 to 55 (7.2% male, 5.7% female) and over 55 (3.5% male, 1.7% female). Ethnicity: Caucasian (47.5% male, 29.5% female), Black (14.5% male, 4.1% female), Hispanic (.7% male, .2% female), American Indian (.2% male), Asian (.1% male, .1% female) and other (male 2%, female 1.1%). Education: 8th grade or less (1.7% male, .3% female), some High School (11.1% male, 5.2% female), GED (2.1% male, 1.1% female), High School Graduate (30.3% male, 15.8% female), some College (11.1% male, 6.4% female), Business/Technical School (.7% male, .7% female), College Graduate (6.2% male, 5.3% female), and Graduate/Professional Degree (1.6% male, .2% female).

Statistical analysis of this sample demonstrated gender (male and female) differences in the Truthfulness Scale, Alcohol Scale, Driver Risk Scale, and the Drug Scale. A significant gender difference was not demonstrated in the Stress Coping Abilities scale.

Reliability coefficient alphas are presented in Table 21.

**Table 21. Reliability coefficient alphas. (1991, N=1,202)**  
**All coefficient alphas are significant at  $p < .001$ .**

<b><u>DRI</u></b> <b><u>Scales</u></b>	<b><u>Coefficient</u></b> <b><u>Alphas</u></b>
Truthfulness Scale	.824
Alcohol Scale	.909
Drug Scale	.857
Driver Risk Scale	.804
Stress Coping Abilities Scale	.902

These results support the reliability of the DRI. The larger sample size of females used in the present study provide support for the reliability of the DRI. Even with the higher percentage of females in the sample, the reliability coefficients maintained high alpha values and high significance level. These results show that the DRI is a reliable instrument for DUI offender assessment.

## **17. Reliability of the DRI in Five Samples of DUI Offenders**

This study 1992 was conducted to further investigate the reliability of the DRI in several samples of DUI offenders. Five samples of DUI offenders from different geographical areas of the country to determine if regional differences exist in DRI reliability coefficients.

### Method and Results

There were five samples of DUI offender included in the present study. The total number of offenders in all five samples was 6,631. **Group 1 consisted of 1,648 offenders.** There were 1,423 males (86.3%) and 225 females (13.7%). The demographic composition of the sample is as follows: Age: 16 to 25 years (29.2%); 26 to 35 years (36.8%); 36 to 45 years (20.8%); 46 to 55 years (8.3%); Over 55 (4.9%) and Under 16 (0.1%). Ethnicity: Caucasian (93.1%); Black (5.8%); Hispanic (0.4%); Asian (0.1%); American Indian (0.2%); and Other (0.4%). Education: 8th grade or less (10.7%); Some High School (24.6%); GED (5.5%); High School Graduate (38.2%); Some College (15.0%); Technical/Business School (1.3%); College Graduates (3.9%); and Professional Graduate School (0.9%).

**Group 2 consisted of 169 offenders.** There were 146 males (86.4%) and 23 females (13.6%). The demographic composition of this sample is as follows. Age: 16 to 25 years (27.8%); 26 to 35 years (40%); 36 to 45 years (18.3%); 46 to 55 years (8.9%); and over 55 (4.1%). Ethnicity: Caucasian (82.8%); Black (2.4%); Hispanic (7.7%); Asian (.6%); American Indian (5.3%) and Other (1.2%). Education: 8th grade or less (2.4%); Some High School (15.4%); GED (5.3%); High School Graduate (47.9%); Some College (23.1%); College Graduate (4.1%); and Graduate/Professional Degree (1.8%).

**Group 3 consisted of 1,374 offenders.** Gender: Males (1,128, 82.1%) and Females (246, 17.9%). Age: Under 16 years (0.3%), 16-25 years (35%), 26-35 years (37.2%), 36-45 years (17.4%), 46-55 (6.8%) and over 55 (3.3%). Ethnicity: White (84.4%), Black (7.9%), Hispanic (5.2%), Asian (0.6%), American Indian (1.7%), and Other (0.1%). Education: 8th grade or less (4.1%), Some High School (15.4%), GED (6.6%), High School Graduate (38.9%), Some College (29.0%), Business/Technical School (4.1%) and Graduate/Professional degree (1.7%).

**Group 4 consisted of 1,937 offenders.** Gender: Males (1,545, 83%) and Females (329, 17%). Age: Under 16 years (.1%), 16-25 years (25.2%), 26-35 years (41%), 36-45 years (22.5%), 46-55 years (7.8%) and Over 55 (3.4%). Ethnicity: White (72.6%), Hispanic (16.9%), American Indian (6.2%), Black (3.3%), Asian (.1%), and Other (.8). Education: 8th grade or less (2%), Some High School (14.1%), GED (8.9%), High School Graduate (25.9%), Some College (43.7%), Business/Technical School (3.5%) and Graduate/Professional degree (1.9%).

**Group 5 consisted of 1,503 offenders.** This sample consisted of 1,299 males (86.4%) and 204 females (13.6%). The demographic composition of this sample is as follows: Age: Under 16 years (0.1%); 16 to 25 (27.4%); 26 to 35 (39.1%); 36 to 45 (22.9%); 46 to 55 (7.2%) and Over 55 (3.4%). Ethnicity: Caucasian (86.1%); Black (13.3%); Hispanic (0.2%); Asian (0.2%); American Indian (0.1%) and Other (0.1%). Education: 8th grade or less (6.7%); Some High School (21.7%); GED (6.9%); High School Graduate (42.0%); Some College (16.4%); Technical/Business School (1.1%); College Graduate (4.2%) and Graduate/Professional Degree (0.9%).

Reliability coefficient alphas for all five samples are presented in Table 22.

**Table 22. Reliability coefficient alphas. Five samples of DUI offenders (1992, Total N=6,631)**

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

<b>DRI Scales</b>	<b>1 Offenders N = 1,648</b>	<b>2 Offenders N = 169</b>	<b>3 Offenders N = 1,374</b>	<b>4 Offenders N = 1,937</b>	<b>5 Offenders N = 1,503</b>
Truthfulness Scale	.83	.82	.82	.84	.85
Alcohol Scale	.92	.92	.92	.92	.92
Drug Scale	.90	.91	.88	.87	.84
Driver Risk Scale	.84	.82	.80	.81	.88
Stress Coping Abilities	.93	.92	.93	.93	.92

T-tests comparison results of gender differences for each scale were mixed. Significant gender differences were found in Group 1 on the Truthfulness Scale and Alcohol Scale. There were no significant gender differences found in Group 2. Significant gender differences in Group 3 were found on the Truthfulness Scale, Alcohol Scale, Driver Risk Scale and the Drug Scale. The same gender differences were found in Group 4 on the Truthfulness Scale, Alcohol Scale, Driver Risk Scale and the Drug Scale. Group 5 had statistically significant gender differences on the Alcohol and Driver Risk scales.

This study indicated that gender differences exist on DRI scales but not consistently on all scales. The results of this study suggest that separate scoring procedures be established for male and female DRI scale scores.

### 18. Reliability of the DRI in a Large Sample of DUI Offenders

This study (1992) evaluated the statistical properties of the DRI for comparison to earlier studies involving large samples of DUI offenders. There were 15,051 convicted DUI offenders included in this study.

#### Method and Results

The DRI was administered to 15,051 DUI offenders. The demographic composition of this sample is as follows: Gender: Males (12,613, 84%) and Females (2,438, 16%). Male Age: 16-25 years (28%), 26-35 years (36%), 36-45 years (22%), 46-55 years (9%) and over 55 (5%). Female Age: 16-25 years (27%), 26-35 years (42%), 36-45 years (20%), 46-55 years (7%) and over 55 (4%). Ethnicity: White (91%), Black (8%), and Other (1%). Education: 8th grade or less (9%), Some High School (22%), GED (5%), High School Graduate (41%), Some College (15%), College Graduates (5%) and Other (3%). DUI Offender Status: First Offender (83%) and Multiple Offender (17%).

Significant gender differences were demonstrated on the Truthfulness Scale and the Alcohol Scale. Significant gender differences were not demonstrated on the Drug Scale, Driver Risk Scale or Stress Coping Abilities Scale. This finding is consistent with previous studies that found gender differences on DRI scales.

Reliability coefficient alphas are presented in Table 23.

**Table 23 Reliability coefficient alphas. (1992, N=15,051)**

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

<b>DRI Scales</b>	<b>Coefficient Alpha</b>
Truthfulness Scale	0.83
Alcohol Scale	0.92
Drug Scale	0.90
Driver Risk Scale	0.84
Stress Coping Abilities Scale	0.93

These results support the reliability of the DRI. All coefficient alphas were significant at p<.001. The DRI is a reliable instrument for DUI offender assessment.

There was no significant BAC (Blood Alcohol Content) level differences between male and female clients. There was a statistically significant difference between BAC values for first and multiple offenders. Significantly higher BAC levels are found among multiple offenders.

Risk range percentile scores were calculated for each DRI scale. These risk range percentile scores were derived from scoring equations based on responses to scale items, Truth-Corrections and prior criminal history information. The scores were 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 DRI risk range percentile scores involves comparing the risk range percentile scores obtained from client DRI test results to the predicted risk range percentages as defined above. The percentages of clients expected to fall into each risk range is the following: Low Risk (**39%**), Medium Risk (**30%**), Problem Risk (**20%**) and Severe Problem or Maximum Risk (**11%**). The actual percentage of clients falling in each of the four risk ranges, based on their risk range percentile scores, was compared to these predicted percentages. These results are presented in Table 24.

**Table 24. Obtained Client Classification (1992)**  
**Percent of Clients in each DRI Risk Range (N=15,047)**

<b>Risk Level</b>	<b>***** DRI Scales for Males *****</b>				
	<b><u>Truthfulness</u></b>	<b><u>Alcohol</u></b>	<b><u>Driver Risk</u></b>	<b><u>Drug</u></b>	<b><u>Stress Coping</u></b>
Low	39.4%	35.6%	35.8%	39.2%	41.8%
Medium	26.3%	33.6%	33.9%	31.3%	29.4%
Problem	19.5%	19.1%	22.1%	17.8%	20.0%
Severe	14.8%	11.7%	8.2%	11.7%	8.8%

<b>Risk Level</b>	<b>***** DRI Scales for Females *****</b>					
	<b><u>Truthfulness</u></b>	<b><u>Alcohol</u></b>	<b><u>Driver Risk</u></b>	<b><u>Drug</u></b>	<b><u>Stress Coping</u></b>	<b><u>Predicted</u></b>
Low	38.8%	36.3%	39.1%	44.2%	37.8%	39%
Medium	24.7%	27.1%	28.9%	28.7%	29.0%	30%
Problem	20.0%	25.4%	21.8%	18.4%	20.1%	20%
Severe	16.5%	11.2%	10.2%	8.7%	13.1%	11%

These results show that the obtained risk range percentages approximate very closely the **predicted** percentages. All scale scores were within 5.5 percent of the predicted and 11 obtained percentages were within two percent of predicted. This is very accurate assessment.

Questions are included in the DRI to obtain the client's own opinion or perception of his/her problems. Table 25 presents client responses to Questions #121-#128 which are summarized as follows: #121 (Alcohol Problems), #122 (Drug Problems), #124 (Under a Doctor's Care), #127 (Suicidal or Homicidal), and #128 (Emotional/Mental Health Problems).

**Table 25. Client Responses to Selected DRI Test Items. (1992, N = 15,480)**

<b>Question Number</b>	<b>First Offender</b>	<b>Multiple Offender</b>
#121 Alcohol Problems	26.8%	29.1%
#122 Drug Problems	47.9%	58.5%
#124 Under a Doctor's care	19.0%	14.3%
#127 Suicidal or Homicidal	7.9%	9.1%
#128 Emotional/Mental Health Problems	11.6%	10.3%

Question #127 is of particular interest because 7.9% (First Offenders) or 9.1% (Multiple Offenders) indicated that they perceived themselves as suicidal/homicidal or both. Similarly, with regard to Question #128, 11.6% (First Offenders) or 10.3% (Multiple Offenders) considered themselves to have "serious emotional problems", "mental health problems" or both. The population sampled consisted of convicted DUI offenders and these client opinions represent serious "unseen" problems that undoubtedly impact upon driver risk and the client's life situation.

### **DRI-SHORT FORM RESEARCH**

A DRI-Short Form was developed for the reading impaired, high volume testing settings and as a retest instrument. The DRI-Short Form consists of four scales. It can be administered verbally in 9 minutes in individual or group testing settings. The DRI-Short Form provides an alternative for reading impaired DUI offender risk and needs assessment.

#### **19. Reliability of the DRI-Short Form in Two Samples of DUI Offenders**

The DRI-Short Form was completed in 1992 and a reliability study was conducted on DUI offenders for whom the test was designed. The DRI-Short Form includes four scales. The Stress Coping Abilities Scale is not included in the DRI-Short Form because it consists of 40 scale items. DRI-Short Form scales were selected for DRI scale items having the best statistical properties. Thus, these comparable scales vary in length, yet essentially consist of the same test questions (the best-of-the-best) in the DRI-Short Form.

##### Method and Results

There were two samples of DUI offenders included in this study, total N = 2,113. **Group 1 consisted of 570 convicted DUI offenders**, 501 males and 69 females. Ethnicity: Caucasian (91.6%); Black (7.5%); Hispanic (0.2%); Asian (0.2%); and American Indian (0.4%). Education: Eighth grade or less (13.7%); Some High School (28.6%); GED (2.5%); High School Graduate (38.1%); Some College (12.3%); Technical/Business School (1.2%); College Graduate (2.5%) and Graduate/Professional Degree (1.2%).

**Group 2 consisted of 1,543 convicted DUI offenders.** There were 1,297 males and 246 females. The demographic composition of this sample is as follows: Age: Under 16 (4, 0.3%); 16 to 25 years (416, 27.0%); 26 to 35 (584, 37.8%); 36 to 45 (326, 21.1%); 46 to 55 (126, 8.2%) and Over 55 (87, 5.6%). Ethnicity: Caucasian (1,333, 86.4%); Black (197, 12.8%); Hispanic (6, 0.4%); Asian (4, 0.3%); American Indian (2, 0.1%) and Other (1, 0.1%). Education: Eighth grade or less (155, 10.0%); Some High School (392, 25.4%); GED (126, 8.2%); High School Graduate (556, 36.0%); Some College (216, 14.0%);

Technical/Business School (28, 1.8%); College Graduate (57, 3.7%) and Graduate/Professional Degree (13, 0.8%).

Statistical analysis (Wilcoxon Rank-Sum Scores) of Group 1 (N=570) demonstrated gender differences on the Driver Risk scale ( $p = 0.025$ ). Statistical analysis of Group 2 (N=1,543) demonstrated gender differences on the Alcohol Scale and Driver Risk Scale.

Reliability coefficient alphas are presented in Table 26.

**Table 26. Reliability coefficients of the DRI-Short Form (1992, N=2,113)**

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

<b>DRI-Short Form Scales</b>	<b>1 DUI Offenders N = 570</b>	<b>2 DUI Offenders N = 1,543</b>
Truthfulness Scale	.801	.80
Alcohol Scale	.890	.90
Drug Scale	.821	.83
Driver Risk Scale	.791	.79

These results support the reliability and internal consistency of DRI-Short Form measures (scales). All coefficient alphas were significant at  $p < .001$ . The DRI-Short Form is a reliable DUI offender assessment instrument.

## **20. Reliability of the DRI-Short Form**

This study (1993) was conducted to further evaluate the reliability of the DRI-Short Form. All respondents were convicted DUI offenders being screened and processed by the courts.

### Method and Results

The DRI-Short Form was administered to 3,000 convicted DUI offenders. There were 2,567 males (85.5%) and 433 females (14.5%). The demographic composition of this sample is as follows: Age: Under 16 (0.2%); 16 to 25 years (29.0%); 26 to 35 years (35.3%); 36 to 45 years (21.5%); 46 to 55 years (8.8%); and over 55 (5.3%). Ethnicity: Caucasian (91.4%); Black (8.0%); Hispanic (0.3%); Asian (0.1%); American Indian (0.1%) and Other (0.1%). Education: 8th grade or less (14.6%); Some High School (25.4%); GED (5.4%); High School Graduates (33.9%); Some College (14.7%); Technical/ Business School (1.2%); College Graduates (3.5%); and Graduate/Professional Degrees (1.2%).

Statistical analysis demonstrated a significant gender difference on the Alcohol Scale ( $p < .001$ ). No significant gender differences were found for the Truthfulness Scale, Driver Risk Scale, or the Drug Scale. Similarly, no significant gender-differences were found with respect to age, ethnicity or educational level.

Reliability coefficient alphas are presented in Table 27.

**Table 27. Reliability coefficient alphas of the DRI-Short Form (1993, N=3,000)**  
All coefficient alphas are significant at  $p < .001$ .

<b>DRI-Short Form Scales</b>	<b>Coefficient Alpha</b>
Truthfulness Scale	.80
Alcohol Scale	.89
Drug Scale	.82
Driver Risk Scale	.80

These findings are consistent with previous findings on the DRI-Short Form and support the reliability (internal consistency) of the DRI-Short Form. The DRI-Short Form is reliable and similar results are obtained upon repetition.

### **21. DRI Reliability and Client Responses in Two Samples of DUI Offenders**

This study (1993) was conducted to further evaluate DRI internal consistency. There were two samples of DUI offenders included in the study, one of the samples contained a very large number of offenders. All respondents were convicted DUI offenders being screened and processed by the courts.

#### Method and Results

There were two samples of DUI offenders included in the study. There were a total of 34,014 offenders. **Group 1 consisted of 3,004 convicted DUI offenders.** There were 2,557 males (85.1%) and 447 females (14.9%). The demographic composition of this sample is as follows: Age: Under 16 (0.1%); 16 to 25 years (26.5%); 26 to 35 years (39.8%); 36 to 45 years (22.8%); 46 to 55 years (7.4%); and Over 55 (3.4%). Ethnicity: Caucasian (86.8%); Black (12.2%); Hispanic (0.4%); Asian (0.1%); American Indian (0.1%); Other (0.3%). Education: 8th grade or less (7.4%); Some High School (23.5%); GED (6.8%) High School Graduate (41.5%); Some College (15.5%); Technical/Business School (0.9%); College Graduate (3.8%); and Graduate/Professional Degree (0.6%).

**Group 2 consisted of 31,010 convicted DUI offenders.** There were 26,260 men (85%) and 4,750 women (15%). The demographic composition of this sample is as follows. Age: Under 16 years (male 0.1%, female 0.1%); 16 to 25 years (male 26.7%, female 24.4%); 26 to 35 years (male 37.8%, female 45.1%); 36 to 45 years (male 22.0%, female 22.3%); 46 to 55 years (male 8.8%, female 6.1%) and Over 55 (male 4.6%, female 2.0%). Ethnicity: Caucasian (male 88.6%, female 92.6%); Black (male 10.3%, female 6.9%); Other (male 1.1%, female 0.5%). Education: Less than 9th grade (male 9.9%, female 6.7%); Some High School (male 24.2%, female 23.9%); GED Certificate (male 6.4%, female 7.8%); High School Graduates (male 39.0%, female 33.9%); Some College (male 14.1%, female 20.4%); Technical/Business School (male 1.3%, female 1.8%); and College Graduates (male 5.1%, female 5.5%). This sample consisted of 69% first DUI offenders and 31% multiple DUI offenders. 36% of first offenders and 45% of multiple DUI offenders were between the ages of 26 and 35. 66% of first DUI offenders and 64% of multiple DUI offenders were between the ages 16 and 35. There were no significant differences between first and multiple offenders with respect to ethnicity or education.

The DUI prior offenses for Group 2 as reported at the time of their assessment are presented in Table 28. Under each type of offense, the column on the left is the **percent** of clients reporting a given number of incidents and the column on the right, in parentheses, is the **number** of clients reporting. The information presented in Table 28 demonstrates that a substantial number of DUI offenders have more than one prior

DUI conviction, moving violations, at-fault accidents and, to a lesser extent, drug-related offenses for both the past five years and during their lifetimes. This information is important in accurate DUI assessment. The statistics in Table 28 were obtained by DUI client self-report on the DRI.

**Table 28. Group 2 prior DUI offenses. (1993, N=31,010)**

<b>Number of Incidents</b>	<b>DUI's % (#)</b>	<b><u>Previous Five Years</u></b>		
		<b>Moving Violations % (#)</b>	<b>At-Fault Accidents % (#)</b>	<b>Drug-Related Offenses % (#)</b>
0	68.5 (21,248)	59.3 (18,386)	80.4 (24,928)	91.6 (28,402)
1	22.3 (6,990)	20.0 (6,192)	16.3 (5,044)	6.3 (1,956)
2	7.4 (2,304)	11.2 (3,488)	2.6 (808)	1.4 (419)
3	1.5 (460)	5.1 (1,571)	0.5 (177)	0.4 (131)
4 or More	0.3 (68)	4.4 (1,373)	0.2 (53)	0.3 (102)
		<b><u>Lifetime Offenses</u></b>		
0	53.3 (16,521)	37.1 (11,518)	66.1 (20,511)	87.5 (27,143)
1	25.2 (7,823)	19.1 (5,924)	23.5 (7,288)	8.4 (2,593)
2	11.6 (3,583)	15.8 (4,889)	7.3 (2,279)	2.4 (765)
3	5.4 (1,662)	10.4 (3,237)	2.2 (640)	0.8 (252)
4	2.2 (688)	5.9 (1,839)	0.5 (161)	0.4 (110)
5	1.0 (320)	4.8 (1,473)	0.2 (68)	0.2 (58)
6 or more	1.3 (413)	6.9 (2,130)	0.2 (63)	0.3 (89)

Statistical analysis of Group 1 (N=3,004) demonstrated a significant gender difference on the Alcohol Scale ( $p < .001$ ). No significant gender differences were found for the Truthfulness Scale, Driver Risk Scale, Drug Scale or Stress Coping Abilities Scale. Similarly, no significant gender-differences were found with respect to age, ethnicity or educational level. Reliability coefficient alphas are presented in Table 29.

**Table 29. Reliability coefficient alphas. Group 1 DUI offenders (1993, N=3,004)**

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

<b><u>DRI Scales</u></b>	<b><u>Coefficient Alpha</u></b>
Truthfulness Scale	.85
Alcohol Scale	.91
Driver Risk Scale	.82
Drug Scale	.88
Stress Coping Abilities	.93

These findings are similar to those reported in earlier studies and support the reliability (internal consistency) of the DRI. Reliability refers to a test's accuracy, dependability and trustworthiness. Similar results should be obtained upon repetition of the DRI.

Table 30 present the percent of DUI offenders in Group 2 (N=31,010) falling into each risk range for each of the DRI scales. These values represent assignment of risk ranges solely based upon attained tests scores. These obtained risk range percentages are compared to predicted percentages.

**Table 30. DUI Offender Risk Classification**

<b>Risk Ranges</b>	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Driver Risk</b>	<b>Drug</b>	<b>Stress Coping</b>	<b>Predicted Percent</b>
Low	39.3%	40.4%	40.6%	42.9%	41.1%	<b>39%</b>
Medium	31.0%	28.0%	30.6%	27.6%	30.8%	<b>30%</b>
Problem	19.7%	24.5%	18.1%	20.5%	18.3%	<b>20%</b>
Severe Problem	9.9%	10.5%	11.8%	9.0%	9.8%	<b>11%</b>

As shown in Table 30, the percentage of the DUI offenders falling into each risk range approximates very closely the theoretical or predicted percent. These results demonstrate the accuracy of the DRI. It should be noted that test scores are assigned percentile scores which are based on the distribution obtained from thousands of DUI/DWI offender assessments.

Table 31 present respondents' answers to selected DRI test items.

**Table 31. Client responses to selected DRI test items for Group 2 (N=31,010)**

**Select the statement that describes your motivation or desire for alcohol treatment or help.  
(Similar item for drug treatment.)**

	<b>Alcohol</b>	<b>Drugs</b>
High	11.0%	3.6%
Some	10.5%	4.2%
Little	25.8%	7.9%
None	52.7%	84.3%

**During the past six months I have been:**

	<b>Percentage</b>	<b>Number of People</b>
Suicidal	2.6%	806
Homicidal	1.7%	527
Both	2.0%	620
<b>Total</b>	<b>6.3%</b>	<b>1,954</b>

**Number of times in substance abuse treatment programs**

	<b>Percentages</b>	<b>Number of People</b>
Once	17.5%	3,799
Twice	6.1%	1,324
Three or More	3.7%	803
<b>Total</b>	<b>27.3%</b>	<b>5,926</b>

These client perceptions show that over one-fourth of the clients previously had substance abuse treatment nearly half of the clients desired alcohol treatment. 15 percent of the clients desired drug treatment. These results emphasize the need for treatment intervention in this sample of DUI offenders as

stated by the offenders. DUI is a serious offense that many DUI offenders acknowledge and desire remedial steps in dealing with a perceived problems that are both emotional and substance abuse related.

## **REVISED DRI RESEARCH**

In 1993, some DRI items were reworded to lower the instrument's reading level and make it even easier to use. Double negatives were removed, items were made more readable and the best-of-the-best items were retained in each scale. Items were retained on the basis of their statistical properties. Original and reworded items were compared and the items with the best statistical properties were retained in the revised DRI.

### **22. Reliability Analysis of the Revised DRI**

This study (1993) was conducted to evaluate the reliability of the revised DRI assessment instrument. Revising the test would make it more concise, direct and easier to complete. Reading levels of the test items were also analyzed to improve readability and comprehension for DUI offenders. Reliability inter-item coefficients were used in combination with content of test items to aid in development of the revised items. The purpose of this study was to investigate the reliability of the revised DRI.

#### Method and Results

The revised DRI was administered to 181 DUI offenders. The demographic composition of this DUI offender sample is as follows: 146 males (80.7%) and 35 females (19.3%). Age: 16 to 20 (2.8%); 21 to 25 (20.4%); 26 to 30 (19.3%); 31 to 35 (18.2%); 36 to 40 (18.8%); 41 to 45 (6.6%); 46 to 50 (6.6%); 51 to 55 (2.8%); 56 to 60 (2.2%); 61 to 65 (1.7%) and Over 65 (0.6%). Ethnicity: Caucasian (67.4%); Black (3.3%); Hispanic (20.4%); Asian (0.6%); American Indian (7.7%) and Other (0.6%). Education: 8th grade or less (2.2%); Some High School (12.7%); GED (8.8%); High School Graduate (21.5%); Some College (40.3%); Technical/Business School (5.0%); College Graduate (8.8%); and Graduate School (0.6%). Offender status: First offender (34, 18.8%) and Multiple offender (147, 81.2%).

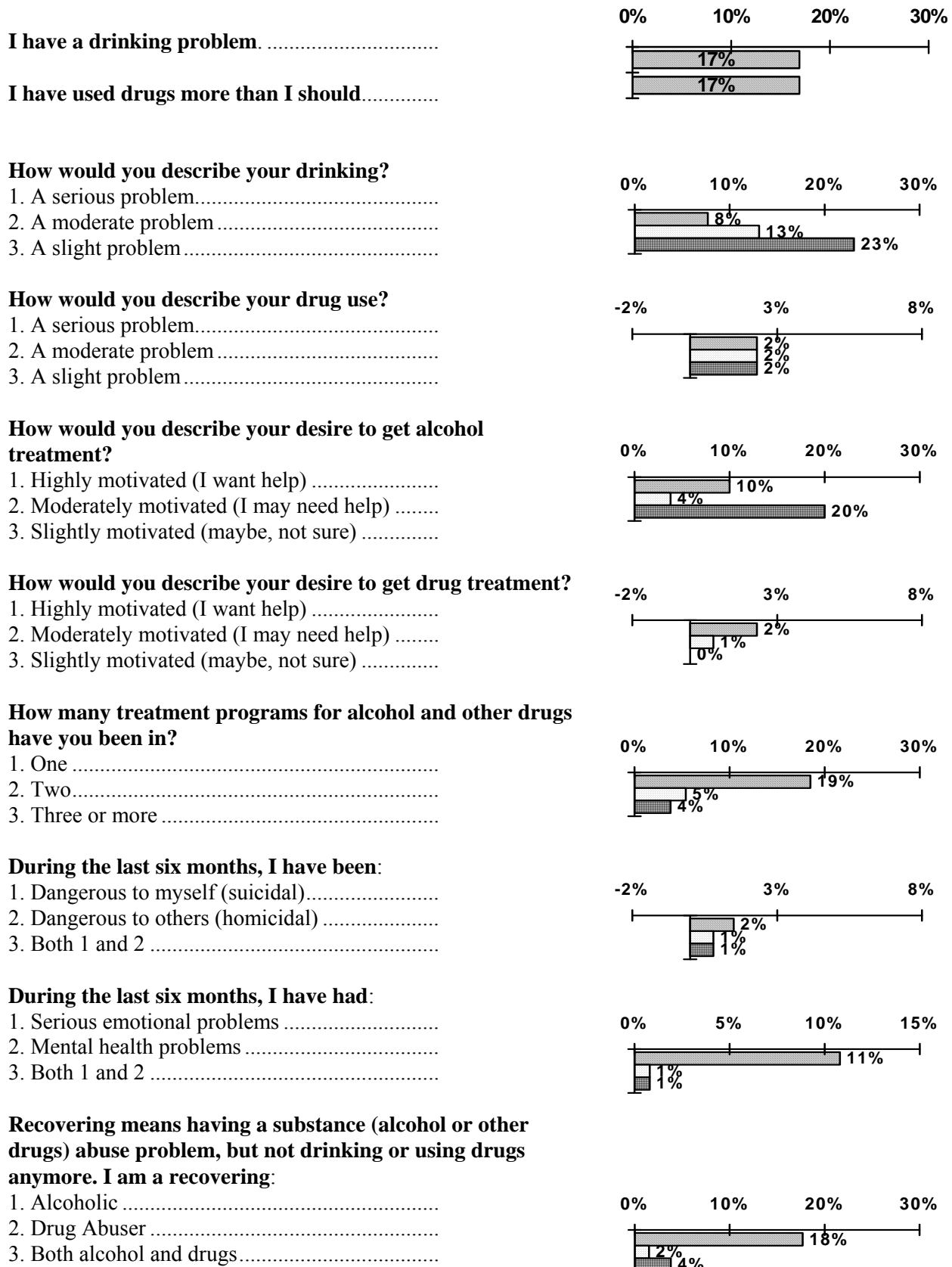
Reliability coefficient alphas are presented in Table 32.

**Table 32. Reliability coefficient alphas for the revised DRI (1993, N=181)**  
**All coefficient alphas are significant at p<.001.**

<b>DRI</b>	<b>Coefficient</b>
<b><u>Scales</u></b>	<b><u>Alpha</u></b>
Truthfulness Scale	.88
Alcohol Scale	.94
Driver Risk Scale	.84
Drug Scale	.92
Stress Coping Abilities Scale	.92

These results support the reliability of the revised DRI. All coefficient alphas were significant at p<.001. These coefficient alphas show a slight improvement over the previous version of the DRI. The revised DRI shows improved reliability statistics. The DRI is a reliable DUI assessment instrument.

**Table 33. Client Responses to selected DRI test items (1993, N=181)**





Reviewing client responses may help identify special areas of inquiry when evaluating DUI offenders. A client's opinion of his or her problem, as well as desire for treatment and emotional well-being, provides important information that aids the assessment process. Client or respondent percentiles vary from one assessment setting to another depending in part on whether or not the DRI is used in court settings or in outpatient treatment or counseling centers. Client responses for the 1993 (N=181) study are presented in Table 33.

These client responses (1993, N=181) provide added insight into DUI offender attitudes and opinions. Of the 181 DUI offenders, 31 admitted to a drinking problem, and another 31 DUI offenders admitted they used drugs more than they should. Other item responses are equally interesting.

### **23. A Study of the Revised DRI in Four Samples of DUI Offenders**

This study (1994) investigated the reliability of the revised DRI in four different samples of DUI offenders. These samples different regions of the country and assessment settings. Comparisons were made across sample on reliability coefficients and client responses.

#### Method and Results

The revised DRI was administered to four samples of DUI offenders. There were a total 9,884 offenders included in the study. **Group 1 consisted of 1,871 offenders.** There were 1,538 (82.2%) males and 332 (17.7%) females. The demographic composition of this sample is as follows: Age: 16 to 20 years (6.6% males and 5.1% females); 21 to 25 years (17.3% males and 12.0% females); 26 to 30 years (21.4% males and 21.1% females); 31 to 35 years (19.6% males and 24.4% females); 36 to 40 years (13.6% males and 17.5% females); 41 to 45 years (8.3% males and 9.0% females); 46 to 50 years (5.9% males and 4.5% females); 51 to 55 years (3.6% males and 4.2% females); 56 to 60 years (1.6% males and 1.5% females); 61 to 65 years (1.0% males and 0.6% females); and Over 65 (1.2% males and no females). Education: 8th grade or less (2.9% males and 0.6% females); Some High School (15.1% males and 19.3% females); GED (5.9% males and 6.0% females); High School Graduate (46.2% males and 43.4% females); Partially Completed College (18.4% males and 19.9% females); Technical/Business School (1.6% males and 2.4% females); College Graduates (8.0% males and 6.0% females); and Professional/Graduate School (1.9% males and 2.4% females). Ethnicity: American Indian (0.7%); Asian (0.3%); Hispanic, Puerto Rican (0.1%); Hispanic, Mexican (1.4%); Black (5.5%); White (91.8%); and Other (0.2%). Marital Status: Single (40.6%); Married (32.1%); Widowed (1.1%); Divorced (22.1%); and Separated (4.0%). Prior DUI convictions in the offender's lifetime: Zero (1,082, 57.8%); One (514, 27.5%); Two (195, 10.4%); Three (55, 2.9%); Four (14, 0.7%); Five (2, 0.1%); Six or more (4, 0.2%); and Missing (5, 0.3%).

Nearly half (41.9%) of all 1,871 DUI offenders in Group 1 reported having a prior DUI conviction. There were more males with a prior conviction than females. Five percent had a prior DUI charge reduced to a reckless driving charge. Almost two-thirds of the clients reported no court-ordered supervision. Twenty-two percent of these DUI offenders had one statutory summary suspension, and eight percent (actually 8.4%) had two statutory summary suspensions. Nearly three-fourths of these offenders reported at least one moving violation and almost one-third reported at least one at-fault accident.

A substantial number of DUI offenders in Group 1 reported a history of alcohol and driving-related offenses. Over 40 percent reported a previous conviction for DUI. There were 14 percent who had two or more DUI convictions. About one-third of all DUI offenders had at least one court-ordered supervision and a similar number had at least one statutory summary suspension. Over 16 percent had

BAC levels of .20 or higher. There were 47 percent who had BAC levels under .20. And, there were a substantial number of clients (490 or 26%) who refused to submit to a BAC test. For 10 percent of the DRI offenders, their BAC levels were not available at the time of DRI testing.

**Group 2 consisted of 827 convicted DUI offenders.** There were 636 (76.9%) men and 191 (23.1%) women. The demographic composition of this group is as follows: Age: 16 to 20 years (7.2%); 21 to 25 years (23.7%); 26 to 30 years (20.9%); 31 to 35 years (18.1%); 36 to 40 years (11.9%); 41 to 45 years (7.7%); 46 to 50 years (5.2%); 51 to 55 years (1.6%); 56 to 60 years (1.6%); 61 to 65 years (0.8%); and Over 65 (1.0%). Ethnicity: Caucasian (84.0%); Black (12.1%); Hispanic (0.7%); Asian (0.8%); American Indian (0.4%); and Other (0.4%);. Education: 8th grade or less (2.3%); Some High School (15.5%); GED (2.8%); High School Graduate (36.5%); Some College (23.6%); Technical/Business School (0.8%); College Graduate (10.9%); and Professional/Graduate School (2.1%). This sample is broadly defined as Caucasian (84%), 21 through 35 years of age (62.7%), and High School Graduates or equivalent (76.7%). There were no significant gender differences with regard to ethnicity or education. There was a significant gender difference for age, where males were on average older than females. The average age of males was 32.36 years compared to 30.27 years for females.

In Group 2, over one-third (40.9%) of all DUI offenders reported having a prior DUI conviction in their lifetime and 20.7 percent reported a prior DUI in the last five years. There were more males with a prior conviction than females. Over 17 percent of these DUI offenders had BAC levels of .20 or higher. Over one-fourth (25.3%) had BAC levels between .15 and .19. There were a substantial number of clients (12.7% or 105 individuals) who refused to take the BAC test. Nearly all of these DUI offenders (84.5%) reported having at least one moving violation and nearly three-fourths reported a moving violation in the last five years. Almost half of these clients (44.7% or 370 individuals) reported at least one at-fault accident and over one-fourth (28.4%) reported an accident in the last five years. A substantial number of these DUI offenders reported a history of alcohol and driving-related offenses. Over 40 percent had a previous DUI conviction. There were 12.5 percent who had two or more DUI convictions. Three-fourths of these DUI offenders had at least one moving violation in the last five years and over one-fourth had at least one at-fault accident in the last five years. Eleven percent of the clients reported a drug conviction in their lifetime and about eight percent (8.1%) had a drug conviction in the last five years. Four percent of these DUI offenders reported two or more drug convictions. The terms DUI and OMVI are used interchangeable in this report. Comparisons between first and multiple offenders indicate significant differences for age, education, moving violations and at-fault accidents in one's lifetime. Multiple offenders were older (average age of 33.37 years) and less educated than first offenders (average age of 30.78 years). Multiple offenders reported more moving violations in the last five years (average of 2.17) than first offenders (average of 1.89) and more moving violations in their lifetime (4.11 for multiple offenders and 2.99 for first offenders). Multiple offenders reported more accidents in their lifetime than first offenders (average of .83 for multiple offenders and .56 for first offenders). There were 350 multiple offenders and 477 first offenders.

**Group 3 consisted of 3,399 convicted DUI offenders.** There were 2,768 (81.4%) men and 631 (18.6%) women. The demographic composition of this sample is as follows: Age: 16 to 25 years (29.9%); 26 to 35 years (39.7%); 36 to 45 years (20.0%); 46 to 55 years (7.0%); and Over 55 (3.3%). Ethnicity: Caucasian (84.5%); Black (7.2%); Hispanic (5.1%); Asian (0.3%); American Indian (2.5%); and Other (0.4%). Education: 8th Grade or less (3.1%); Some High School (15.2%); GED Certificate (7.3%); High School Graduate (42.5%); Some College (21.4%); Technical/Business School (3.1%); College Graduate (6.5%) and Professional/Graduate School (0.9%). This sample is broadly defined as Caucasian (84.5%), 26 through 35 years of age (39.7%) and High School Graduates or equivalent (78.6%). There were no significant gender differences with regard to race or education. There was a significant gender

difference for age, where males (average age 32.48 years) were older than females (average age 30.87 years).

In Group 3, over half (54%) of all DUI offenders reported having a prior DUI conviction in their lifetime, and 42 percent reported a prior DUI conviction in the last five years. There were more males with prior DUI convictions than females. Over 27 percent of the client population had BAC levels of .20 or higher. Over one-third (36.9%) of the clients had BAC levels between .15 and .19. A substantial number of DUI offenders (5.2% or 177 individuals) refused to take the BAC test. One-third of these DUI offenders (34.6%) or 1,177 individuals) reported at least one at-fault accident, and one-fifth (20%) reported an accident in the last five years. Over half (54%) of these DUI offenders had a previous conviction for DUI. There were 29 percent who had two or more DUI convictions. Over one-fifth had at least one at-fault accident in the last five years. Around 14 percent (13.8%) of these DUI offenders reported a drug-related conviction in their lifetime, and nine percent (8.9%) reported a drug-related conviction in the last five years. There were 5.6 percent of the clients who had two or more drug convictions. Multiple offenders were older (average age 33.52 years) and less educated than first offenders (average age 30.51 years). Comparisons between first offenders and multiple offenders demonstrate significant differences for age, education, moving violations and at-fault accidents in their lifetime. There were 1,875 multiple offenders and 1,516 first offenders.

**Group 4 consisted of 3,787 convicted DUI offenders.** This sample consisted of students in driver education and underage drivers, as well as DUI offenders. There were 3,047 (81%) males and 740 (19%) females. The offender sample was primarily Caucasian (88%) with another eight percent Black. Three fourths of the offenders were between the ages of 21 years and 45 years of age. The three most represented age groups were: 26 to 30 year olds (16%), 31 to 35 year olds (20%) and 36 to 40 year olds (16%). The majority of the sample were High School graduates or equivalent (74%). Forty-two percent of the participants were single. There were no significant gender differences with regard to education. There was a significant gender difference for age, race and marital status. Males were older and more often single than females.

In Group 4, over half of the sample were arrested on their first DUI offense. Over one-third had two or more DUI arrests. Nearly 20 percent of the participants reported alcohol arrests that were not DUI-related. Ten percent reported one or more drug arrest. One-third of the participants reported at least one at-fault accident. Ten percent had DUI arrests that were reduced to reckless driving convictions and four percent had other DUI offenses pending. Nearly three-fourths of the offenders had one or more moving violations. Twenty percent of the sample had one or more misdemeanor arrests and nine percent had one or more felony arrests.

Reliability coefficient alphas for the four DUI offender groups are presented in Table 34.

**Table 34. Coefficient alphas for four sample of DUI offenders (1994, Total N=9,884)**

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

<b>DRI Scales</b>	<b>1 Offenders N = 1,871</b>	<b>2 Offenders N = 827</b>	<b>3 Offenders N = 3,399</b>	<b>4 Offenders N = 3,787</b>
Truthfulness Scale	.86	.86	.88	.87
Alcohol Scale	.92	.89	.95	.91
Driver Risk Scale	.85	.85	.85	.89
Drug Scale	.89	.85	.91	.85
Stress Coping Abilities	.92	.90	.92	.92

These results strongly support the reliability of the DRI. Reliability refers to the consistency of results regardless of who uses the instrument. These results indicate that the DRI is a reliable DUI offender assessment instrument.

DRI scales' statistical properties (reliability, validity and accuracy) have been shown to be stable in a variety of different states and geographical areas. And, each year these reliability and validity statistics have improved. The DRI has evolved from 1988 to the present as a reliable, valid, accurate and meaningful DUI assessment instrument.

Client responses to DRI items represent respondents' opinions and perceptions. Acknowledging DUI offender biases, tendencies to minimize their problems in court-related settings, and their guardedness in DUI evaluation settings - it is still the DUI offender's attitude, defensiveness and statements about their situation and needs that affects assessment recommendations. And, information provided by DUI offenders can help clarify patterns of need. Using percentile responses to selected DRI items sheds some light on client substance (alcohol and other drugs) use history, motivation for assistance, current emotional status and need. Client responses for all four samples are presented in Table 35.

These types of comparisons can be made on urban-rural, regional and even a state-by-state basis. Even though this information is of a self-report nature, it does open up new DUI offender comparison dimensions. Agencies like to know about client attitudes, opinions and trends. "Response summary" helps put the human component of these statistics in perspective.

Risk range percentile scores for Group 4 are presented in Table 36. These obtained risk range percentages are compared to the predicted percentages. Risk range percentile scores are derived from scoring equations based on responses to scale items, Truth-Corrections and prior criminal history information, then converted to percentile scores. The percentages of clients predicted to fall into each risk range is presented in the bottom row of Table 36.

**Table 35. Client Responses for four DUI offender samples (1994, Total N=9,884)**

	<b>1 Offenders N = 1,871</b>	<b>2 Offenders N = 827</b>	<b>3 Offenders N = 3399</b>	<b>4 Offenders N = 3787</b>
<b>I have a drinking problem.</b> .....	25%	19%	39%	14%
<b>I have used drugs more than I should.</b> .....	8%	10%	10%	13%
<b>How would you describe your drinking?</b>				
1. A serious problem.....	6%	4%	12%	7%
2. A moderate problem .....	9%	10%	18%	8
3. A slight problem .....	20%	20%	23%	18%
<b>How would you describe your drug use?</b>				
1. A serious problem.....	1%	1%	2%	2%
2. A moderate problem .....	1%	1%	2%	1%
3. A slight problem.....	3%	3%	4%	2%
<b>How would you describe your desire to get alcohol treatment?</b>				
1. Highly motivated (I want help) .....	12%	8%	24%	8%
2. Moderately motivated (I may need help) .....	7%	8%	13%	6%
3. Slightly motivated (maybe, not sure) .....	21%	24%	22%	15%
<b>How would you describe your desire to get drug treatment?</b>				
1. Highly motivated (I want help) .....	3%	3%	5%	2%
2. Moderately motivated (I may need help) .....	1%	1%	3%	1%
3. Slightly motivated (maybe, not sure) .....	5%	7%	5%	2%
<b>How many treatment programs for alcohol and other drugs have you been in?</b>				
1. One .....	17%	12%	20%	22%
2. Two.....	6%	5%	10%	7%
3. Three or more .....	3%	2%	3%	3%
<b>During the last six months, I have been:</b>				
1. Dangerous to myself (suicidal).....	2%	3%	2%	1%
2. Dangerous to others (homicidal) .....	1%	1%	1%	0.4%
3. Both 1 and 2 .....	1%	1%	2%	1%
<b>During the last six months, I have had:</b>				
1. Serious emotional problems .....	6%	6%	8%	4%
2. Mental health problems .....	1%	1%	2%	1%
3. Both 1 and 2 .....	2%	2%	3%	2%
<b>Recovering means having a substance (alcohol or other drugs) abuse problem, but not drinking or using drugs anymore. I am a recovering:</b>				
1. Alcoholic .....	14%	10%	21%	17%
2. Drug Abuser .....	2%	2%	2%	2%
3. Both alcohol and drugs.....	4%	4%	5%	4%

**Table 36. DRI risk range percentile scores accuracy for Group 4 (1994, N=3,787)**

<b><u>DRI Scale</u></b>	<b><u>Low Risk</u></b>	<b><u>Medium Risk</u></b>	<b><u>Problem Risk</u></b>	<b><u>Severe Problem</u></b>
Truthfulness Scale	35.2%	32.6%	20.2%	12.0%
Alcohol Scale	35.9%	30.0%	22.8%	11.3%
Drug Scale	45.1%	31.8%	12.8%	10.3%
Driver Risk Scale	40.9%	33.2%	17.9%	8.0%
Stress Coping Abilities	38.9%	30.2%	20.0%	10.9%
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>

These results indicate that obtained risk range percentages closely approximated the predicted percentages for all DRI scales and risk ranges. This finding supports the accuracy of the DRI in establishing DUI offender risk. The results of this study strongly indicate that the DRI is suitable for assessment in populations that are not entirely DUI offenders but nonetheless is used for DUI risk assessment. These findings are important because some courts combine related driver violation categories with DUI assessment.

#### **24. A Study of the DRI in Two Large Samples of DUI Offenders**

Two large DUI programs were added to the DRI database in 1994. This study evaluated the reliability and accuracy of the DRI in these large samples.

##### Method and Results

Two large samples of DUI offenders were included in the study. There were a total of 26,163. **Group 1 consisted of 14,968 convicted DUI offenders.** There were 12,639 (84.4%) men and 2,329 (15.6%) women. The demographic composition of this sample is as follows: Age: 19 years of age or under (5.2%); 20 to 29 (36.4%); 30 to 39 (34.6%); 40 to 49 (16%); 50 to 59 (5.4%); 60 years of age or older (2.3%). Ethnicity: Caucasian (89.8%); Black (8.3%); Hispanic (0.8%); Asian (0.1%); American Indian (0.2%); Other (0.3%). Education: 8th grade or less (7.2%); Did not complete High School (22.3%); GED (6.9%); High School Graduates (40.4%); Some College (15.8%); Technical or Business School (1.5%); College Graduates (4.6%); Professional or Graduate School (1.0%). This sample is broadly defined as Caucasian (89.8%), 20 to 39 years of age (71%), and High School Graduate or equivalent (71.5%). There were significant gender differences for education and race where females indicated more education than males and a higher percentage of females were Caucasian than males. There was no significant gender difference for age.

In Group 1, half of the DUI offenders in this sample reported having had a prior DUI conviction (49.3%), and one-third (34.4%) reported having had a prior DUI in the last 5 years. More males had prior DUI convictions than females. Over 14 percent of the DUI offenders had BAC levels of .20 or higher, and one-fourth had BAC levels of .15 to .19. Nearly 10 percent of the offenders refused to take the BAC test. Nearly two-thirds of the offenders reported having had moving violations in their lifetime. One-third of the offenders reported having had an at-fault accident and 20 percent reported an at-fault accident in the last 5 years. About 10 percent of the DUI offenders reported having had a drug conviction.

**Group 2 consisted of 11,195 convicted DUI offenders.** There were 9,068 (81%) males and 2,127 (19%) females. This DUI offender sample is broadly defined as Caucasian (70%), 21 to 35 years of age (59%), and High School Graduate or equivalent (84%). There were no significant gender differences with regard to race or education. There was a significant gender difference for age, where males were

older, on average, than females. The average age of the males was 32.48 years compared to the average age of females which was 30.87 years.

In Group 2, over one-third of the offenders reported having a prior DUI conviction and 8 percent reported two or more prior DUI convictions. Nearly one-fourth reported a prior DUI in the past 5 years. Nearly one-fourth of the offenders had BAC levels of .20 or higher. Almost one-third of the offenders had BAC levels between .15 and .19. Ten percent of the offenders refused to take the BAC test. One-fourth of the clients reported at least one at-fault accident and one-fourth reported an accident in the past five years. About 14 percent of the offenders reported having a drug conviction in their lifetime and about 9 percent had a drug conviction in the past five years. Comparisons between first offenders and multiple offenders indicate significant differences for age, race, education, and all court-related histories. Multiple offenders were older (average age of 35.5 years) and less educated than first offenders (average age of 32.6 years). There were 4,212 multiple offenders and 6,983 first offenders.

Reliability coefficient alphas for both groups are presented in Table 37.

**Table 37. Reliability coefficient alphas for two samples of DUI offenders. (1994, Total N=26,163)**  
All coefficient alphas are significant at p<.001.

<b>DRI Scales</b>	<b>1 DUI Offenders N = 14,968</b>	<b>2 DUI Offenders N = 11,195</b>
Truthfulness (Validity)	.86	.85
Alcohol Scale	.92	.91
Driver Risk Scale	.85	.86
Drugs Scale	.89	.84

Note: The reliability test for the Stress Coping Scale was not performed.

**Table 38. Risk range percentages for two DUI samples (1994, Total N=26,163)**  
**Group 1, N = 14,968**

<b>Risk Ranges</b>	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Driver Risk</b>	<b>Drug</b>	<b>Stress Coping</b>
Low	40.1%	41.2%	37.0%	40.6%	38.7%
Medium	28.6%	28.1%	32.1%	28.0%	30.0%
Problem	19.7%	19.8%	20.4%	20.4%	20.5%
Severe Problem	11.6%	10.9%	10.5%	11.0%	10.8%

**Group 2, N = 11,195**

<b>Risk Ranges</b>	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Driver Risk</b>	<b>Drug</b>	<b>Stress Coping</b>
Low	40.7%	38.4%	37.7%	37.3%	38.7%
Medium	31.4%	31.0%	31.3%	29.5%	30.1%
Problem	19.2%	20.4%	20.0%	22.1%	20.5%
Severe Problem	8.7%	10.2%	11.0%	11.1%	11.0%

Comparison of the percentage differences between predicted risk range and obtained risk range percentile scores for each DRI scale demonstrates the accuracy of the DRI. Each attained risk range percentage for each DRI scale closely approximates the predicted percentage. These findings show that DRI results are very close to predicted offender risk percentile classification.

**Table 39. Client Responses for two DUI offender samples (1994, Total N=26,163)**

	<b>1 Offenders N = 14,968</b>	<b>2 Offenders N = 11,195</b>
<b>I have a drinking problem</b> .....	30%	18%
<b>I have used drugs more than I should</b> .....	9%	8%
<b>How would you describe your drinking?</b>		
1. A serious problem.....	6%	3%
2. A moderate problem .....	12%	8%
3. A slight problem .....	25%	19%
<b>How would you describe your drug use?</b>		
1. A serious problem.....	2%	1%
2. A moderate problem .....	2%	1%
3. A slight problem .....	5%	3%
<b>How would you describe your desire to get alcohol treatment?</b>		
1. Highly motivated (I want help).....	11%	7%
2. Moderately motivated (I may need help).....	12%	7%
3. Slightly motivated (maybe, not sure).....	27%	22%
<b>How would you describe your desire to get drug treatment?</b>		
1. Highly motivated (I want help).....	4%	2%
2. Moderately motivated (I may need help).....	3%	1%
3. Slightly motivated (maybe, not sure).....	7%	4%
<b>How many treatment programs for alcohol and other drugs have you been in?</b>		
1. One.....	19%	24%
2. Two.....	6%	4%
3. Three or more.....	4%	4%
<b>During the last six months, I have been:</b>		
1. Dangerous to myself (suicidal).....	3%	2%
2. Dangerous to others (homicidal).....	2%	1%
3. Both 1 and 2.....	2%	1%
<b>During the last six months, I have had:</b>		
1. Serious emotional problems.....	8%	6%
2. Mental health problems .....	2%	1%
3. Both 1 and 2.....	3%	2%
<b>Recovering means having a substance (alcohol or other drugs) abuse problem, but not drinking or using drugs anymore. I am a recovering:</b>		
1. Alcoholic.....	14%	6%
2. Drug Abuser.....	2%	2%
3. Both alcohol and drugs .....	4%	2%

These offenders were tested in a court setting where the DUI assessment determined whether offenders were assigned education, treatment or some other regimen. These offenders are representative of DUI offenders in a wide variety of assessment settings. Since most of the offenders were first time DUI offenders, this sample represents what could be considered a “normal” DUI first offender population.



## 25. A Study of the DRI in a Sample of Serious Abusers

This study (Halifax, 1995) investigated DRI test results in a sample of convicted DUI offenders tested in a substance abuse treatment center. Many of these individuals were serious alcohol abusers and most had prior DUI offenses. An advantage of the DRI database is that risk range percentile scores can be standardized on the offender sample the test is used to measure. If serious offenders were to be tested with the same scoring procedures used on other DUI offender databases, many of the serious offenders would end up in the severe problem range. Most DUI offender databases consist of about two-thirds first offenders. DRI databases enable setting scoring procedures on the offender population that is to be tested. Rather than identifying all individuals as serious problem risk, the population can be further categorized based on comparisons within the sample or group. The purpose of the present study was to establish scoring procedures to set risk range percentile scores for this sample of serious abusers.

### Method and Results

The DRI was administered to 323 convicted DUI offenders. This sample consisted of 315 (98%) males and 8 (2%) females. The age group most represented was 31 to 35 years of age (23%). The majority of offenders were 26 to 45 years of age (74%). Over half of the offenders did not complete High School (56%).

Over 90 percent of the DUI offenders reported having a prior DUI conviction and over 70 percent had two or more DUI convictions. Over one-fourth of the offenders had one or more drug convictions. These demographics indicate that this sample represents DUI offenders with serious alcohol and/or drug problems.

**Table 40. DRI Risk range percentile scores in a sample of serious abusers (1995, N=323)**

<u>DRI Scale</u>	<u>Low Risk</u>	<u>Medium Risk</u>	<u>Problem Risk</u>	<u>Severe Problem</u>
Truthfulness Scale	42.1%	29.4%	19.2%	9.3%
Alcohol Scale	38.4%	30.6%	20.5%	10.5%
Drug Scale	37.5%	31.2%	19.8%	11.5%
Driver Risk Scale	41.2%	31.9%	18.2%	8.7%
Stress Coping Abilities	39.3%	30.4%	19.2%	11.1%

These offender obtained risk range percentile scores closely approximate the predicted percentage on all DRI scales and risk range categories. These results indicate that the DRI accurately established risk in this sample of serious substance abusers. An advantage of the DRI is the built-in database that permits standardization research. In any new geographical area (e.g., state, region or country), where the DRI has not been used, obtained risk ranges are compared to the predicted, any discrepancy between obtained and predicted results in re-standardization of the DRI risk range percentile scores for that database. When significant differences are found between scale distributions, the DRI is re-standardized on the new population. These procedures help ensure the reliability, validity and accuracy of the DRI when applied to new DUI/DWI offender populations. Such a procedure positively resolves cultural differences.

Client self-perceptions to selected DRI items are presented in Table 41. Of the 323 DUI offenders sampled (N=323), 39 percent or 126 people reported they had a drinking problem. Compared to other samples, this is a large percentage. Similarly, 15 percent or 48 people stated they had used drugs more than they should. Eleven percent or 36 people reported drinking was a serious problem, and sixteen percent or 52 people stated drinking was a moderate problem. Of these 323 DUI offenders, 22 percent or 71 people reported they were recovering alcoholics.

**Table 41. Client Responses for a serious abusers offender sample (1995, N=323)**

	<b>Serious Offenders</b>
	<b><u>N = 323</u></b>
<b>I have a drinking problem.....</b>	39%
<b>I have used drugs more than I should.....</b>	15%
<b>How would you describe your drinking?</b>	
1. A serious problem.....	11%
2. A moderate problem.....	16%
3. A slight problem.....	29%
<b>How would you describe your drug use?</b>	
1. A serious problem.....	2%
2. A moderate problem.....	2%
3. A slight problem.....	5%
<b>How would you describe your desire to get alcohol treatment?</b>	
1. Highly motivated (I want help).....	15%
2. Moderately motivated (I may need help).....	10%
3. Slightly motivated (maybe, not sure).....	37%
<b>How would you describe your desire to get drug treatment?</b>	
1. Highly motivated (I want help).....	3%
2. Moderately motivated (I may need help).....	1%
3. Slightly motivated (maybe, not sure).....	9%
<b>How many treatment programs for alcohol and other drugs have you been in?</b>	
1. One.....	32%
2. Two.....	12%
3. Three or more.....	9%
<b>During the last six months, I have been:</b>	
1. Dangerous to myself (suicidal).....	3%
2. Dangerous to others (homicidal).....	1%
3. Both 1 and 2.....	2%
<b>During the last six months, I have had:</b>	
1. Serious emotional problems.....	6%
2. Mental health problems.....	6%
3. Both 1 and 2.....	2%
<b>Recovering means having a substance (alcohol or other drugs) abuse problem, but not drinking or using drugs anymore. I am a recovering:</b>	
1. Alcoholic.....	22%
2. Drug Abuser.....	3%
3. Both alcohol and drugs.....	4%

## 26. Reliability of the DRI in Two Samples of DUI Offenders

This study (1995) was conducted to further investigate the reliability if the DRI is different offender samples. As the DRI gains continued widespread use, it is important to continue to evaluate the DRI in the various offender samples.

### Method and Results

This study (1995) included two DUI offender samples for a total of 1,860 participants. **Group 1 consisted of 1,514 DUI offenders.** There were 1,156 (76%) males and 358 (24%) females. The offender sample is broadly defined as Caucasian (87%), 21 to 40 years of age (73%), and High School graduates or equivalent (80%). There were no significant gender differences with regard to age or education. The average age of the males was 32.2 years compared to 31.8 years of age for the females.

Three-fourths of the clients reported having at least one prior DUI conviction and nearly one-fourth reported two or more DUI convictions. Over 18 percent reported BAC levels of .20 or higher and over 27 percent reported BAC levels of .15 to .19. Fourteen percent of the offenders refused to take the BAC test. The average BAC level for all offenders who reported BAC was .173.

**Group 2 consisted of 346 DUI offenders.** There were 296 (86%) males and 50 (14%) females. The offender sample is broadly defined as Caucasian (93%), 21 to 45 years of age (78%), and High School graduate or equivalent (78%). There were no significant gender differences with regard to age, race or education. The average age of the males was 36.4 years and the average age of the females was 35.2 years.

Over half of the offenders reported having a prior DUI conviction and one-third reported two or more prior DUI convictions. Nearly half of the clients reported a prior DUI in the past five years. A higher percentage of males had prior DUI convictions than females. Nearly one-fourth of the offenders had BAC levels of .20 or higher. Nearly one-third of the offenders had BAC levels between .15 and .19. The average BAC for all offenders was .164 percent. There were 203 multiple offenders and 143 first offenders.

Reliability coefficient alphas and risk range percentile score for each DRI scale are presented in Table 42.

**Table 42. DRI scale accuracy and reliability coefficient alphas. (1995, Total N=1,860)**

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

**Group 1, N = 1,514**

<b>DRI Scales</b>	<b>Low Risk</b>	<b>Medium Risk</b>	<b>Problem Risk</b>	<b>Severe Problem</b>	<b>Coefficient Alpha</b>
Truthfulness Scale	40.0%	28.0%	22.9%	9.1%	.87
Alcohol Scale	39.8%	29.6%	19.8%	10.8%	.91
Drug Scale	40.2%	32.2%	17.4%	10.4%	.90
Driver Risk Scale	42.1%	29.5%	19.0%	9.4%	.85
Stress Coping Abilities	39.2%	29.5%	20.3%	11.0%	.90
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>	

**Group 2, N = 346**

<b>DRI Scales</b>	<b>Low Risk</b>	<b>Medium Risk</b>	<b>Problem Risk</b>	<b>Severe Problem</b>	<b>Coefficient Alpha</b>
Truthfulness Scale	38.4%	30.8%	21.1%	9.5%	.87
Alcohol Scale	39.3%	29.8%	20.2%	10.7%	.93
Drug Scale	42.0%	30.8%	17.0%	10.2%	.90
Driver Risk Scale	38.4%	28.9%	20.9%	11.8%	.85
Stress Coping Abilities	38.7%	29.5%	20.8%	11.0%	.90
<b>Predicted Percentage</b>	<b>39%</b>	<b>30%</b>	<b>20%</b>	<b>11%</b>	

These findings support the reliability and accuracy of the DRI. The DRI provides consistency of results. And, computer scoring ensures this consistency regardless of who administers the test. DRI results are objective, reproducible and verifiable.

Client self-perception responses to selected DRI items are presented in Table 43. In Group 1, of 1,514 DUI offenders, 242 admitted to a drinking problem, and 227 state they used drugs more than they should. There were 394 (26%) of the 1,514 DUI offenders who stated they had been in prior treatment for alcohol and other drugs. Of these 1,514 DUI offenders, 197 stated they were recovering alcoholics, 30 stated they were recovering drug abusers, and 61 stated they were recovering alcohol and drug abusers. This totals to 288 (19%) DUI offenders admitting they are recovering substance (alcohol or other drugs) abusers. Seven percent or 106 people reported serious emotional problems; one percent or 15 people stated they had mental health problems; and two percent or 30 people reported both emotional and mental health problems.

In Group 2, of the 346 DUI offenders represented in this sample, 125 admitted they have a drinking problem, and 31 admit to using drugs more than they should. Thus 156 of the 346 DUI offenders represented in this sample admit to a substance (alcohol or other drugs) use or abuse problem. Nineteen percent or 66 individuals reported they were highly motivated for alcohol treatment. Thirteen percent or 45 clients stated they may need alcohol treatment. And, twenty percent or 69 people were unsure if they needed alcohol treatment. This means that of the 346 people in this sample, fifty-two percent or 180 individuals may need alcohol treatment. And, it should be noted that these self-reports are likely underestimates. Nine percent or 31 clients reported serious emotional problems within the last six months. Twenty-six percent or 90 people reported that they were recovering alcoholics.

Comparison of item responses across different samples indicates considerable variability exists. This suggests that specific database sample analysis is important. Samples obtained from different geographical settings which reflect varying cultural and environmental factors may need to be evaluated individually. If this is the case, sample (agency, department or regional) database analysis becomes even more important.

**Table 43. Client Responses for two DUI offender samples (1995, Total N=1,860)**

	<b>1 Offenders N = 1,514</b>	<b>2 Offenders N = 346</b>
<b>I have a drinking problem.....</b>	16%	36%
<b>I have used drugs more than I should.....</b>	15%	9%
<b>How would you describe your drinking?</b>		
1. A serious problem.....	5%	8%
2. A moderate problem.....	11%	16%
3. A slight problem.....	20%	26%
<b>How would you describe your drug use?</b>		
1. A serious problem.....	2%	0%
2. A moderate problem.....	2%	1%
3. A slight problem.....	4%	3%
<b>How would you describe your desire to get alcohol treatment?</b>		
1. Highly motivated (I want help).....	7%	19%
2. Moderately motivated (I may need help).....	9%	13%
3. Slightly motivated (maybe, not sure).....	20%	20%
<b>How would you describe your desire to get drug treatment?</b>		
1. Highly motivated (I want help).....	3%	2%
2. Moderately motivated (I may need help).....	2%	0%
3. Slightly motivated (maybe, not sure).....	4%	3%
<b>How many treatment programs for alcohol and other drugs have you been in?</b>		
1. One.....	18%	26%
2. Two.....	5%	6%
3. Three or more.....	3%	5%
<b>During the last six months, I have been:</b>		
1. Dangerous to myself (suicidal).....	2%	2%
2. Dangerous to others (homicidal).....	2%	1%
3. Both 1 and 2.....	1%	1%
<b>During the last six months, I have had:</b>		
1. Serious emotional problems.....	7%	9%
2. Mental health problems.....	1%	4%
3. Both 1 and 2.....	2%	3%
<b>Recovering means having a substance (alcohol or other drugs) abuse problem, but not drinking or using drugs anymore. I am a recovering:</b>		
1. Alcoholic.....	13%	26%
2. Drug Abuser.....	2%	3%
3. Both alcohol and drugs.....	4%	3%

**27. DRI Reliability and Scale Risk Range Accuracy in Four Samples of DUI Offenders**

Expanded use of the Driver Risk Inventory in different assessment settings around the country makes it important to continue study of the reliability and accuracy of the DRI in these client populations. This study (1996) examined the reliability and accuracy of the DRI in four assessment settings from different geographical areas. In previous research the DRI was shown to be a reliable DUI offender test and it would be expected that use in a wide variety of testing settings would also show the DRI to be highly statistically reliable. An advantage of the DRI built-in database is the capability to compile data from different testing settings and to analyze the data separately from other settings. This enables comparisons of reliability statistics as well as scale risk range accuracy. For users with large client populations the DRI can be standardized directly on that client population. Other settings can combine

their data to form a general population. In both cases, the DRI accurately determines DUI offender risk and establishes client need. The purpose of this study (1996) was to analyze DRI reliability statistics and scale risk range accuracy in four DUI offender samples.

**Method and Results**

There were four groups of subjects in this study (1996) that consisted of a total of 12,092 DUI offenders. Group 1 consisted of 5,154 participants. There were 4,327 males (84%) and 827 females (16%). Demographic composition of these participants is as follows: Age: 19 & under (3%); 20-29 (34%); 30-39 (37%); 40-49 (17%); 50-59 (7%) and 60 & Over (2%). Ethnicity: Caucasian (83%); Black (12%), Hispanic (4%) and Other (1%). Education: Eighth grade or less (5%); Some H.S. (25%); H.S. graduate (45%); Some college (19%) and College graduate (11%).

Group 2 consisted of 678 participants. There were 550 males (81%) and 128 females (19%). Demographic composition of these participants is as follows: Age: 19 & under (8%); 20-29 (35%); 30-39 (33%); 40-49 (16%); 50-59 (5%) and 60 & Over (2%). Ethnicity: Caucasian (25%); Black (2%); Hispanic (66%); Native American (7%) and Other (1%). Education: Eighth grade or less (6%); Some H.S. (22%); H.S. graduate (35%); Some college (18%) and College graduate (9%).

Group 3 consisted of 1,152 participants. There were 1,020 males (88%) and 132 females (12%). Demographic composition of these participants is as follows: Age: 19 & under (3%); 20-29 (26%); 30-39 (33%); 40-49 (22%); 50-59 (12%) and 60 & Over (4%). Ethnicity: Hawaiian & Part Hawaiian (20%); Caucasian (29%); Black (2%); Hispanic (4%); Asian (22%) and Other (21%). Education: Eighth grade or less (3%); Some H.S. (9%); H.S. graduate (58%); Some college (16%) and College graduate (14%). Marital Status: Single (56%); Married (33%); Divorced (9%); Separated (2%) and Widowed (1%).

Group 4 consisted of 5,108 participants. There were 4,273 males (84%) and 835 females (16%). Demographic composition of these participants is as follows: Age: 19 & under (4%); 20-29 (36%); 30-39 (34%); 40-49 (17%); 50-59 (6%) and 60 & Over (3%). Ethnicity: Caucasian (80%); Black (10%); Hispanic (8%); Native American (1%) and Other (1%). Education: Eighth grade or less (5%); Some H.S. (19%); H.S. graduate (48%); Some college (18%) and College graduate (11%).

Reliability coefficient alphas are presented in Table 44.

**Table 44. Reliability coefficient alphas (1996, Total N = 12,092).**

<b><u>DRI Scale</u></b>	<b><u>All coefficient alphas are significant at p&lt;.001.</u></b>			
	<b>Group 1 N=5,154</b>	<b>Group 2 N=678</b>	<b>Group 3 N=1,152</b>	<b>Group 4 N=5,108</b>
Truthfulness Scale	.83	.86	.87	.83
Alcohol Scale	.91	.93	.92	.92
Driver Risk Scale	.80	.81	.80	.80
Drugs Scale	.82	.90	.91	.86
Stress Coping Abilities	.92	.94	.93	.93

The DRI scale reliability coefficient alphas show remarkable consistency among the four offender groups. The demographic composition of the groups varied from Caucasian, Hispanic to Asian, yet reliability statistics are nearly identical across the four samples. The results of this study support the use of the DRI in different DUI offender samples. All coefficient alphas are significant at p<.001. All scale reliability coefficients achieved high levels. These results show that the DRI is a reliable DUI offender risk assessment instrument.

### Accuracy

Client scale scores are classified according to the risk (degree of severity) they represent. 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 (90 to 100<sup>th</sup> percentile). By definition the expected percentage of clients assigned to each risk category is, 39% in Low risk, 30% in Medium risk, 20% in Problem risk and 11% in Severe Problem. To facilitate comparisons between offender groups, Problem and Severe Problem (31%) were combined. The actual percentages of DUI offenders placed in these problem risk categories based on their scale scores are compared to the expected percentage (31%). Table 45 presents the comparisons for the Problem & Severe Problem risk ranges for each offender group. The differences between obtained and expected are shown in parentheses.

**Table 45. Problem and Severe Problem risk range percentages. (1996, Total N=12,092)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=5,154)	Group 2 (N=678)	Group 3 (N=1,152)	Group 4 (N=5,108)
Truthfulness Scale	30.1 (0.9)	30.4 (0.6)	30.4 (0.6)	30.6 (0.6)
Alcohol Scale	31.0 (0)	30.7 (0.3)	30.7 (0.3)	31.6 (0.6)
Driver Risk Scale	29.7 (1.3)	28.6 (2.4)	32.5 (1.5)	30.0 (1.0)
Drugs Scale	30.3 (0.7)	32.7 (1.7)	30.5 (0.5)	30.7 (0.3)
Stress Coping Abilities	31.4 (0.4)	31.6 (0.6)	31.2 (0.2)	31.4 (0.4)

These results demonstrate the accuracy of the DRI. All but four comparisons between obtained and predicted risk ranges were within one percentage point and these four were within 2.4 percent. These results indicate that the DRI is very accurate in identifying problem risk in these four DUI offender samples. The DRI accurately measures DUI offender risk.

The Driver Risk Inventory was shown to be an accurate and reliable DUI offender test. Test results from four DUI offender samples that represented diverse demographic compositions from different geographical areas show remarkable consistency and accuracy between these different groups. These results show that the DRI is accurate, valid and reliable no matter who takes the test. The DRI is a valuable instrument for DUI offender risk and needs assessment.

### **28. Further Study of DRI Reliability and Accuracy in Three Offender Samples**

Three DUI offender samples were used in this study (1996) to examine DRI reliability and scale risk range accuracy. The samples were from municipal court and community corrections departments. The DUI offenders were administered the DRI as part of the normal evaluation procedures used by the courts. This study replicated previous studies of DRI reliability and accuracy.

#### Method and Results

There were three groups of DUI offenders in this study (1996) that consisted of a total of 20,050 participants. Group 1 consisted of 12,824 participants. There were 10,528 males (82%) and 2,296 females (18%). Demographic composition of these participants is as follows: Age: 19 & under (4%); 20-29 (32%); 30-39 (36%); 40-49 (19%); 50-59 (7%) and 60 & Over (3%). Ethnicity: Caucasian (79%); Black (7%), Hispanic (9%) and Other (6%). Education: Eighth grade or less (5%); Some H.S. (20%); H.S. graduate (47%); Some college (18%) and College graduate (9%). Marital Status: Single (51%); Married (28%); Divorced (16%); Separated (4%) and Widowed (1%).

Group 2 consisted of 5,314 participants. There were 4,331 males (82%) and 983 females (18%). Demographic composition of these participants is as follows: Age: 19 & under (4%); 20-29 (38%); 30-39 (34%); 40-49 (17%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (58%); Black (4%); Hispanic (28%); Native American (9%) and Other (2%). Education: Eighth grade or less (4%); Some H.S. (13%); H.S. graduate (29%); Some college (42%) and College graduate (13%). Marital Status: Single (53%); Married (26%); Divorced (16%); Separated (5%) and Widowed (1%).

Group 3 consisted of 1,912 participants. There were 1,606 males (84%) and 306 females (16%). Demographic composition of these participants is as follows: Age: 19 & under (7%); 20-29 (33%); 30-39 (34%); 40-49 (19%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (89%); Black (8%); Hispanic (3%) and Other (2%). Education: Eighth grade or less (3%); Some H.S. (21%); H.S. graduate (53%); Some college (18%) and College graduate (5%).

Reliability coefficient alphas are presented in Table 46.

**Table 46. Reliability coefficient alphas (1996, Total N = 20,050).**  
All coefficient alphas are significant at  $p < .001$ .

<b>DRI Scale</b>	<b>Group 1 N=12,824</b>	<b>Group 2 N=5,314</b>	<b>Group 3 N=1,912</b>
Truthfulness Scale	.86	.88	.86
Alcohol Scale	.94	.93	.93
Driver Risk Scale	.80	.80	.80
Drugs Scale	.89	.89	.89
Stress Coping Abilities	.93	.92	.92

As found in previous studies, DRI scale reliability coefficient alphas show remarkable consistency between offender groups. Reliability statistics for these court defendants are very similar across the three samples. These results support the reliability of the DRI in these three DUI offender samples. These results show that the DRI is a reliable test.

#### Accuracy

For the most part, evaluators want to know if a DUI offender has a substance (alcohol or drugs) abuse problem. The DRI categorizes offenders by four risk ranges, Low, Medium, Problem and Severe Problem. The expected percentage of offenders categorized as Problem and Severe Problem combined is 31%. The actual percentages of DUI offenders placed in these problem risk categories based on their scale scores are compared to the expected percentages. These comparisons are presented in Table 47. The differences between obtained and expected are shown in parentheses.

These results demonstrate the accuracy of the DRI. All comparisons between obtained and predicted risk ranges were within two percentage points. The DRI is very accurate in identifying problem risk in DUI offenders. The DRI accurately measures DUI offender risk.



**Table 47. Problem and Severe Problem risk range percentages. (1996, Total N=20,050)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=12,824)		Group 2 (N=5,314)		Group 3 (N=1,912)	
Truthfulness Scale	29.5	(1.5)	29.1	(1.9)	31.4	(0.4)
Alcohol Scale	31.0	(0)	31.8	(0.8)	30.1	(0.9)
Driver Risk Scale	31.9	(0.9)	29.3	(1.7)	32.8	(1.8)
Drugs Scale	32.9	(1.9)	32.3	(1.3)	29.0	(2.0)
Stress Coping Abilities	31.3	(0.3)	30.7	(0.3)	31.4	(0.4)

**29. A Study of the DRI in Two Large Samples of DUI Offenders**

This study (1996) examined the reliability and accuracy of the DRI in two statewide samples of DUI offenders. There were a total of 63,815 DUI offenders included in this study. The DRI is used in over 40 states and Canada, and includes many statewide programs. Many states desire to standardize their DUI programs in an effort to provide uniform assessment and case management. The DRI provides objective DUI offender risk assessment and the statewide DRI database enables standardization of DRI measures directly on the entire population of DUI offenders in the state. The DRI can be tailored to meet the needs of state DUI programs. Any DUI offender intervention (education, counseling or treatment) program must be based on accurate DUI offender assessment.

Method and Results

There were two large groups of DUI offenders in this study (1996) that consisted of a total of 63,815 participants. Group 1 consisted of 44,713 participants. There were 36,217 males (81%) and 8,496 females (19%). Demographic composition of these participants is as follows: Age: 19 & under (2%); 20-29 (26%); 30-39 (37%); 40-49 (23%); 50-59 (8%) and 60 & Over (4%). Ethnicity: Caucasian (76%); Black (7%), Hispanic (15%) and Other (2%). Education: Eighth grade or less (6%); Some H.S. (17%); H.S. graduate (43%); Some college (20%) and College graduate (11%). Marital Status: Single (47%); Married (27%); Divorced (19%); Separated (5%) and Widowed (2%).

Group 2 consisted of 19,102 participants. There were 15,792 males (83%) and 3,310 females (17%). Demographic composition of these participants is as follows: Age: 19 & under (7%); 20-29 (33%); 30-39 (33%); 40-49 (27%); 50-59 (.1%) and 60 & Over (0%). Ethnicity: Caucasian (90%); Black (7%); Hispanic (2%) and Other (1%). Education: Some H.S. (22%); H.S. graduate (47%); Some college (21%) and College graduate (10%). Marital Status: Single (41%); Married (28%); Divorced (25%); Separated (5%) and Widowed (1%). Employment Status: Employed (83%), Unemployed (17%).

Reliability coefficient alphas are presented in Table 48.

**Table 48. Reliability coefficient alphas (1996, Total N = 63,815).****All coefficient alphas are significant at p<.001.**

<b>DRI Scale</b>	<b>Group 1 N=44,713</b>	<b>Group 2 N=19,102</b>
Truthfulness Scale	.87	.86
Alcohol Scale	.93	.92
Driver Risk Scale	.80	.80
Drugs Scale	.89	.89
Stress Coping Abilities	.93	.93

The reliability of the DRI has been shown to be highly statistically significant in this study and in previous studies. Most scale reliability coefficients are at or above .90, which is well above the professionally accepted level of .80. The DRI is a reliable DUI offender assessment instrument.

Accuracy

The actual percentages of offenders categorized as Problem and Severe Problem combined (70<sup>th</sup> percentile and above) for each DRI scale are presented in Table 49. These percentages are compared to the expected percentage (31%). The differences between obtained and expected are shown in parentheses.

**Table 49. Problem and Severe Problem risk range percentages. (1996, Total N=63,815)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=44,713)		Group 2 (N=19,102)	
Truthfulness Scale	30.0	(1.0)	28.9	(2.1)
Alcohol Scale	30.0	(1.0)	30.2	(0.8)
Driver Risk Scale	31.9	(0.9)	30.7	(0.7)
Drugs Scale	29.5	(1.5)	28.8	(2.2)
Stress Coping Abilities	30.8	(0.2)	31.3	(0.3)

The DRI accurately categorizes DUI offenders in the problem risk ranges on all DRI scales. All comparisons between obtained and predicted risk ranges were within 1.5 percentage points for Group 1 and 2.2 percent for Group 2. The DRI, utilizing state database scale scores, accurately set cutoff scores for the Problem and Severe Problem risk ranges. The cutoff score between problem and non-problem is accurate to within 1.5 percent and 2.2 percent for Groups 1 and 2, respectively. The DRI is very accurate in identifying problem risk in DUI offenders. These results strongly support the accuracy of the DRI.

**30. DRI Reliability and Accuracy in Three Offender Samples**

DRI reliability and scale risk range accuracy was studied (1997) in three DUI offender samples. These samples were municipal court defendants, driver education clients and community substance abuse screening services. There were total of 11,623 DUI offenders included in this study.

Method and Results

There were three groups of DUI offenders in this study (1997) that consisted of a total of 11,623 participants. Group 1 consisted of 7,263 participants. There were 6,045 males (83%) and 1,218 females (17%). Demographic composition of these participants is as follows: Age: 19 & under (7%); 20-29 (34%); 30-39 (33%); 40-49 (18%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (90%); Black (9%), Hispanic (1%) and Other (1%). Education: Eighth grade or less (7%); Some H.S. (22%); H.S. graduate (48%); Some college (19%) and College graduate (6%).

Group 2 consisted of 1,797 participants. There were 1,445 males (80%) and 352 females (20%). Demographic composition of these participants is as follows: Age: 19 & under (6%); 20-29 (43%); 30-39 (31%); 40-49 (14%); 50-59 (5%) and 60 & Over (2%). Ethnicity: Caucasian (62%); Black (1%); Hispanic (27%); Native American (6%) and Other (3%). Education: Eighth grade or less (5%); Some H.S. (15%); H.S. graduate (37%); Some college (27%) and College graduate (15%). Marital Status: Single (64%); Married (21%); Divorced (12%); Separated (3%) and Widowed (1%).

Group 3 consisted of 2,563 participants. There were 2,073 males (81%) and 490 females (19%). Demographic composition of these participants is as follows: Age: 19 & under (5%); 20-29 (41%); 30-39 (31%); 40-49 (17%); 50-59 (5%) and 60 & Over (1%). Ethnicity: Caucasian (83%); Black (8%); Hispanic (6%) and Other (4%). Education: Eighth grade or less (3%); Some H.S. (14%); H.S. graduate (47%); Some college (25%) and College graduate (11%).

Reliability coefficient alphas are presented in Table 50.

**Table 50. Reliability coefficient alphas (1997, Total N = 11,623).**

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

<b>DRI Scale</b>	<b>Group 1 N=7,263</b>	<b>Group 2 N=1,797</b>	<b>Group 3 N=2,563</b>
Truthfulness Scale	.85	.86	.86
Alcohol Scale	.93	.93	.95
Driver Risk Scale	.86	.80	.80
Drugs Scale	.91	.90	.91
Stress Coping Abilities	.93	.95	.93

These reliability coefficient alphas are in agreement with what was found in previous research. DRI scale reliability is consistent between offender groups. Reliability statistics for these offenders are very similar across the three samples. These results support the reliability of the DRI.

Accuracy

The DRI categorizes offenders into four risk ranges, Low (39%), Medium (30%), Problem (20%) and Severe Problem (11%). The expected percentage of offenders categorized as Problem and Severe Problem combined is 31%. The actual percentages of DUI offenders who were categorized in these problem risk ranges are presented in Table 51. The differences between obtained and expected are shown in parentheses.

DUI offenders who score in the upper 31 percentile on the DRI scales are categorized in the problem risk ranges. The closeness to which actual percentages of offenders placed in the problem risk ranges come to predicted percentages demonstrates the accuracy of the DRI. These results show that the DRI very accurately categorized DUI offender risk. All but one of the comparisons between obtained and predicted risk ranges were within 1.8 percentage points. The DRI accurately identifies problem risk in DUI offenders. The DRI accurately measures DUI offender risk.

**Table 51. Problem and Severe Problem risk range percentages. (1997, Total N=11,623)**

<b>Problem &amp; Severe Problem Risk Ranges (31%)</b>	<b>Group 1 (N=7,263)</b>	<b>Group 2 (N=1,797)</b>	<b>Group 3 (N=2,563)</b>
Truthfulness Scale	28.2 (2.8)	29.9 (1.1)	29.3 (1.7)
Alcohol Scale	30.3 (0.7)	30.7 (0.3)	30.7 (0.3)
Driver Risk Scale	29.5 (1.5)	30.8 (0.2)	30.4 (0.6)
Drugs Scale	30.0 (1.0)	32.8 (1.8)	29.5 (1.5)
Stress Coping Abilities	31.0 (0)	30.6 (0.4)	31.4 (0.4)

T-tests were calculated for all DRI scales to study possible gender differences. The t-test results are presented in Table 52.

**Table 52. Gender Differences, 1997 (Group 3, N=2,563)**

<b>DRI Scale</b>	<b>Males (N=2,073)</b>	<b>Females (490)</b>	<b>t value</b>	<b>Significance Level</b>
Truthfulness Scale	10.46	10.68	0.86	n.s.
Alcohol Scale	10.74	8.99	3.45	p<.001
Driver Risk Scale	7.92	6.59	5.81	p<.001
Drugs Scale	5.38	4.36	3.26	P<.001
Stress Coping Abilities	110.90	116.59	2.78	P=.005

Significant gender differences were found on four DRI scales, i.e., Alcohol Scale, Driver Risk Scale, Drug Scale and Stress Coping Abilities Scale. Males scored significantly higher than females on the Alcohol, Driver Risk and Drugs scales. Females scored significantly higher than males on the Stress Coping Abilities Scale. To correct for gender differences in DRI raw scores, scale risk range percentile scores utilize separate male-female scale scoring procedures. This is an example of how the DRI built-in database is used to set scoring procedures to make the DRI accurate. Accurate assessment for all offenders gives evaluators confidence to make meaningful decisions regarding intervention programs.

### 31. DRI Study Using Large Samples of DUI Offenders

Statewide DUI programs often consist of offenders with diverse and varying characteristics. Offenders can vary in terms of the risk they represent for many reasons. A DUI offender test must accurately measure risk no matter who takes the test. This study (1997) consisted of large DUI offender samples from two statewide programs.

#### Method and Results

There were two groups of DUI offenders in this study (1997) that consisted of a total of 75,621 participants. Group 1 consisted of 57,472 participants. There were 45,972 males (80%) and 11,500 females (20%). Demographic composition of these participants is as follows: Age: 19 & under (3%); 20-29 (25%); 30-39 (36%); 40-49 (24%); 50-59 (9%) and 60 & Over (4%). Ethnicity: Caucasian (78%); Black (7%), Hispanic (13%) and Other (2%). Education: Eighth grade or less (5%); Some H.S. (18%); H.S. graduate (44%); Some college (21%) and College graduate (12%). Marital Status: Single (47%); Married (27%); Divorced (20%); Separated (5%) and Widowed (2%).

Group 2 consisted of 18,149 participants. There were 14,914 males (82%) and 3,235 females (18%). Demographic composition of these participants is as follows: Age: 19 & under (6%); 20-29 (32%); 30-39 (32%); 40-49 (20%); 50-59 (7%) and 60 & Over (3%). Ethnicity: Caucasian (89%); Black (7%); Hispanic (2%) and Other (1%). Education: Eighth grade or less (5%); Some H.S. (18%); H.S. graduate (47%); Some college (21%) and College graduate (9%). Marital Status: Single (42%); Married (26%); Divorced (25%); Separated (5%) and Widowed (1%).

Reliability coefficient alphas are presented in Table 53.

These reliability coefficient alphas support the reliability of the DRI. These DRI scale reliability statistics demonstrate that the DRI is highly reliable in these state DUI programs. The DRI is remarkably statistically reliable in all DUI offender samples tested. All scale reliability coefficient alphas are well above the professionally accepted reliability level of .80. The DRI is a reliable DUI offender test.

**Table 53. Reliability coefficient alphas (1997, Total N = 75,621).**

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

<b>DRI Scale</b>	<b>Group 1 N=57,472</b>	<b>Group 2 N=18,149</b>
Truthfulness Scale	.87	.86
Alcohol Scale	.93	.91
Driver Risk Scale	.84	.84
Drugs Scale	.89	.88
Stress Coping Abilities	.93	.93

### Accuracy

The DRI Problem and Severe Problem risk ranges combined are presented in Table 54. The actual percentages of DUI offenders who were categorized in these problem risk ranges are presented. The differences between obtained and expected are shown in parentheses.

**Table 54. Problem and Severe Problem risk range percentages. (1997, Total N=75,621)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=57,472)		Group 2 (N=18,149)	
Truthfulness Scale	32.2	(1.2)	29.1	(1.9)
Alcohol Scale	30.0	(1.0)	30.8	(0.2)
Driver Risk Scale	33.2	(2.2)	29.4	(1.6)
Drugs Scale	31.5	(0.5)	32.9	(1.9)
Stress Coping Abilities	31.3	(0.3)	31.0	(0)

The actual percentages of offenders placed in the problem risk ranges closely approximate the predicted percentage (31%). These results show that the DRI very accurately identified DUI offender risk. All of the comparisons between obtained and predicted risk ranges were within two percentage points. The DRI accurately measures DUI offender risk.

## **32. Reliability and Accuracy of the DRI-Short Form**

This study (1997) examined the reliability and scale risk range accuracy of the DRI-Short Form in two statewide DUI offender samples. The DRI-Short Form is used for reading impaired offenders or for an alternative to the standard DRI. The DRI-Short Form does not contain the Stress Coping Abilities Scale. There were two statewide offender groups included in this study.

### Method and Results

There were two groups of DUI offenders in this study (1997) that consisted of a total of 3,197 participants. Group 1 consisted of 2,989 participants. There were 2,743 males (92%) and 246 females (8%). Demographic composition of these participants is as follows: Age: 19 & under (2%); 20-29 (24%); 30-39 (28%); 40-49 (21%); 50-59 (14%) and 60 & Over (10%). Ethnicity: Caucasian (38%); Black (14%), Hispanic (44%) and Other (3%). Education: Eighth grade or less (44%); Some H.S. (31%); H.S. graduate (19%); Some college (6%) and College graduate (1%). Marital Status: Single (40%); Married (41%); Divorced (13%); Separated (4%) and Widowed (3%).

Group 2 consisted of 208 participants. There were 185 males (89%) and 23 females (11%). Demographic composition of these participants is as follows: Age: 19 & under (3%); 20-29 (20%); 30-39 (25%); 40-49 (29%); 50-59 (14%) and 60 & Over (10%). Ethnicity: Caucasian (85%); Black (6%); Hispanic (7%) and

Other (2%). Education: Some H.S. (58%); H.S. graduate (36%); Some college (4%) and College graduate (2%). Marital Status: Single (31%); Married (26%); Divorced (34%); Separated (6%) and Widowed (3%).

Reliability coefficient alphas are presented in Table 55.

**Table 55. DRI-Short Form reliability coefficient alphas (1997, Total N = 3,197).**  
All coefficient alphas are significant at p<.001.

<b>DRI Scale</b>	<b>Group 1 N=2,989</b>	<b>Group 2 N=208</b>
Truthfulness Scale	.83	.80
Alcohol Scale	.86	.89
Driver Risk Scale	.80	.80
Drugs Scale	.87	.87

These results support the reliability of the DRI-Short Form. All scale coefficient alphas are above acceptable reliability standards. Coefficient alphas for the DRI-Short Form scales are consistent with the standard version DRI. The DRI-Short Form is used for testing reading impaired offenders or as an alternative to the DRI, yet DRI-Short Form reliability statistics indicate the DRI-Short Form is appropriate for these “difficult to test” offenders. The DRI-Short Form is a reliable DUI offender test.

Accuracy

The results for Group 1 Problem and Severe Problem risk range categories, as categorized by the DRI-Short Form, are presented in Table 56. The differences between obtained and expected are shown in parentheses.

**Table 56. Problem and Severe Problem risk range percentages. (1997, N=2,989)**

<b>Problem &amp; Severe Problem Risk Ranges (31%)</b>	<b>Group 1 (N=2,989)</b>	
Truthfulness Scale	32.0	(1.0)
Alcohol Scale	30.1	(0.9)
Driver Risk Scale	32.4	(1.4)
Drugs Scale	32.7	(1.7)

As with the standard DRI test results, the DRI-Short Form offender attained problem risk range percentages are in close agreement with predicted percentages. These results show that the DRI-Short Form very accurately identified DUI offender risk. All of the comparisons between obtained and predicted risk ranges were within 1.7 percentage points. The DRI-Short Form accurately measures DUI offender risk.

**33. DRI Research with Five Samples of DUI Offenders**

This DRI database research (1998) used five samples of DUI offenders to study the reliability, validity and accuracy of the DRI. The validity of the DRI is examined using comparisons between first and multiple offenders. Because the DRI measures severity, it is expected that multiple offenders would have more severe problems than first offenders and, therefore, would score higher on DRI scales. The study of reliability and accuracy are carried over from previous research and the study of validity is unique in this present study.

## Method and Results

There were five groups of subjects in this study (1998) that consisted of a total of 9,649 DUI offenders. Group 1 consisted of 3,145 participants. There were 2,582 males (82%) and 563 females (18%). Demographic composition of these participants is as follows: Age: 19 & under (9%); 20-29 (31%); 30-39 (34%); 40-49 (18%); 50-59 (5%) and 60 & Over (2%). Ethnicity: Caucasian (88%); Black (8%), Hispanic (3%) and Other (1%). Education: Eighth grade or less (3%); Some H.S. (20%); H.S. graduate (54%); Some college (19%) and College graduate (5%).

Group 2 consisted of 763 participants. There were 597 males (78%) and 166 females (22%). Demographic composition of these participants is as follows: Age: 19 & under (5%); 20-29 (29%); 30-39 (37%); 40-49 (22%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (86%); Black (7%); Hispanic (7%) and Other (1%). Education: Eighth grade or less (3%); Some H.S. (15%); H.S. graduate (41%); Some college (22%) and College graduate (19%).

Group 3 consisted of 2,323 participants. There were 2,044 males (88%) and 279 females (12%). Demographic composition of these participants is as follows: Age: 19 & under (3%); 20-29 (27%); 30-39 (33%); 40-49 (21%); 50-59 (12%) and 60 & Over (4%). Ethnicity: Hawaiian & Part Hawaiian (21%); Caucasian (28%); Black (2%); Hispanic (4%); Asian (22%) and Other (21%). Education: Eighth grade or less (3%); Some H.S. (9%); H.S. graduate (57%); Some college (17%) and College graduate (14%). Marital Status: Single (55%); Married (34%); Divorced (9%); Separated (2%) and Widowed (1%).

Group 4 consisted of 2,515 participants. There were 2,113 males (84%) and 402 females (16%). Demographic composition of these participants is as follows: Age: 19 & under (4%); 20-29 (36%); 30-39 (34%); 40-49 (17%); 50-59 (6%) and 60 & Over (3%). Ethnicity: Caucasian (80%); Black (10%); Hispanic (8%); Native American (1%) and Other (1%). Education: Eighth grade or less (5%); Some H.S. (19%); H.S. graduate (48%); Some college (18%) and College graduate (11%).

Group 5 consisted of 903 participants. There were 579 males (84%) and 144 females (16%). Demographic composition of these participants is as follows: Age: 19 & under (7%); 20-29 (33%); 30-39 (34%); 40-49 (19%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (89%); Black (8%); Hispanic (3%) and Other (2%). Education: Eighth grade or less (3%); Some H.S. (21%); H.S. graduate (53%); Some college (18%) and College graduate (5%).

Reliability coefficient alphas for the five groups are presented in Table 57.

**Table 57. Reliability coefficient alphas (1998, Total N = 9,649).**  
**All coefficient alphas are significant at p<.001.**

<b>DRI Scale</b>	<b>Group 1 N=3,145</b>	<b>Group 2 N=763</b>	<b>Group 3 N=2,323</b>	<b>Group 4 N=2,515</b>	<b>Group 5 N=903</b>
Truthfulness Scale	.86	.88	.86	.87	.85
Alcohol Scale	.92	.94	.91	.93	.94
Driver Risk Scale	.80	.81	.82	.81	.80
Drugs Scale	.90	.89	.88	.88	.90
Stress Coping Abilities	.92	.93	.93	.93	.92

The results of this study support the reliability of the DRI in these five DUI offender samples. All coefficient alphas are significant at p<.001. All scale reliability coefficients achieved high levels. Reliability statistics for each DRI scale are very similar across the five different offender groups and indicates that the DRI is

reliable no matter who takes the test. These results show that the DRI is a reliable DUI offender risk assessment instrument.

Accuracy

The DRI Problem and Severe Problem risk ranges combined are presented in Table 58. The actual percentages of DUI offenders categorized in these problem risk ranges are shown along with the differences between obtained and expected in parentheses.

**Table 58. Problem and Severe Problem risk range percentages. (1998, Total N=9,649)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=3,145)	Group 2 (N=763)	Group 3 (N=2,323)	Group 4 (N=2,515)	Group 5 (N=903)
Truthfulness Scale	31.2 (0.2)	28.2 (2.8)	31.4 (0.4)	27.5 (3.5)	31.9 (0.9)
Alcohol Scale	31.9 (0.9)	29.9 (1.1)	30.8 (0.2)	30.7 (0.3)	29.5 (1.5)
Driver Risk Scale	29.6 (1.4)	28.4 (2.6)	32.3 (1.3)	32.1 (1.1)	28.7 (2.3)
Drugs Scale	30.6 (0.4)	31.1 (0.1)	30.8 (0.2)	32.6 (1.6)	30.5 (0.5)
Stress Coping Abilities	30.9 (0.1)	31.3 (0.3)	31.0 (0)	31.1 (0.1)	30.6 (0.4)

The percentages of offenders placed in the problem risk ranges closely approximate predicted percentages. All of the comparisons between obtained and predicted risk ranges were within 3.5 percentage points and only three comparisons were more than two percent. These results demonstrate that the DRI very accurately measures DUI offender risk.

Validity

Two different statistical procedures are presented that demonstrate the validity of the DRI. The first validation procedure compares first offenders and multiple offenders (discriminant validity). Multiple offenders are defined as offenders who have two or more DUI arrests. Because risk of DUI is defined in terms of severity of driving risk and involve alcohol and/or drug use it is expected that multiple offenders would score significantly higher on the Alcohol, Driver Risk and Drug Scales than first offenders.

T-test comparisons were used to study the statistical significance between first and multiple offenders. Results for Group 3 are presented in Table 59. There were 1,821 first offenders and 502 multiple offenders (2 or more DUI arrests).

**Table 59. T-test comparisons between first offenders and multiple offenders. Group 3 (1998, N=2,323)**

<u>DRI Scale</u>	<u>First Offenders Mean</u>	<u>Multiple Offenders Mean</u>	<u>T-value</u>	<u>Significance</u>
Truthfulness Scale	12.47	12.12	t = 1.28	n.s.
Alcohol Scale	7.71	14.73	t = 14.83	p < .001
Drug Scale	3.18	9.62	t = 8.87	p < .001
Driver Risk Scale	9.01	13.49	t = 14.87	p < .001
Stress Coping Abilities	130.91	129.25	t = 0.77	n.s.

Note: The Stress Coping Abilities Scale is reversed in that the higher the score the better one copes with stress.



These results show that multiple offenders score significantly higher on the Alcohol, Driver Risk and Drug Scales than first offenders. These results support the discriminant validity of the Alcohol, Driver Risk and Drug Scales. The Truthfulness Scale and the Stress Coping Abilities Scale did not show significant differences between first and multiple offender scores. Results of the Truthfulness Scale suggest that first offenders may try to fake good, whereas multiple offenders see no reason to further deny their problems.

T-test comparisons for Group 4 and Group 5 are presented in Tables 60 and 61, respectively. For Group 4, there were 1,781 first offenders and 734 multiple offenders. For Group 5, there were 701 first offenders and 202 multiple offenders.

The Truthfulness Scale demonstrated that first offenders scored higher than multiple offenders, yet the differences are not always significant differences. This result suggests that there may be a trend in DUI offender testing in that first offenders attempt to deny, minimize or fake good, whereas multiple offenders are not as naïve and less often deny their problems.

**Table 60. T-test comparisons between first offenders and multiple offenders. Group 4 (1998, N=2,515)**

<u>DRI Scale</u>	<u>First Offenders Mean</u>	<u>Multiple Offenders Mean</u>	<u>T-value</u>	<u>Significance</u>
Truthfulness Scale	11.31	10.21	t =4.95	p<.001
Alcohol Scale	9.18	16.36	t = 15.97	p<.001
Drug Scale	2.47	8.34	t = 13.26	p<.001
Driver Risk Scale	12.98	15.90	t = 10.81	p<.001
Stress Coping Abilities	140.16	131.73	t = 4.60	p<.001

**Table 61. T-test comparisons between first offenders and multiple offenders. Group 5 (1998, N=903)**

<u>DRI Scale</u>	<u>First Offenders Mean</u>	<u>Multiple Offenders Mean</u>	<u>T-value</u>	<u>Significance</u>
Truthfulness Scale	10.35	9.67	t =1.65	n.s.
Alcohol Scale	8.35	18.55	t = 12.13	p<.001
Drug Scale	11.28	17.15	t = 5.46	p<.001
Driver Risk Scale	12.77	17.77	t = 11.19	p<.001
Stress Coping Abilities	143.77	132.70	t = 3.56	p<.001

These t-test results for the three offender groups indicate that the DRI accurately discriminates between first and multiple offenders. Multiple offenders have more severe problems than first offenders and it was shown that multiple offenders scored higher on DRI scales than first offenders. These results support the discriminant validity of the DRI.

The second validity procedure studied the accuracy at which the DRI identified problem drinkers. To be considered accurate a DUI offender test must accurately identify both problem clients (drinkers or drug abusers) and non-problem clients. Accurate tests differentiate problem and non-problem clients. An inaccurate test, for example, may too often call non-problem drinkers problem drinkers or vice versa. A medical diagnosis might be a more stringent criterion for identifying substance-related problems. However, in the DRI, treatment information is readily obtained from the DUI offender. It is likely that there are some offenders who have alcohol or drug problems but have not been in treatment.

Nevertheless, the ease by which this procedure can be calculated using the built-in DRI database makes it a worthwhile area of inquiry.

The criterion in this analysis for identifying offenders as problem drinkers or drug abusers is having been in treatment (alcohol or drug). Having been in treatment identifies DUI offenders as having had an alcohol or drug problem. If a person has never had an alcohol or drug problem it is very likely they have not been treated for an alcohol or drug problem. Thus, offenders are separated into two groups, those who had treatment and those who have not had treatment. Then, offender scores on the Alcohol and Drug Scales are compared. It is predicted that DUI offenders with an alcohol and/or drug treatment history will score in the problem risk range (70<sup>th</sup> percentile and above) on the Alcohol and/or Drug Scales. Non-problem is defined in terms of low risk scores (39<sup>th</sup> percentile and below) on the Alcohol and/or Drug Scales. Scores in the medium risk range (40 to 69<sup>th</sup> percentile) are left out of this analysis because they clearly separate problem versus non-problem categories. They are not “low risk” and they do not show evidence of “problem risk.” Substance abuse treatment information is obtained from offender answers to DRI test items regarding alcohol and drug treatment.

Predictive validity analysis for Group 3 shows that Alcohol and Drug Scales accurately identify offenders who have had alcohol and/or drug treatment. The DRI Alcohol Scale is very accurate in identifying DUI offenders who have alcohol problems. There were 331 offenders who reported having been in alcohol treatment and these offenders are classified as problem drinkers. Of these, 320 offenders, or 97 percent, had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. The Alcohol Scale correctly identified nearly all of the offenders categorized as problem drinkers. For the 1,293 offenders who have not had treatment (non-problem drinkers) the Alcohol Scale identified 898 or 70 percent (had scale scores at or below the 39<sup>th</sup> percentile). The combination of identifying both problem and non-problem drinkers gives an overall accuracy of the Alcohol Scale of 75%. In psychometrics, this is very accurate assessment. It is interesting to note that 395 offenders (31%) had Alcohol Scale scores in the problem risk range and did not have treatment. For these individuals treatment is recommended.

The results for Group 4 are presented in Table 62. These results show that for the 260 offenders who reported having been in alcohol treatment 231 offenders, or 89 percent, had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. Of the 927 offenders who reported no alcohol treatment, 872 offenders or 94 percent had Alcohol scale scores in the Low Risk or no problem range. The overall accuracy of the Alcohol Scale in identifying both problem and non-problem drinkers was 93 percent.

**Table 62. Percent correct identification of problem and non-problem drinkers. (1998, Group 4)**

Alcohol Scale	Alcohol Treatment		Number in each category
	No Treatment	Treatment	
Low Risk (zero to 39 <sup>th</sup> percentile)	872 (94%)	29 (11%)	901
Problem or Severe Problem Risk (70 to 100 <sup>th</sup> percentile)	55 (6%)	231 (89%)	286
	927 (78%)	260 (22%)	N = 1,187

Groups 3 and 4 differ by the no treatment groups. Group 3 had more offenders who had not been in treatment but indicated that they had an alcohol problem. This points out that offenders have different opinions about what constitutes an alcohol problem and this is tempered by the general acceptance of drinking in the specific area they are in.

The results for Group 5 are similar to those of Group 3. Of the 145 offenders in Group 5 who had alcohol treatment, 138 or 95 percent had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. Of the 477 offenders who did not have treatment, 349 offenders or 73 percent had Alcohol Scale scores in the Low risk or no problem range. Combining the percent correct identification of problem with non-problem gives an overall accuracy of the Alcohol Scale of 78 percent. These results show there is a very strong positive correlation between Alcohol Scale scores and alcohol treatment.

The predictive validity results for the Drug Scale are presented in Table 63.

**Table 63. Correct identification of problem and non-problem drug abusers. (1998)**

Drug Scale	No Treatment	Treatment	Overall Accuracy
Group 3 (N=1,586)	860 (61%)	173 (95%)	65%
Group 4 (N=1,252)	915 (86%)	181 (99%)	88%
Group 5 (N=623)	344 (61%)	52 (93%)	64%

The DRI Drug Scale is very accurate in identifying offenders who have drug problems. There were fewer offenders who reported having been in drug treatment compared to those in alcohol treatment. For this reason, overall accuracy of the Drug Scale is heavily influenced by the no treatment groups. As shown in the table the Drug Scale correctly identified nearly all of the offenders in the treatment groups. The DRI Drug Scale achieved very impressive accuracy rates for identifying both problem and non-problem offenders. These results strongly substantiate the accuracy of the DRI Drug Scale.

It would be a simple matter to identify all problem drinkers and drug abusers, you would just need to lower your standards for declaring a problem, and continue to lower your standards until you have all people who have problems identified. This method does not work in practice, because, by lowering your standards you also call many people problem drinkers or drug users who are not. Beyond a certain point, the more people you try to identify as having problems, the more you will over-identify people who do not have problems. Besides being wrong, there are legal ramifications of calling someone a problem drinker or drug abuser when they are not.

### **34. DRI Reliability, Validity, Accuracy and Recidivism Prediction**

One of the goals of DUI offender assessment is determining if offenders will re-offend. Knowing if an offender will re-offend would help determine the type of intervention given to offenders. Those offenders likely to recidivate could be given higher levels of intervention, such as counseling or treatment, while offenders not likely to recidivate could be given less severe intervention, such as education. This study (1998) examined the reliability, validity and accuracy of the DRI, and developed an equation for recidivism prediction.

#### Method and Results

There were 3,031 DUI offenders included in this study (1998). There were 2,433 males (80%) and 598 females (20%). Demographic composition of these participants is as follows: Age: 19 & under (8%); 20-29 (33%); 30-39 (35%); 40-49 (17%); 50-59 (5%) and 60 & Over (1%). Ethnicity: Caucasian (82%); Black (10%), Hispanic (3%) and Other (5%). Education: Eighth grade or less (1%); Some H.S. (17%); H.S. graduate (55%); Some college (21%) and College graduate (6%).

Reliability coefficient alphas for the five groups are presented in Table 64. These results support the statistical reliability of the DRI.

Accuracy

The DRI Problem and Severe Problem risk ranges combined are presented in Table 65. The actual percentages of DUI offenders categorized in these problem risk ranges are shown along with the differences between obtained and expected in parentheses.

**Table 64. Reliability coefficient alphas (1998, Total N = 3,031).**

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

<b>DRI Scale</b>	<b>Alpha</b>
Truthfulness Scale	.86
Alcohol Scale	.95
Driver Risk Scale	.82
Drugs Scale	.91
Stress Coping Abilities	.93

**Table 65. Problem and Severe Problem risk range percentages. (1998, Total N=3,031)**

Problem & Severe Problem Risk Ranges (31%)	Attained Scores (N=3,031)
Truthfulness Scale	29.0 (2.0)
Alcohol Scale	29.9 (1.1)
Driver Risk Scale	30.6 (0.4)
Drugs Scale	31.2 (0.2)
Stress Coping Abilities	31.4 (0.4)

The percentages of offenders placed in the problem risk ranges closely approximate the predicted percentage (31%). All of the comparisons between obtained and predicted risk ranges were within two percentage points. These results demonstrate that the DRI very accurately measures DUI offender risk.

Validity

Discriminant validity analysis compared first offenders and multiple offenders. Multiple offenders are defined as offenders who have two or more DUI arrests. T-test comparisons are presented in Table 66. There were 1,956 first offenders and 1,075 multiple offenders (2 or more DUI arrests).

**Table 66. T-test comparisons between first offenders and multiple offenders. (1998, N=3,031)**

<b><u>DRI Scale</u></b>	<b><u>First Offenders Mean</u></b>	<b><u>Multiple Offenders Mean</u></b>	<b><u>T-value</u></b>	<b><u>Significance</u></b>
Truthfulness Scale	10.71	9.49	t = 6.34	p<.001
Alcohol Scale	8.18	19.38	t = 29.82	p<.001
Drug Scale	5.27	13.05	t = 13.83	p<.001
Driver Risk Scale	6.97	10.20	t = 20.27	p<.001
Stress Coping Abilities	129.93	114.02	t = 10.62	p<.001

Note: The Stress Coping Abilities Scale is reversed in that the higher the score the better one copes with stress.

These results show that multiple offenders score significantly higher on all DRI scales than first offenders. These results support the discriminant validity of the DRI scales.

The analysis of predictive validity for the Alcohol Scale is presented in the Table 67. Offenders Alcohol Scale scores are used to determine if the Alcohol Scale accurately identifies problem drinkers. Those offenders who have been in alcohol treatment were considered to be problem drinkers. It was expected that offenders who had treatment would score in the problem risk ranges (70<sup>th</sup> percentile and above).

The results show that for the 898 offenders who reported having been in alcohol treatment 747 offenders, or 83 percent, had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. Of the 1,266 offenders who reported no alcohol treatment, 1,107 offenders or 87 percent had Alcohol scale scores in the Low Risk or no problem range. The overall accuracy of the Alcohol Scale in identifying both problem and non-problem drinkers was 86 percent.

**Table 67. Percent correct identification of problem and non-problem drinkers. (1998, N=3,031)**

Alcohol Scale	Alcohol Treatment		Number in each category
	No Treatment	Treatment	
Low Risk (zero to 39 <sup>th</sup> percentile)	1,107 (87%)	151 (17%)	1,258
Problem or Severe Problem Risk (70 to 100 <sup>th</sup> percentile)	159 (13%)	747 (83%)	906
	1,266 (58%)	898 (42%)	N = 2,164

The Drug Scale results showed that of the 800 offenders who reported having been in drug treatment 654 or 82 percent had Drug Scale scores in the 70<sup>th</sup> percentile or higher. Of the 1,269 offenders who did not have treatment 976 or 77 percent had Drug Scale scores in the Low Risk range. This lower percent is reasonable because clients could have a drug problem without having been in treatment. Combining these results, the overall accuracy of the Drug Scale was 79 percent. These results show that the Drug Scale accurately identifies offenders who have drug problems.

### Recidivism Prediction

In this analysis, recidivism is defined as re-arrest for a DUI offense. The DRI answer sheet item “Number of prior DUI arrests in lifetime” was used for predicting recidivism. The results show that this DUI recidivism prediction was highly statistically significant,  $F=310.11$ ,  $p<.001$ . The regression coefficient (Multiple R) of .729 was very high and strongly supports the prediction accuracy of the DRI in predicting re-arrest for DUI. The prediction of prior DUI arrests in the offender’s lifetime contains the following predictor variables. 1. Number of lifetime moving violations, 2. Number of drug offenses, 3. Offender status (first or multiple offender), 4. DRI Truthfulness Scale, 5. DRI Alcohol Scale, 6. DRI Driver Risk Scale, 7. Age, 8. Alcohol treatment, 9. Education and 10. Alcohol severity (direct admissions).

The results of this highly statistically significant prediction equation show that the Driver Risk Inventory accurately predicts recidivism. Court history in combination with DRI scale scores accurately predicts risk of re-offending behavior or re-arrest for DUI.

It is interesting to note that Blood Alcohol Content level at the time of the DUI arrest does not significantly contribute to the prediction of future DUI arrests. Some important contributing factors found in the present analysis are: having previous DUI arrests, DRI Alcohol and Driver Risk Scale scores, age and number of moving violations. These results show that the DRI accurately predicts recidivism of DUI arrests.

### **35. A Validation Study of the DRI-II in a Large Sample of DUI Offenders**

This study was conducted by Frederick A. Marsteller, Ph.D. of Emory University School of Medicine and Donald D. Davignon, Ph.D. of Behavior Data Systems, Ltd.

#### Introduction

The Driver Risk Inventory (DRI) is an automated computer scored DUI/DWI offender assessment instrument. The DRI is a test uniquely suited for identifying problem drinkers, substance (alcohol and/or other drugs) abusers and high-risk drivers. The DRI was originally released in 1985 and contained five empirically based measures or scales which included the Truthfulness Scale, Alcohol Scale, Drug Scale, Driver Risk Scale and the Stress Coping Abilities Scale. A sixth measurement (or classification) was recently added to the DRI, called the Substance Dependency Scale, and this new release is called the DRI-II. The purpose of the present study was to validate the new DRI-II.

The new DRI-II Substance Dependency Scale incorporates the seven DSM-IV criteria for substance dependence classification. Also, equivalent items were added to the Alcohol and Drug scales. When a person admits to three or more of the seven DSM-IV criteria for substance dependence they are classified as dependent. The present study also investigated the validity of this new Substance Dependency Scale along with the predictive accuracy of the Alcohol and Drug scales in identifying offenders classified as dependent.

The original Driver Risk Inventory (DRI) was validated in a series of studies (Behavior Data Systems, unpublished) that began in the 1980's which involved primarily test item selection. A 1987 validation study that included 563 DUI offenders demonstrated the relationship between ratings of experienced DUI evaluators and DRI scale scores. DUI evaluators employed their "normal screening procedures" which included test results and an interview before they rated DUI/DWI offenders on the same five scales that are represented in the DRI. Raters had no knowledge of DRI scores. The relationships between staff ratings and DRI scale scores were as follows: Alcohol Scale ( $r=.63$ ,  $p<.001$ ); Drug Scale ( $r=.54$ ,  $p<.001$ ); Driver Risk Scale ( $r=.44$ ,  $p<.001$ ); Truthfulness Scale ( $r=.09$ ,  $p<.02$ ); and Stress Coping Abilities Scale ( $r=.02$ , n.s.). Agreements between DRI scales (Alcohol, Drug and Driver Risk) and experienced evaluator ratings were highly significant. The less significant relationship between the Truthfulness Scale and evaluator ratings was not surprising. Without a Truthfulness Scale the evaluator is largely at the mercy of what the DUI/DWI offender says and the evaluator's training and experience. Keistner and Speight (1975) pointed out that drinking drivers tend to minimize alcohol-related problems if test outcomes play a major factor in sentencing. The nonsignificant coefficient between stress coping abilities and evaluator ratings is in marked contrast to earlier studies that showed highly significant relationships between the Stress Coping Abilities Scale and MMPI scales and the Social Readjustment Rating Scale ( $r=.40$ ,  $p<.001$ ). It was hypothesized that the DUI/DWI evaluators were not trained or experienced in evaluating DUI/DWI offenders' "stress coping abilities."

The validity of the DRI was again demonstrated in this 1987 study which showed that the DRI Alcohol Scale was highly correlated with the MAST ( $r=.68$ ,  $p<.001$ ). The study also presented highly significant Cronbach Alpha reliability coefficients for each DRI scale. The reliability coefficients were as follows: Truthfulness Scale=.81, Alcohol Scale=.89, Drug Scale=.74, Driver Risk Scale=.75, and Stress Coping Abilities Scale=.89.

Another DRI validation study (Behavior Data Systems, 1988, N=1,299) compared the Alcohol Scale and Drug Scale with the Mortimer-Filkins, MAST, and the MacAndrew. The correlation coefficients

between the Mortimer-Filkins and DRI Alcohol Scale ( $r=.45$ ,  $p<.001$ ) and Drug Scale ( $r=.24$ ,  $p<.001$ ) were significant. Similar significant correlation coefficients were found between the MAST and DRI Alcohol Scale ( $r=.38$ ,  $p<.001$ ) and Drug Scale ( $r=.20$ ,  $p<.001$ ). The correlation coefficients between DRI Alcohol Scale ( $r=.17$ ,  $p<.02$ ) and Drug Scale ( $r=.17$ ,  $p<.02$ ) and MacAndrew were lower than those with the MAST and Mortimer-Filkins, yet were significant. Reliability coefficients for all of the DRI scales were again high and nearly identical or higher than those in the 1987 study. These results showed that the DRI is a valid and reliable DUI assessment instrument.

A report by the National Highway Traffic Safety Administration (NHTSA) published in 1988 (DOT HS 807 475) rated the Driver Risk Inventory the best of all the DUI assessment instruments evaluated. The following instruments were reviewed and evaluated: Addiction Severity Index (ASI), Alcohol Use Inventory (AUI), CAGE (Cut Down, Annoyed, Guilty, Eye-opener), Craig Analysis of the Substance Abuse Syndrome (CASAS), Driver Risk Inventory (DRI), Hopkins 20 Question Test, Life Activities Inventory (LAI), MacAndrew MMPI Scale (MAC), Minnesota Assessment of Chemical Health (MACH), Michigan Alcoholism Screening Test (MAST), Modified Criteria -National Council on Alcoholism Diagnosis (MOD-CRIT), Mortimer-Filkins Test (Court procedures for Identifying Problem Drinkers), and Substance Abuse Life Circumstances Evaluation/Automated Drinking Evaluation (SALCE/ADE). The DRI is used in over 37 states and two foreign countries. Over 420,000 DUI assessments are represented in the DRI database (Behavior Data Systems, personal communication, September 26, 1997).

A study by Leshowitz and Meyers (1996) applied decision theory to determine the accuracy of the DRI and a proposed DUI interview instrument (Clayton, et al., 1994). The DRI was found to be far more accurate than the new instrument by a wide margin. Using the data presented by Clayton et al., Leshowitz and Meyers showed that the interview instrument performed at near chance, whereas, the DRI categorized DUI offenders as either “high risk” or “low risk” at an overall accuracy rate of about 70 percent. This is an interesting finding because the data used in the Leshowitz and Meyers analysis was presented by the authors (Clayton, et al.) of their new interview instrument and those authors were openly hostile to the DRI. Rather than discredit the DRI, Clayton, et al. provided validation of the DRI. Indeed, using their (Clayton, et al.) own data, Leshowitz and Meyers showed that the DRI was the better DUI assessment instrument.

### Validation of the DRI-II

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 present study, the DRI-II Truthfulness, Alcohol, Drug and Dependency scales were validated with the following respective measures, the Minnesota Multiphasic Personality Inventory (MMPI-2) L-Scale, MMPI-2 MacAndrew Scale (Greene, 1991), Drug Abuse Screening Test (DAST, Skinner, 1982), and a DSM-IV substance use dependency scale devised for this study. The copyrighted material in the MMPI scales was used with permission of the University of Minnesota.

The DRI-II Driver Risk Scale and Stress Coping Abilities Scale were not included in this study because of time constraints involved in testing. These criterion items (or tests) would have increased testing time dramatically. The Driver Risk Scale was changed very little from its DRI scale and the Stress Coping Abilities Scale is identical to its DRI scale. These scales were not the focus of this study and each of

these scales has been studied extensively. These practical matters contributed to the decision to limit the focus of this study to the DRI-II Truthfulness Scale, Alcohol Scale, Drug Scale and Dependency Scale.

## Methods

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. Florida DUI evaluation agencies deal with the courts and therefore it would be expected that no offender would want to fake bad. In contrast, the MMPI-2 L-Scale detects clients attempting to present an unusually good front (fake good). DUI/DWI research literature consistently demonstrates DUI/DWI offenders attempt to minimize their problems and fake good--particularly in court-related settings. These findings help explain the MMPI-2 F-Scale and L-Scale differences.

Four established Florida certified DUI screening agencies participated and provided a representative sample of Florida DUI offenders. All participating staff were experienced in providing DUI screening services, including administration of the Driver Risk Inventory (DRI), and making DUI program recommendations to their courts. The DRI-II and the criterion test were administered in counterbalanced order to all participants as part of their normal DUI screening procedure. DUI examiners could score DRI-II tests, yet they had no knowledge regarding criterion test results. Criterion test answer sheets were returned by mail, matched with DRI-II data by name and scored only after all tests were administered. Both DRI-II and criterion tests were scored by the researchers when the data analysis was undertaken--after data gathering was completed.

### Population

There were 1,014 DUI offenders included in the present study. 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%).

<b>Blood Alcohol Concentration (BAC) at Time of Arrest</b>						
BAC	Males		Females		Total	
	N	Percent	N	Percent	N	Percent
0 - .01	3	0.4	2	1.0	5	0.5
.02 - .07	20	2.5	7	3.4	27	2.7
.08 - .14	198	24.4	53	26.1	251	24.8
.15 - .17	89	11.0	18	8.9	107	10.6
.18 - .19	31	3.8	16	7.9	47	4.6
.20 - .25	80	9.9	14	6.9	94	9.3
Over .25	29	3.6	2	1.0	31	3.1
Not Available	231	28.5	61	30.0	292	28.8
Refused	130	16.0	30	14.8	160	15.8



**Average Blood Alcohol Concentration (BAC) level as reported by the DUI offender.**

Offender Classification	N	Mean BAC
All Offenders	562	0.157
Males	450	0.159
Females	112	0.148
First Offenders	401	0.152
Multiple Offenders	161	0.170
Not Available	292	
Refused	160	

Note: The “Not Available” classification category refers to DUI offenders that either did not remember their BAC or chose not to report it at the time of their DUI evaluation. The “Refused” category includes DUI offenders that refused the BAC test at the time of their arrest.

**Percent of First and Multiple Offenders by Gender**

	Male		Female		Total	
	N	Percent	N	Percent	N	Percent
First Offenders	511	63.0	149	73.4	660	65.1
Multiple Offenders	300	37.0	54	26.6	354	34.9

Note: A Multiple Offender is an offender who reported two or more lifetime DUI’s.

**Results**

**Scale Scores**

Two measures were used to assess the agreement among the continuous-score scales used in this study. *Pearson product-moment correlations* measure the extent to which two scores tend to differ from their means by the same *relative* amount. Product moment correlations range from –1 for exact agreement in opposite directions, to 0 for no agreement, to 1 for exact agreement in the same direction. The *intraclass correlation* measures the proportion of the combined variance of the scores of the two scales which is due to differences among individuals, rather than to differences between the scores on the two scales within individuals. The intraclass correlation ranges from, 0 when all of the variation is between scales, to 1 when the scales are identical. To compute intraclass correlations, all scales were standardized to have a mean of 0 and a standard deviation of 1. This procedure prevents differences in the range of scores for different scales from diluting the intraclass correlation. The intraclass 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. For simplicity, only the product moment correlations are shown in Table 68.

**Table 68. Product-moment correlations. All product-moment correlations shown are significant at  $p < .001$ .**

	DRI-II					Criterion				
	2	3	4	5	6	7	8	9	10	11
1 - DRI-II - Alcohol	.421	-.244	-.301	.356	.599	.291	.508	-.154	.241	.625
2 - DRI-II - Drug	--	.120	-.134	.275	.256	.152	.618	n.s.	.359	.276
3 - DRI-II - Truthfulness		--	.371	-.209	-.324	-.371	-.289	.668	n.s.	-.324
4 - DRI-II - Stress Coping			--	-.240	-.313	-.215	-.220	.323	-.363	-.315
5 - DRI-II - Driver Risk				--	.232	.213	.252	n.s.	.246	.234
6 - DRI-II - Dependency					--	.352	.371	-.251	.229	.964
7 - MacAndrew						--	.383	-.379	.135	.339
8 - DAST							--	-.273	.234	.380
9 - MMPI-L								--	.093	-.255
10 - MMPI-F									--	.232
11 - DSM-IV										--

### Categorical Ratings

It is often desirable to simplify the use of the assessment scales by providing cutoff scores, above which a problem is deemed to be present. Each of the alcohol and drug scales in this study have such cutoffs defined based on previous research. The strength of association between the categorical outcomes can be assessed in several ways. The simplest is just the percent agreement. This measure actually overestimates the extent of agreement because it includes the agreement which would occur if one measure were categorizing the outcome at random. A widely used measure of categorical agreement is the *kappa* coefficient (see e.g. Dunn, 1989). *Kappa* estimates the strength of agreement excluding that expected due to chance. There are several recommended “benchmarks” for assessing the strength of agreement using *kappa*. Those of Landis and Koch (1977) are as follows:

<u>Kappa</u>	<u>Strength of Agreement</u>
0.00	Poor
0.01-0.20	Slight
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Substantial
0.81-1.00	Almost perfect

The following cutoff scores, defined as the score above which a problem is present were used in this analysis and the percentage of respondents scoring above the cutoff are as follows:

Scale	Cutoff score	Reference	% Positive
DRI-II Alcohol Scale - Problem	12	Behavior Data Systems, Ltd.	27.7
DRI-II Alcohol Scale - Severe	27	Behavior Data Systems, Ltd.	10.9
DRI-II Drug Scale - Problem	4	Behavior Data Systems, Ltd.	33.1
DRI-II Drug Scale – Severe	8	Behavior Data Systems, Ltd.	10.4
DRI-II Substance Dependency Scale	Categorical	Behavior Data Systems, Ltd.	25.9
MacAndrew Alcoholism Scale	23	Greene, 1991	25.0
DAST	7	Staley and El-Guebaly, 1990	11.4
DSM-IV Dependence	Categorical	APA, 1996	8.5
DSM-III-R Dependence	Categorical	APA, 1989	14.6

### Truthfulness Scale

The MMPI-2 L-Scale assesses whether respondents are attempting to present an unusually good appearance by denying even the most minor personal flaws. In a similar vein, the DRI-II Truthfulness Scale is designed to detect denial, minimization of problems and reveal “faking good.” In a DUI test setting the constructs of minimization and denial are important factors that if not measured often hinder accurate assessment. The correlation between the DRI-II 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 DRI-II Truthfulness Scale. They also indicate that the DRI-II Truthfulness Scale and the MMPI-2 L-Scale measure essentially the same attitudes and behaviors. In other words, the DRI-II Truthfulness Scale measures what it is designed to measure, i.e., problem minimization and “faking good.”

### Alcohol Scale

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) personal attitudes which represent a risk of alcohol and drug problems, and b) behaviors and symptoms which are common among alcoholics. The DRI-II Alcohol Scale measures alcohol use and identifies alcohol-related problems. DRI-II Alcohol Scale items specifically refer to alcohol use and alcohol-related symptoms. The DRI-II Alcohol Scale correlates significantly with the MacAndrew Scale ( $r=.291$ ,  $p<.001$ ), in the predicted direction.

The *kappa* coefficients of the Alcohol Scale with the MacAndrew Scale at both problem and severe cutoffs are rather small (.248 and .166, respectively). The two dependence scales used in this study also support the validity of the Alcohol Scale. The Alcohol Scale had a correlation of .599 with DRI-II Substance Dependency Scale and *kappas* of .699 and .478 for the problem and severe cutoffs, respectively. The correlation with the sum of the DSM criterion items was .625 and the *kappas* were .320 and .414 for the problem and severe cutoffs for DSM-IV “dependence” and .450 and .460 for DSM-III-R “dependence”.

These results support the concurrent validity of the DRI-II Alcohol Scale. In other words, the Alcohol Scale demonstrates a statistically significant association with other recognized measures of alcohol problems.

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 items in the DRI-II and criterion dependency scales represent major physical and social problems associated with alcohol and drug use and are designed to identify individuals in need of clinical attention. They are, therefore, designed to assess substance related problems at the upper end of severity. Because of its designed application, the DRI-II Alcohol Scale is designed to assess alcohol use across a full spectrum from minimal risk through severe dependence. It is not surprising that the Alcohol Scale has stronger *kappa* coefficients at the higher cutoff score.

The DRI-II Alcohol Scale, on the other hand, 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 DRI-II Alcohol Scale incorporates truth-correction, whereas non-DRI-II scales do not.

### Drug Scale

The DAST is a drug abuse questionnaire that directly refers to drug use and abuse. It was designed to screen clinical populations for significant drug abuse problems. The DRI-II Drug Scale measures drug (marijuana, crack, cocaine, barbiturates, amphetamines, heroin) use and abuse problems. The DRI-II Drug Scale correlates significantly with the DAST ( $r=.618$ ,  $p<.001$ ), in the predicted direction. The substantial *kappa* for the association between the Drug Scale and the DAST at the higher Drug Scale cutoff (.681) compared to the small *kappa* (.286) at the lower cutoff again may reflect a difference in orientation between the scales, with the DRI-II Drug Scale providing assessment across the full spectrum, while the DAST focuses on major problems or extreme cases.

These results support the validity of the DRI-II Drug Scale. The DRI-II Drug Scale accurately measures illicit drug use and abuse. Again, the truth-corrected scores of the DRI-II Drug Scale may reduce the correlation with the DAST which is not truth-corrected.

## Dependency Scale

### DSM Classification of Substance Use Disorders

Substance dependence as operationalized in both the DRI-II Substance Dependency Scale and the DSM-IV Criterion scale is based on the DSM-IV criteria, which are presented in Table 69 below. Offenders who answer positively to items reflecting 3 or more DSM-IV criteria (test questions 146 through 155) are classified as having “*substance dependence disorder*”. Those who are not classified as dependent are classified as having a “*substance abuse disorder*” if they answer positively to any of the four substance abuse items (156-159). Although the clinical terms “abuse” and “dependence” are used in this discussion actual diagnosis can only be made by a qualified clinician based on a face-to-face interview. What are presented here are *screening classifications* and they are presented in quotes to avoid confusion.

The DSM-IV symptom most commonly endorsed is Symptom 4: a persistent desire to stop or reduce use or repeated attempts to stop or reduce use. This was endorsed by 36.1% of respondents. Reporting of Symptom 2 -- withdrawal symptoms or use to relieve or prevent withdrawal symptoms -- and Symptom 6 -- reducing other important activities to use -- were each reported by fewer than 5% of respondents. Using these criteria, 8.5% of respondents were classified as “dependent” using the DSM-IV criterion test.

Prior to the recent introduction of the DSM-IV, the standard for diagnosing substance use disorders was the DSM-III-R. Although the criteria under the two systems are similar, there is a very substantial difference in the definitions of dependence and abuse between the two. In DSM-III-R, a classification of dependence required that any three of nine symptoms be present during the past year. Abuse was a residual diagnosis based on continued use despite a wide range of problems which might be exacerbated by use or repeated use when hazardous. The DSM-IV dependence criteria depend more strongly on either physical dependence or loss of control over use than did the DSM-III-R criteria. In theory, using DSM-IV criteria will reduce the estimated prevalence of *substance dependence* and increase the estimated prevalence of *substance abuse* diagnoses, due to the more stringent criteria for dependence. Almost all available estimates of the prevalence of alcohol dependence both in the general population and DWI populations are based on the DSM-III-R criteria. Accordingly, it may be useful to examine a recoding of the DSM-IV criterion items to DSM-III-R standards (Table 70).

Using DSM-III-R criteria increases the number of dependence “classifications” at the expense of abuse “classifications” and classifies slightly fewer individuals as having neither “classification.” The *kappa* coefficient for the two scorings (.703) indicates that although the agreement between the two is very substantial, they are not assessing exactly the same thing.

It should also be noted that the estimated proportion of this DUI offender population which is classified as DSM-IV “dependent” (8.5%) or DSM-III-R “dependent” (14.6%) is very low with respect to other estimates, which tend to be in the range of 9-12% for the general population (e.g. Kessler, et al, 1995) and 40-60% in DUI populations. All published estimates of the prevalence of alcohol dependence among DWI offenders to date were based on DSM-III-R criteria, rather than the recently implemented DSM-IV criteria. The prevalence of DSM-III-R alcohol dependence has been reported to be as low as 23.9% (Veneziano and Veneziano, 1992) and as high as 74% (Wieczorek et al, 1990).

<b>DSM-IV Symptom</b>			<b>% Positive</b>
Dependence Symptoms	1	Tolerance (146 or 147)	5.8
	2	Withdrawal or use to prevent withdrawal (148 or 149)	4.1
	3	Inability to control use (150)	11.5
	4	Desire or attempts to quit or reduce use (151 or 152)	36.1
	5	A great deal of time spent getting, using, recovering (153)	7.9
	6	Reduced other important activities to use (154)	2.8
	7	Continued use despite serious problems (155)	11.2
<b>Dependence "Classification" (three or more of the above)</b>			<b>8.5</b>
<b>Dependence "Classification" w/ physical symptoms (I or II)</b>			<b>5.6</b>
Abuse Symptoms	1	Continued use despite social problems (156)	9.4
	2	Continued use despite role impairment (157)	6.0
	3	Repeated use when dangerous (158)	25.1
	4	Continued use despite legal problems (159)	15.7
<b>Abuse "Classification" (one of the above and not dependent)</b>			<b>27.5</b>

<b>DSM-III-R Symptoms</b>			<b>% Positive</b>
Dependence Symptoms	1	Inability to control use (150)	11.5
	2	Desire or attempts to quit or reduce use (151 or 152)	36.1
	3	A great deal of time spent getting, using, recovering (153)	7.9
	4	Impaired role functioning or use when dangerous. (157 or 158)	27.1
	5	Reduced other important activities to use (154)	2.8
	6	Use despite recurrent psych., social or phys. problems (155, 156)	16.8
	7	Tolerance (146 or 147)	5.8
	8	Characteristic withdrawal symptoms (148)	3.4
	9	Use to relieve or avoid withdrawal (149)	2.5
<b>Dependence "Classification" (three or more symptoms)</b>			<b>14.6</b>
<b>Abuse "Classification" (not dependent and item 4 or item 6)</b>			<b>18.6</b>

In this testing environment, when respondents perceive that they will gain (not be referred for treatment) by underreporting problems, the validity of item responses may be limited. For example, 5.8% of respondents respond positively to at least one of the two items addressing tolerance in the DSM-IV criterion questions. However, 14% of respondents reported BACs of .18 or greater and 25.3% of those who reported non-missing BAC values reported BAC of .18 or greater. This apparent several-fold underestimation of this symptom is a cause for concern. Use of the BAC to correct (i.e. including any reported BAC of .18 or greater as positive for tolerance) the tolerance symptom score increases the proportion positive to 21.2% and the proportion with a dependence "classification" to 11.7% (a 37.7% increase). This result indicates that a Substance Dependence Scale used in this testing environment should 1) incorporate all available information, not just responses to direct questions, and 2) would likely benefit from correction based on a truthfulness scale such as that in the DRI-II.

The seven DSM-IV items were reworded (along with equivalent alcohol and drug items) to create the DRI-II Substance Dependency Scale. Consequently, DSM-IV substance dependency items were

compared with DRI-II Dependency Scale items. There was a high positive correlation between the DRI-II Substance Dependency Scale and the DSM-IV Criterion items ( $r=.964$ ,  $p<.001$ ). This high correlation reflects their very strong overlap. The DRI-II Substance Dependency Scale found a larger fraction of “dependent” subjects than either the criterion scale did with either the DSM-III-R or DSM-IV coding. Its *kappas* with the other alcohol and drug scales were higher than those of the alcohol and drug scales with the criterion “classifications” using either coding. The relatively small *kappas* for the association between the DRI-II Substance Dependency Scale dependency classification and the two DSM criterion-based ratings may be due to the *better* detection rate of the DRI-II Substance Dependency Scale. This finding supports the validity of the DRI-II Substance Dependency Scale. In other words, clients answer DSM-IV substance dependency criteria items in the same way they answer DRI-II Dependency Scale items (and their equivalents).

In addition, the DRI-II Alcohol Scale is significantly correlated ( $r=.625$ ,  $p<.001$ ) with the DSM-IV substance dependency criterion (7 classification items). This correlation was predicted because the DSM-IV substance dependency items refer to alcohol symptoms. “The essential feature of Substance Dependence is a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems” (p. 176, DSM-IV). What this means is that the DRI-II Alcohol Scale and DSM-IV substance dependency criteria are to a large extent measuring the same thing. Specifically, the DRI-II Alcohol Scale is a measure of the severity of alcohol abuse. This is true for the DRI-II Drug Scale as well. The DRI-II Alcohol and Drug scales measure the severity of substance abuse. The DSM-IV Substance Dependency criteria refer to both alcohol and/or drugs. Consequently, the DRI-II Drug Scale also correlates significantly ( $r=.276$ ,  $p<.001$ ), in the expected direction, with the DSM-IV Substance Dependency criteria. However, a less significant correlation coefficient is demonstrated for the DRI-II Drug Scale ( $r=.276$ ,  $p<.001$ ) than the DRI-II Alcohol Scale ( $r=.625$ ,  $p<.001$ ).

The very high correlation between the DRI-II Alcohol Scale and DSM-IV criteria is in contrast to the much lower correlation between MacAndrew and DSM-IV ( $r=.339$ ,  $p<.001$ ). It is important to note that the term “substance” is more generic in application than the terms “alcohol” or “drugs.” The MacAndrew is referred to as an alcohol scale. As noted earlier, of the 46 MacAndrew items only one of them refers to alcohol, and none refer to drugs. In 1988 the MacAndrew scale was shown to correlate with both the DRI-II Alcohol and Drug Scales at the  $p<.02$  level of significance. In the present study the MacAndrew Scale also significantly correlates ( $r=.152$ ,  $p<.001$ ) with the DRI-II Drug Scale. In retrospect the MacAndrew scale may be more of a generic substance (alcohol and drugs) use scale. A similar logic may apply to the DAST which significantly correlates ( $r=.508$ ,  $p<.001$ ) with the DRI-II Alcohol Scale.

### Discriminant Validity

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 scale, ANOVAs comparing the mean scores for each scale among the “classification” groups were computed. Post hoc comparisons among the groups were made using Tukey’s Least-Significant Difference test.

The question addressed here is whether the different scales used in this study can discriminate among the “classification” groups. Keep in mind that the groups are established on the basis of self-report responses to DSM-IV criteria on the criterion test.

Mean scale scores for subjects identified as having “no classification” (None) or “classifications” of substance abuse or dependence based on DSM-IV criterion and responses to the criterion scale items.				
	None	Abuse	Depend.	Significant Differences
DRI-II Alcohol	9.4	12.5	28.7	None<Abuse<Dependence
MacAndrew	20.2	21.7	24.0	None<Abuse<Dependence
DRI-II Drug	4.1	3.8	8.5	None=Abuse<Dependence
DAST	3.4	4.1	7.2	None<Abuse<Dependence
DRI-II Truthfulness	12.7	9.1	8.1	None>Abuse=Dependence
MMPI L-Scale	7.3	5.7	5.0	None>Abuse=Dependence
MMPI F-Scale	3.5	3.7	6.7	None=Abuse<Dependence
DRI-II Driver Risk	7.4	8.9	10.8	None<Abuse<Dependence
DRI-II Stress Coping	152.7	135.0	107.8	None>Abuse>Dependence

An 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 <.0001). It is noteworthy that for the DRI-II Alcohol Scale, the differences among the “classification” groups are larger than those for the MacAndrew scale. This is reflected by the much larger  $R^2$  for the Alcohol Scale (23.5%) than for the MacAndrew (8.3%). The  $R^2$  is a measure of the proportion of the total variance in scale scores that are attributable to group differences. This finding supports the conclusion that the DRI-II Alcohol Scale accurately discriminates between “classification” categories and does so better than the MacAndrew. A similar comparison of the DRI-II Drug Scale and the DAST shows more comparable differences, with the  $R^2=5.2\%$  for the Drug Scale and 8.5% for the DAST. The relatively small  $R^2$  values probably reflect the fact that this sample was predominantly referred from problem use of alcohol (i.e. getting a DUI). The DRI-II Truthfulness, Driver Risk and Stress Coping Abilities Scales are also all significantly associated with “classification,” supporting the validity of their contribution to the screening efficacy of the DRI-II.

A t-test comparison between First Offenders and Multiple Offenders (2 or more DUI's) with the DRI-II Alcohol Scale reveals that the Alcohol Scale scores of Multiple Offenders are significantly higher than First Offenders scores ( $t=9.51$ ,  $p<.001$ ). Similar findings are consistently found when First Offender's Blood Alcohol Concentrations (BAC) are compared to Multiple Offenders BAC. First Offenders BAC are consistently lower, on average, than Multiple Offenders BAC. The t-test comparison between these offender groups on the MacAndrew again showed a less significant difference ( $t=2.77$ ,  $p<.006$ ) than the DRI-II Alcohol Scale.

### Summary of Validating the DRI-II

Each of the DRI-II scales (Truthfulness, Alcohol, Drugs and Dependency) correlate highly significantly with their respective criterion tests. These large correlation coefficients support the validity of the DRI-II. Indeed, these significant correlations provide strong support for the validity of the DRI-II scales.

Those scales which are most like the DRI-II associated scales (L-Scale, DAST and DSM-IV) have very high correlation coefficients and provide very strong support for the validity of the DRI-II scales. The MacAndrew Scale is not a direct measure of alcohol use and problems; it is instead a heterogeneous assemblage of items associated with either risk of alcoholism or with heavy alcohol use. In contrast, the DRI-II Alcohol Scale is specific to alcohol use and alcohol-related problems. The DRI-II Alcohol Scale measures alcohol-related problems and proneness to alcohol abuse. The DRI-II Alcohol Scale includes severity of abuse or alcoholism. The severity of abuse DRI-II Alcohol Scale items appear to be related to some MacAndrew items. Therefore, it would be expected that the MacAndrew and the DRI-II



Alcohol Scale would not show a highly significant relationship. The correlation is, nonetheless, significant.

### DRI-II Reliability

Reliability in testing refers to a test's stability or consistency. Test reliability refers to the consistency of scores obtained by the same person when retested with the same or equivalent test. In most testing environments a reliability coefficient of .80 or higher is accepted as satisfying reliability standards. All of the DRI-II scales exceed this standard. The weakest reliability is demonstrated in the DSM-IV Substance Dependency classification scale that consists of the seven DSM-IV dependence criterion items in reformatted or reworded format. These items were reworded for many reasons, including their reading levels and ease of understanding. As explained earlier, the Substance Dependency Scale is a classification (not a measurement) scale as presented in the DSM-IV.

In the present study, Cronbach's Coefficient Alpha (an important index of reliability and internal consistency) was computed on the sample of DUI offenders' responses to scale items. The following table summarizes the results of this analysis. It should be noted that all six DRI-II scales are included in this reliability (internal consistency) analysis. These six DRI-II scales include: Truthfulness Scale, Alcohol Scale, Driver Risk Scale, Drug Scale, Substance Dependency Scale and the Stress Coping Abilities Scale.

**DRI-II Scales Internal Consistency (N=1,014, 1997)**

<u>DRI-II Scale</u>	<u>Cronbach's Alpha</u>	<u>Significance Level</u>
Truthfulness Scale	.87	p<.001
Alcohol Scale	.93	p<.001
Driver Risk Scale	.83	p<.001
Drug Scale	.87	p<.001
Substance Dependency Scale*	.81*	p<.001
Stress Coping Abilities Scale	.92	p<.001

\* This is a DSM-IV classification (not a measurement) scale.

All other DRI-II scales demonstrate very large Cronbach Alpha reliability coefficients. These results strongly support the internal consistency of the DRI-II scales. The Alcohol Scale demonstrates very high internal consistency, which again raises questions regarding the statistical properties of the MacAndrew Scale. It is reasonable to conclude that the DRI-II (and the scales contained therein) is a reliable assessment instrument or test.

For comparison purposes, Cronbach Alpha reliability coefficients were also obtained for the criterion test scales. These results were as follows: L-Scale=.72, MacAndrew=.56, DAST=.85, DSM-IV items=.81. Only the DAST and DSM-IV exceeds accepted reliability standards. Those criterion test scales with reliability coefficients of .7 or above show high correlation coefficients with their respective DRI-II scales. The MacAndrew Scale has a low reliability coefficient and its correlation with the DRI-II Alcohol Scale is relatively low (yet significant). Again, the MacAndrew Scale is shown to lack many acceptable statistical properties for assessment of DUI offenders. A test that has weak reliability usually has weak validity. Criterion test reliability coefficients provide additional insight into this study's findings. For example, criterion tests having good reliability (.80 or higher) coefficients could show

even more substantial DRI-II scale correlation coefficients. Unfortunately, the MacAndrew Scale has a low reliability coefficient.

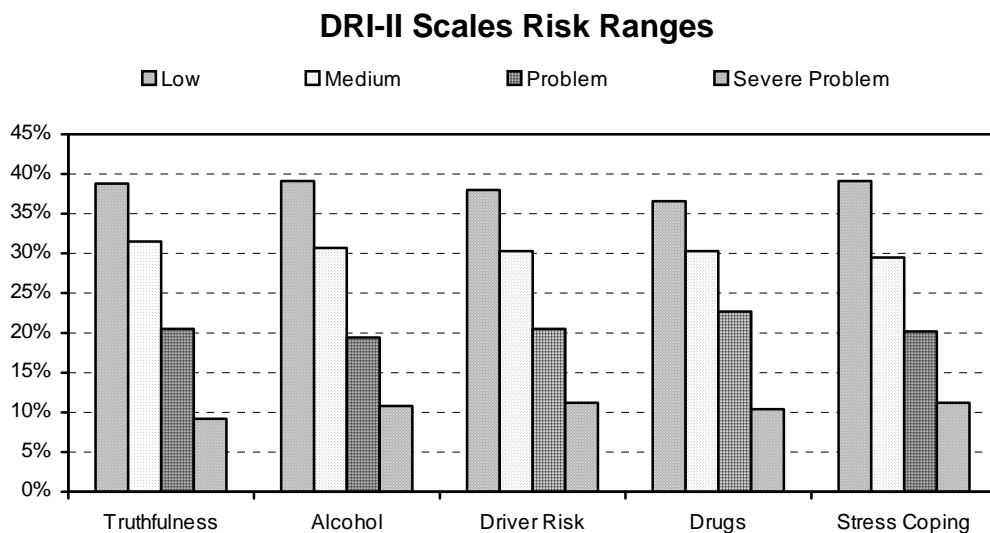
### DRI-II Accuracy

DRI-II accuracy is determined by the closeness of obtained scale risk range percentages to predicted percentages. DRI-II predicted risk range percentages are presented in the table below. The actual or “obtained” percentage of offenders that scored in each scale’s risk range are presented in the graph and table below. Obtained risk range percentages are based on offenders’ scale scores which are comprised of test item totals for the scale with truth-correction factored in, then converted to a percentile score.

PREDICTED RISK RANGE PERCENTAGES FOR EACH DRI-II 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%

The results show that all of the DRI-II obtained risk range percentages were within 2.7 percent of the predicted percentages. There are only two instances where the differences between obtained and predicted scores are more than two percentage points. These results show that the DRI-II accurately classified severity or risk in this sample of DUI offenders.

The percentage of offenders falling into each risk range for each of the five scored Driver Risk Inventory-II scales is presented for the DUI offenders included in this study. It was noted earlier that the Substance Dependency Scale is a classification and not a measurement scale. Results demonstrate the accuracy of the DRI-II.



	Truthfulness	Alcohol	Driver Risk	Drugs	Stress Coping	Predicted
Risk Range	%	%	%	%	%	%
Low	38.8	39.1	38.0	36.6	39.1	<b>39%</b>
Medium	31.5	30.7	30.3	30.3	29.5	<b>30%</b>
Problem	20.5	19.4	20.5	22.7	20.2	<b>20%</b>
Severe Problem	9.2	10.8	11.2	10.4	11.2	<b>11%</b>

## Summary

DRI-II validity was examined in this study of 1,014 DUI offenders presenting for mandatory alcohol and drug evaluation at four Florida DUI agencies. The DRI-II Alcohol, Drug and Truthfulness scales were compared to the MacAndrew Alcoholism scale of the MMPI-2 (MAC-R), the Drug Abuse Screening Test (DAST) and the L-Scale of the MMPI-2. The DRI-II Truthfulness Scale significantly correlated with the MMPI L-Scale ( $r=.668, p<.001$ ). The DRI-II Alcohol Scale significantly correlated with the MAC-R ( $r=.291, p<.001$ ). The DRI-II Drug Scale significantly correlated with the DAST ( $r=.618, p<.001$ ). The new DRI-II Substance Dependency Scale very significantly correlated with DSM-IV substance dependency criterion items which were developed for this study ( $r=.964, p<.001$ ). Criterion validity is a measure based upon a test's correspondence with another established measure (or test) of the same thing (criterion or variable). These results support the validity of the DRI-II.

Very large Cronbach Alpha reliability coefficients were found for the DRI-II scales: Truthfulness Scale (.87,  $p<.001$ ), Alcohol Scale (.93,  $p<.001$ ), Drug Scale (.87,  $p<.001$ ), Driver Risk Scale (.83,  $p<.001$ ), Substance Dependency Scale (.81,  $p<.001$ ), and Stress Coping Abilities Scale (.92,  $p<.001$ ). This study strongly supports the internal consistency or reliability of the DRI-II.

Comparison between offenders DSM-IV "classifications" based on responses to the criterion items developed for this study shows that the DRI-II scales have very high discriminant validity. Analyses of variance comparing offenders classified as "no classification" or no diagnosis, "substance abuse" or "substance dependence" were highly significant. Mean scores of all five DRI-II scales differed significantly among the "classification" groups and showed patterns of differences that not only support their individual discriminant validity, but also demonstrated their strength as a group.

The original intent with the new Dependency Scale was to classify DUI offenders as dependent or nondependent. The DSM-IV also contains criteria for classifying substance abuse. Admission to one of the four substance abuse criteria classifies an individual as substance abuse. Because an offender may not meet the criteria for dependence but may still meet the criteria for substance abuse, it was decided to include the DSM-IV criteria for substance abuse in the DRI-II. Again, the DSM-IV criteria were reformatted and included in the DRI-II along with additional equivalent alcohol and drug items. The DSM-IV criteria for both substance dependence and substance abuse are now represented in this scale that has been renamed the "Substance Dependency/Abuse Scale". Consequently, in the future this DSM-IV based scale is called the Substance Dependency/Abuse Scale. DSM-IV symptoms were substantially underreported. DUI offender court history and other information show the offenders' minimized their problems on the DSM-IV items of the criterion test. And these findings support future modifications of the scale. Such modifications will include 1) using all available information (e.g. BAC) in assessing each symptom, and 2) adjusting classifications with the Truthfulness Scale to avoid minimization of problems or underreporting.

The DRI-II measures DUI offender alcohol and drug severity levels, risk or proneness toward problems. Severity level (risk) is assigned on the basis of scale scores and is divided into four risk ranges (low,

medium, problem and severe problem). Risk range percentages are as follows: low risk, 0 to 39 percent; medium risk, 40 to 69 percent; problem risk, 70 to 89 percent; severe problem risk, 90 percent and above. The accuracy or closeness of obtained scores with predicted scores was demonstrated for each DRI-II scale. These risk range percentages are predicted and may be adjusted to comply with each state's DUI/DWI program. Scale score-related recommendations may also be adjusted for each state's statutes and DUI/DWI program.

The results of this study show that the DRI-II accurately classifies alcohol/drug severity or offender (alcohol and/or drugs) risk. Using the above risk range percentages, the DRI-II accurately predicts offender risk to within two percentage points for nearly all scales and all risk ranges. The DRI-II has very high predictive validity and accuracy.

Very good DSM-IV dependency classification was demonstrated. Yet utilization of DSM-III-R classification criteria resulted in even more significant results. Differences between DSM-III-R and DSM-IV dependency criteria were discussed. Similarly, some criterion measures were found to be lacking. Substitution of more reliable and valid alcohol criterion measures would likely result in even more substantial results. In conclusion, the DRI-II is a reliable, valid and accurate DUI/DWI offender assessment instrument or test.

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### 36. DRI-II Reliability, Validity and Accuracy

This study (1998) summarizes use of the new DRI-II in a state DUI program. There were 42,930 DUI offenders tested with the new DRI-II. The purpose of this study was to investigate reliability, validity and accuracy of the DRI-II. The statistical procedures used in past research studies were utilized in the present study.

#### Method and Results

There were 42,930 DUI offenders included in this study (1998). There were 34,777 males (81%) and 8,441 females (19%). Demographic composition of these participants is as follows: Age: 19 & under (4%); 20-29 (28%); 30-39 (35%); 40-49 (23%); 50-59 (8%) and 60 & Over (3%). Ethnicity: Caucasian (75%); Black (7%), Hispanic (15%) and Other (3%). Education: Eighth grade or less (2%); Some H.S. (17%); H.S. graduate (45%); Some college (22%) and College graduate (13%). Marital Status: Single (49%); Married (26%); Divorced (19%); Separated (5%) and Widowed (2%).

Reliability coefficient alphas are presented in Table 71.

**Table 71. Reliability coefficient alphas (1998, Total N = 42,930).  
All coefficient alphas are significant at  $p < .001$ .**

<b>DRI-II Scale</b>	<b>Alpha</b>
Truthfulness Scale	.90
Alcohol Scale	.92
Driver Risk Scale	.87
Drugs Scale	.90
Stress Coping Abilities	.91
Dependency Items*	.88
Abuse Items*	.84

\* Note: The Substance Dependency/Abuse Scale is a classification (as opposed to measurement) scale derived from DSM-IV criteria.

These results support the statistical reliability of the DRI-II. The Truthfulness Scale and Driver Risk Scale shows improvement from earlier studies.

#### Accuracy

The DRI-II Problem and Severe Problem risk ranges combined are presented in Table 72. The actual percentages of DUI offenders categorized in these problem risk ranges are shown along with the differences between obtained and expected in parentheses.

**Table 72. Problem and Severe Problem risk range percentages. (1998, Total N=42,930)**

Problem & Severe Problem Risk Ranges (31%)	Attained Scores (N=42,930)
Truthfulness Scale	29.3 (1.7)
Alcohol Scale	31.1 (0.1)
Driver Risk Scale	29.1 (1.9)
Drugs Scale	29.1 (1.9)
Stress Coping Abilities	31.3 (0.3)

The percentages of offenders placed in the problem risk ranges closely approximate the predicted percentage (31%). All of the comparisons between obtained and predicted risk ranges were within 1.9 percentage points. These results demonstrate that the DRI-II very accurately measures DUI offender risk.

### Validity

Discriminant validity analysis compared first offenders and multiple offenders. Multiple offenders are defined as offenders who have two or more DUI arrests. T-test comparisons are presented in Table 73. There were 28,700 first offenders and 14,230 multiple offenders (2 or more DUI arrests).

**Table 73. T-test comparisons between first offenders and multiple offenders. (1998, N=42,930)**

<u>DRI-II Scale</u>	<u>First Offenders Mean</u>	<u>Multiple Offenders Mean</u>	<u>T-value</u>	<u>Significance</u>
Truthfulness Scale	12.05	10.99	t = 18.63	p<.001
Alcohol Scale	6.93	11.95	t = 15.42	p<.001
Drug Scale	3.73	11.88	t = 18.08	p<.001
Driver Risk Scale	5.14	7.98	t = 39.46	p<.001
Stress Coping Abilities	142.13	140.83	t = 2.66	p=.008

Note: The Stress Coping Abilities Scale is reversed in that the higher the score the better one copes with stress.

These results show that multiple offenders score significantly higher on all DRI scales than first offenders. These results support the discriminant validity of the DRI scales.

The analysis of predictive validity for the Alcohol Scale is presented in the Table 74. Offenders Alcohol Scale scores are used to determine if the Alcohol Scale accurately identifies problem drinkers. Those offenders who have been in alcohol treatment were considered to be problem drinkers. It was expected that offenders who had treatment would score in the problem risk ranges (70<sup>th</sup> percentile and above).

The results show that for the 7,458 offenders who reported having been in alcohol treatment 7,458 offenders, or 100 percent, had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. Of the 22,163 offenders who reported no alcohol treatment, 16,274 offenders or 73 percent had Alcohol scale scores in the Low Risk or no problem range. The overall accuracy of the Alcohol Scale in identifying both problem and non-problem drinkers was 80 percent.

**Table 74. Percent correct identification of problem and non-problem drinkers. (1998, N=42,930)**

Alcohol Scale	Alcohol Treatment		Number in each category
	No Treatment	Treatment	
Low Risk (zero to 39 <sup>th</sup> percentile)	16,274 (73%)	-	16,274
Problem or Severe Problem Risk (70 to 100 <sup>th</sup> percentile)	5,889 (27%)	7,458 (100%)	13,347
	22,163 (75%)	7,458 (25%)	N = 29,621

The Drug Scale results showed that of the 7,928 offenders who reported having been in drug treatment 7,195 or 91 percent had Drug Scale scores in the 70<sup>th</sup> percentile or higher. Of the 22,641 offenders who did not have treatment 17,339 or 77 percent had Drug Scale scores in the Low Risk range. This lower percent is reasonable because clients could have a drug problem without having been in treatment. Combining these results, the overall accuracy of the Drug Scale was 80 percent. These results show that the Drug Scale accurately identifies offenders who have drug problems.

#### Substance Abuse/Dependency Scale

The DRI-II contains the Substance Abuse/Dependency Scale that classifies offenders according to their responses to DSM-IV substance dependency criteria and substance abuse criteria. If three of the seven dependency criteria are answered positively the offender meets the classification of substance dependence. If one of the four abuse criteria are answered positively the offender is classified as substance abuse. The results of this study showed that 22.3 percent or 9,589 offenders met the criteria for substance dependence as defined by the DSM-IV items contained in the DRI-II. There were 18,445 offenders or 43 percent classified as substance abuse. Combined, there were 28,034 offenders (65.3%) classified by the DSM-IV criteria as substance abusers. 14,896 (34.7%) offenders did not meet the criteria of substance dependency or abuse. There were 3,834 (8.9%) offenders who reported having been diagnosed dependent in the past.

### **37. DRI-II Reliability, Validity and Accuracy in Two Samples of DUI Offenders**

This study (1999) summarizes use of the new DRI-II in two statewide DUI programs. There were a total of 23,913 DUI offenders tested with the new DRI-II. The purpose of this study was to replicate the previous research study of reliability, validity and accuracy of the DRI-II.

#### Method and Results

There were two groups of subjects included in this study (1999) that consisted of 23,913 DUI offenders. Group 1 consisted of 22,913 DUI offenders. There were 19,416 males (81%) and 4,548 females (19%). Demographic composition of these participants is as follows: Age: 19 & under (10%); 20-29 (32%); 30-39 (31%); 40-49 (19%); 50-59 (6%) and 60 & Over (2%). Ethnicity: Caucasian (90%); Black (7%), Hispanic (2%) and Other (1%). Education: Eighth grade or less (4%); Some H.S. (21%); H.S. graduate (45%); Some college (21%) and College graduate (9%). Marital Status: Single (43%); Married (27%); Divorced (19%); Separated (9%) and Widowed (2%).

Group 2 consisted of 1,000 DUI offenders. There were 820 males (82%) and 180 females (18%). Demographic composition of these participants is as follows: Age: 19 & under (11%); 20-29 (34%); 30-39 (29%); 40-49 (19%); 50-59 (5%) and 60 & Over (2%). Ethnicity: Caucasian (88%); Black (6%), Hispanic (5%) and Other (1%). Education: Eighth grade or less (3%); Some H.S. (18%); H.S. graduate (50%); Some college (23%) and College graduate (7%). Marital Status: Single (48%); Married (24%); Divorced (23%); Separated (4%) and Widowed (1%).

Reliability coefficient alphas for the two groups are presented in Table 75.

**Table 75. Reliability coefficient alphas (1999, Total N = 23,913).**

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

<b>DRI-II Scale</b>	<b>Group 1, N=22,913</b>	<b>Group 2, N=1,000</b>
Truthfulness Scale	.88	.88
Alcohol Scale	.92	.92
Driver Risk Scale	.88	.88
Drugs Scale	.90	.91
Stress Coping Abilities	.91	.91
Dependency Items*	.87	.89
Abuse Items*	.83	.84

\* Note: The Substance Dependency/Abuse Scale is a classification (as opposed to measurement) scale derived from DSM-IV criteria.

These reliability results are consistent with those found in the previous study. These results support the statistical reliability of the DRI-II.

Accuracy

The DRI-II Problem and Severe Problem risk ranges combined are presented in Table 76. The actual percentages of DUI offenders categorized in these problem risk ranges are shown along with the differences between obtained and expected in parentheses.

**Table 76. Problem and Severe Problem risk range percentages. (1999, Total N=23,913)**

Problem & Severe Problem Risk Ranges (31%)	Group 1 (N=22,913)	Group 2 (N=1,000)
Truthfulness Scale	30.5 (0.5)	31.9 (0.9)
Alcohol Scale	31.6 (0.6)	30.4 (0.6)
Driver Risk Scale	30.8 (0.2)	29.4 (1.6)
Drugs Scale	29.5 (1.5)	29.2 (1.8)
Stress Coping Abilities	30.9 (0.9)	30.6 (0.4)

The percentages of offenders placed in the problem risk ranges closely approximate the predicted percentage (31%). All of the comparisons between obtained and predicted risk ranges were within 1.8 percentage points. These results demonstrate that the DRI-II very accurately measures DUI offender risk.

Validity

Discriminant validity analysis compared first offenders and multiple offenders. Multiple offenders are defined as offenders who have two or more DUI arrests. T-test comparisons for Group 1 are presented in Table 77. There were 15,267 first offenders and 7,646 multiple offenders (2 or more DUI arrests).

**Table 77. T-test comparisons between first offenders and multiple offenders, Group 1. (1999, N=22,913)**

<b><u>DRI-II Scale</u></b>	<b><u>First Offenders Mean</u></b>	<b><u>Multiple Offenders Mean</u></b>	<b><u>T-value</u></b>	<b><u>Significance</u></b>
Truthfulness Scale	9.09	8.38	t=9.60	p<.001
Alcohol Scale	7.40	15.30	t= 56.99	p<.001
Drug Scale	11.21	12.07	t= 8.25	p<.001
Driver Risk Scale	9.16	12.64	t= 30.32	p<.001
Stress Coping Abilities	139.27	132.55	t= 11.00	p<.001

Note: The Stress Coping Abilities Scale is reversed in that the higher the score the better one copes with stress.



These results show that multiple offenders score significantly higher on all DRI-II scales than first offenders. These results support the discriminant validity of the DRI-II scales.

The analysis of predictive validity used offenders Alcohol Scale scores to determine if the Alcohol Scale accurately identifies problem drinkers. Those offenders who have been in alcohol treatment were considered to be problem drinkers. It was expected that offenders who had treatment would score in the problem risk ranges (70<sup>th</sup> percentile and above).

The results for Group 1 show that for the 3,751 offenders who reported having been in alcohol treatment 3,698 offenders, or 99 percent, had Alcohol Scale scores at or above the 70<sup>th</sup> percentile. Of the 12,552 offenders who reported no alcohol treatment, 9,022 offenders or 72 percent had Alcohol scale scores in the Low Risk or no problem range. The overall accuracy of the Alcohol Scale in identifying both problem and non-problem drinkers was 78 percent. The overall accuracy of the Alcohol Scale for Group 2 was 82 percent.

The DRI-II Drug Scale is also very accurate in identifying offenders who have drug problems. In Group 1 there were 3,538 offenders who reported having been in drug treatment, of these, 2,630 offenders, or 74 percent, had Drug Scale scores at or above the 70<sup>th</sup> percentile. With regard to non-problem drug use, the Drug Scale identified 66 percent (or 8,025) of the offenders. The DRI-II Drug Scale achieved a very impressive accuracy rate of 68 percent for identifying both problem and non-problem offenders. The overall accuracy of the Drug Scale for Group 2 was 77 percent. These results strongly substantiate the accuracy of the DRI-II Drug Scale.

Substance Abuse/Dependency Scale

The DRI-II contains the Substance Abuse/Dependency Scale that classifies offenders according to their responses to DSM-IV substance dependency criteria and substance abuse criteria. If three of the seven dependency criteria are answered positively the offender meets the classification of substance dependence. If one of the four abuse criteria are answered positively the offender is classified as substance abuse. The results of this study are presented in Table 78.

**Table 78. Classification of Substance Dependence or Abuse. (1999, Total N=23,913)**

Classification	Group 1 (N=22,913)	Group 2 (N=1,000)
Dependence	23%	26.5%
Abuse	47.3%	48.3%
Diagnosed Dependent in the Past	8.6%	12.6%

Any DUI offender intervention program (education, counseling or treatment) must be based on reliable, accurate and valid assessment. Accurate assessment is important for maximizing resources while avoiding the provision of unnecessary intervention services. The Driver Risk Inventory-II is a valuable DUI offender screening instrument for determining the extent to which DUI offenders have substance abuse and driving-related problems. DRI-II is specifically designed for DUI offenders and incorporates many factors important for determining DUI offenders' risk of re-offense and for establishing their driving-related needs.

### 38. A Study of the DRI-II in a Sample of Probation Department DUI Offenders

This study (1999) included DUI offenders being tested in a statewide probation department DUI program. The statistical properties of the DRI-II in this sample of offenders was studied. These participants were tested as part of their routine probation department program assessment.

#### Method and Results

The participants in this study (1999) consisted of 2,578 DUI offenders. There were 2,082 (80.8%) males and 496 (19.2%) females. Demographic composition of this sample is as follows. Age: 19 & under (6.5%); 20-29 (43.1%); 30-39 (27.9%); 40-49 (16.3%); 50-59 (4.7%) and 60 & Over (1.5%). Ethnicity: Caucasian (84.5%); Black (5.7%), Hispanic (6.1%), Native American (1.9%) and Other (1.8%). Education: Eighth grade or less (2.9%); Some H.S. (12.7%); H.S. graduate/G.E.D. (46.6%); Some college (29.8%) and College graduate (8.1%).

Reliability coefficient alphas are presented in Table 78.

**Table 78. Reliability coefficient alphas (1999, N = 2,578).**  
**All coefficient alphas are significant at  $p < .001$ .**

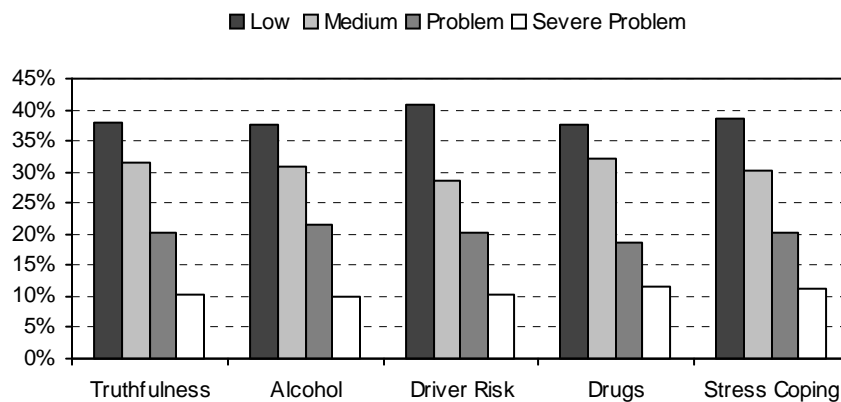
DRI-II Scale	Alpha
Truthfulness Scale	.86
Alcohol Scale	.95
Driver Risk Scale	.86
Drugs Scale	.90
Stress Coping Abilities	.93

These reliability coefficients are similar to those found in other samples. These results support the statistical reliability of the DRI-II in this sample of probation department offenders.

#### DRI Accuracy

The accuracy of the five DRI measurement (or severity) scales is presented in Table 79. Percentages of offenders classified in each of the four risk ranges for each of the five DRI scales are compared to predicted percentages. The established or predicted risk range (low, medium, problem & severe problem) percentages are shown in parentheses in the top row of the table below the graph.

**Table 79. DRI Scales Risk Ranges (1999, N = 2,578)**



All Clients	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	38.0 (1.0)	31.4 (1.4)	20.3 (0.3)	10.3 (0.7)
Alcohol	37.5 (1.5)	31.0 (1.0)	21.5 (1.5)	10.0 (1.0)
Driver Risk	40.9 (1.0)	28.5 (1.5)	20.3 (0.3)	10.3 (0.7)
Drugs	37.7 (1.3)	32.3 (2.3)	18.5 (1.5)	11.5 (0.5)
Stress Coping	38.6 (0.4)	30.1 (0.1)	20.1 (0.1)	11.2 (0.2)

The graph and table above shows that the obtained risk range percentages closely approximates the predicted percentages. Of the 20 possible (5 scales X 4 risk ranges) comparisons all obtained risk range percentages were within 2.3 percentage points of the predicted percentages. There were 13 offender obtained risk range percentages that were within one percentage point of the predicted. Only one obtained risk range percentage was greater than 1.5% from the predicted percentage and this was 2.3 percent from the predicted. These results demonstrate the accuracy of the DRI in the assessment of DUI offenders.

### Validity of the DRI

DRI scales measure severity. The higher the scale score is the more severe an offender’s problems are. The DRI accurately differentiates between problem and non-problem offenders. The following **discriminant validity** analyses compared first and multiple offenders DRI scale scores. “Number of lifetime DUI’s” were used to define first offenders (N=1,750) and multiple offenders (2 or more DUI arrests, N=828). The t-test comparisons between first offenders and multiple offenders for each scale are presented in Table 80.

**Table 80. T-test comparisons between first offenders and multiple offenders**

<u>DRI Scale</u>	<u>First Offenders Mean Score</u>	<u>Multiple Offenders Mean Score</u>	<u>T-value</u>	<u>Level of significance</u>
Truthfulness Scale	10.96	9.50	t = 6.76	p<.001
Alcohol Scale	8.48	23.27	t = 33.10	p<.001
Driver Risk Scale	5.46	7.36	t = 10.99	p<.001
Drug Scale	4.90	7.57	t = 9.09	p<.001
Stress Coping Abilities	129.08	110.88	t = 10.69	p<.001

Note: The Stress Coping Abilities Scale is reversed in that the higher the score the better one copes with stress.

These comparisons demonstrate that multiple offenders score significantly higher on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales than first offenders. Having more DUI arrests is associated with higher severity levels and these results show that multiple offenders scored higher than first offenders. These results support the discriminant validity of the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales.

The Truthfulness Scale shows that first offenders scored significantly higher than multiple offenders. This result suggests that first offenders minimize or deny their problems more than multiple offenders. Multiple offenders are more open to self-disclosure. The Truthfulness Scale has been validated in previous research studies.

The Alcohol Scale shows there is a very large difference between first and multiple offenders. The average Alcohol Scale score for first offenders was 8.48 which was much lower than the average scale score for multiple offenders which was 23.27. Multiple offenders clearly are at higher risk of drinking problems than first offenders. The Driver Risk, Drug and Stress Coping Abilities Scales show that multiple offenders scored higher than first offenders. These differences are not as great as the Alcohol Scale differences but they are nonetheless statistically significant.

In another type of validity analysis the DRI Alcohol Scale demonstrates it accurately identifies offenders who have alcohol problems. Offenders who have been in alcohol treatment identify them as having had alcohol problems. Alcohol treatment information is obtained from offenders' answers to DRI test item (#57) concerning alcohol treatment. In this analysis, offenders who scored at or above the 70th percentile (Problem and Severe Problem) are compared to offenders who scored in the low risk range (39<sup>th</sup> percentile and below).

There were 1764 offenders who had Alcohol Scale scores in the low and problem risk ranges. For the 615 offenders who reported having been in alcohol treatment, 597 offenders, or 97.1 percent, had Alcohol Scale scores at or above the 70th percentile. The DRI Alcohol Scale was extremely accurate in identifying offenders with alcohol problems. 97 percent of the offenders who had alcohol treatment scored in the Problem or Severe Problem risk range on the Alcohol Scale. These results further validate the DRI Alcohol Scale.

The predictive validity analysis for the Drug Scale used drug treatment (DRI test items #35 & #67) to compare with scale scores. 1745 offenders had Drug Scale scores in the low and problem risk ranges. Of the 340 offenders who reported having been in drug treatment 325 or 95.6 percent had Drug Scale scores in the 70th percentile or higher (Problem Risk and above). The Drug Scale is highly accurate in identifying offenders who have drug problems. These results validate the DRI Drug Scale. Taken together these results strongly support the reliability, validity and accuracy of the DRI.

### **DRI Summary**

- Of 20 possible (5 scales x 4 risk ranges) comparisons between attained and predicted scores, 13 were within one percentage point of the predicted
- DRI scale risk range percentile scores were accurate for all comparisons to within 2.3 percent of predicted for all DRI scales and all risk ranges
- All DRI scales reliability coefficients were at .80 or higher; most were near .90
- Discriminant validity analyses show that DRI Alcohol, Driver Risk, Drug and Stress Coping Abilities Scales significantly discriminate between first and multiple offenders
- Predictive validity analyses demonstrate that DRI Alcohol and Drug Scales accurately identify problem drinkers and drug abusers

### **39. DRI-II Test Results in a Large Statewide Sample**

This study (1999) included DUI offenders tested in a large statewide DUI program. The statistical analyses of previous research were studied. These participants were tested as part of their routine DUI program assessment.

#### Method and Results

The participants in this study (1999) consisted of 48,223 DUI offenders. There were 38,612 (80.1%) males and 9,611 (19.9%) females. Demographic composition of this sample is as follows. Age: 20 & under (4.7%); 21-30 (26.6%); 31-40 (33.7%); 41-50 (23.6%); 51-60 (8.5%) and 61 & Over (3.1%).

Ethnicity: Caucasian (73.1%); Black (7.3%), Hispanic (16.6%), Native American (1.5%) and Other (1.5%). Education: Eighth grade or less (0.9%); Some H.S. (15.4%); H.S. graduate/G.E.D. (45.9%); Some college (23.1%) and College graduate (14.6%). Marital Status: Single (49.1%), Married (26.2%), Divorced (18.7%), Separated (4.4%) and Widowed (1.6%).

Reliability coefficient alphas are presented in Table 81.

**Table 81. DRI-II reliability coefficient alphas. (1999, N=48,223)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.90	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drug Scale	.90	.001
Stress Coping Abilities	.91	.001
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Substance Abuse/ Dependency Scale*	.92	.001

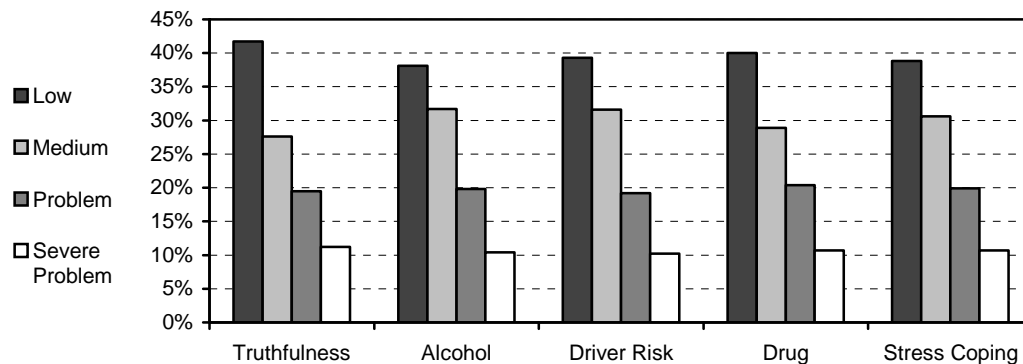
\*The Substance Abuse/Dependency Classification Scale is a classification as opposed to a measurement scale derived from DSM-IV criteria. The dependency and abuse items are used to determine whether or not offenders meet dependency or abuse criteria.

As demonstrated above, Alpha coefficients for all DRI-II scales are well above the professionally accepted standard of .75. Indeed, most of the DRI-II scales are at or above .90. These high reliability statistics are very impressive for any test, especially for a DUI offender assessment instrument or test. These results show that the DRI-II is a very reliable risk assessment instrument.

Accuracy of the DRI-II

The percentage of offenders scoring in the four risk categories (low, medium, problem and severe problem) is compared to the predicted percentage for each of the five measurement scales. The differences between obtained and predicted percentages are shown in parentheses in the table below the graph. There are 48,223 DRI test results summarized in the following risk range percentile analysis.

**Table 82. DRI-II Accuracy (1999, N=48,223)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	41.7 (2.7)	27.6 (2.4)	19.5 (0.5)	11.2 (0.2)
Alcohol	38.1 (0.9)	31.7 (1.7)	19.8 (0.2)	10.4 (0.6)
Driver Risk	39.3 (0.3)	31.3 (1.3)	19.2 (0.8)	10.2 (0.8)
Drug	40.0 (1.0)	28.9 (1.1)	20.4 (0.4)	10.7 (0.3)
Stress Coping	38.8 (0.2)	30.6 (0.6)	19.9 (0.1)	10.7 (0.3)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

As shown in the graph and table above, obtained risk range percentages for all risk categories and all DRI-II scales were within 2.7 percentage points of the predicted percentages. Of the 20 possible comparisons (5 scales x 4 risk ranges) between attained and predicted percentages, 15 were within one percentage point from the predicted percentage. Only three obtained risk range percentages were 1.7% or greater from the predicted percentage, and these were within 2.7 percent. These results demonstrate the accuracy of the DRI-II.

For those offenders who are identified as having problems (Problem-20% and Severe Problem-11% risk ranges or 31% of the offenders) because of scale scores at or above the 70<sup>th</sup> percentile, the obtained percentages are very accurate. The differences between obtained and expected percentages (sum of Problem Risk and Severe Problem minus 31%) are as follows: Truthfulness Scale (0.3), Alcohol Scale (0.8), Driver Risk Scale (1.6), Drug Scale (0.1) and Stress Coping Abilities Scale (0.4). These results further demonstrate that the DRI-II scale scores accurately identify DUI offender risk.

#### Validity of the DRI-II

The answer sheet item “Number of lifetime DUI arrests” was used to operationally define first offenders and multiple offenders. There were 32,483 first offenders and 15,740 multiple offenders. Because “risk” is often defined in terms of severity of problem behavior it is expected that multiple offenders would score significantly higher on DRI-II scales than first offenders. The t-test comparisons between first offenders and multiple offenders for each DRI-II scale are presented in Table 83. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 83. T-test comparisons between first offenders and multiple offenders. (1999, N=48,223)  
Offender status defined by number of lifetime DUI arrests.**

<u>DRI-II Scale</u>	<u>First Offenders Mean (N=32,483)</u>	<u>Multiple Offenders Mean (15,740)</u>	<u>T-value</u>	<u>Level of significance</u>
Truthfulness Scale	12.27	11.18	t = 20.03	p<.001
Alcohol Scale	4.97	10.88	t = 58.54	p<.001
Driver Risk Scale	7.60	11.12	t = 49.10	p<.001
Drug Scale	3.16	4.65	t = 23.57	p<.001
Stress Coping Abilities	141.23	141.60	t = 0.79	n.s.

These results show that multiple offenders scored significantly higher on the Alcohol, Driver Risk and Drug Scales than did first offenders. Scores on the Stress Coping Abilities Scale were not significantly different between first and multiple offenders. Stress, as perceived in court-related DUI proceedings, appears to be essentially the same (or high) for both first and multiple DUI offenders. Moreover, it is interesting to note that first offenders scored significantly higher than did multiple offenders on the Truthfulness Scale. The higher scores of the first offenders on the Truthfulness Scale suggests that first offenders try to minimize

their problems more than multiple offenders or that multiple offenders see no point in further denying problems because they have already been charged with a prior DUI.

These t-test results support the discriminant validity of the Alcohol, Driver Risk and Drug Scales. We expected multiple offenders would score higher on these scales than first offenders. The Alcohol, Driver Risk and Drug Scales measure severity of problem behavior by offenders' deviant answers to scale items. The higher the scale scores the more severe the problems are. Furthermore, having a prior arrest is also indicative of problem behavior. These results show that offenders who have a prior arrest score higher on these scales than offenders who do not have a prior arrest. These results strongly support the discriminant validity of the Alcohol, Driver Risk and Drug Scales.

#### Predictive validity

To be considered accurate a DUI test must accurately identify problem clients (drinkers or drug abusers). The criterion in this analysis for identifying offenders as problem drinkers or drug abusers is having been in treatment (alcohol or drug). Having been in treatment identifies DUI offenders as having had an alcohol or drug problem. If a person has never had an alcohol or drug problem it is likely they have not been treated for an alcohol or drug problem. In the DRI-II, treatment information is directly obtained from DUI offenders. Thus, offenders can be separated into two groups, those who had treatment and those who have not had treatment. It is predicted that DUI offenders with an alcohol or drug treatment history will score in the problem risk range or above (70<sup>th</sup> percentile and above) on the Alcohol and Drug Scales, respectively. Substance abuse treatment information is obtained from offender answers to DRI-II test items (#22, #41, #57, #75 & #133) regarding alcohol and drug treatment.

Predictive validity analysis shows that Alcohol and Drug Scales accurately identify offenders who have had alcohol and/or drug treatment. The DRI-II Alcohol Scale is very accurate in identifying DUI offenders who have alcohol problems. There were 8,152 offenders who reported having been in alcohol treatment and these offenders are classified as problem drinkers. Of these 8,152 offenders, all of the individuals or 100 percent, had Alcohol Scale scores at or above the 70th percentile. In comparison to other DUI assessment instruments, this is very accurate assessment. The Alcohol Scale correctly identified all of the offenders categorized as problem drinkers. These results are very impressive and strongly validate the DRI-II Alcohol Scale.

The DRI-II Drug Scale is also very accurate in identifying offenders who have drug problems. There were 10,183 offenders who reported having been in drug treatment, of these, 9,444 offenders, or 92.7 percent, had Drug Scale scores at or above the 70th percentile. These results are similar to those reported above for the Alcohol Scale and represent very accurate assessment. These results strongly substantiate the accuracy of the DRI-II Drug Scale.

#### Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders according to their responses to DSM-IV substance abuse criteria and substance dependency criteria. If one or more of the four abuse criteria is answered positively the offender is classified as substance abuse. If three or more of the seven dependency criteria are answered positively the offender meets the classification of substance dependence. This analysis included 48,223 offenders.

The results of this analysis showed that 21.9 percent or 10,577 offenders (22.1% of males and 21.3% of females) met the criteria for substance dependence as defined by the DSM-IV items contained in the DRI-II. There were 20,612 offenders or 42.7 percent (44.6% of males and 35.3% of females) classified as substance abuse. Combined, there were 31,189 offenders (64.6%) classified by the DSM-IV criteria

as substance abusers. 17,034 (35.3%) offenders (33.3% of males and 43.3% of females) did not meet the criteria of substance dependency or abuse. There were 4,122 (8.5%) offenders (8.1% of males and 10.5% of females) who reported having been diagnosed dependent in the past. In the DSM-IV if a person is once diagnosed “dependent” they are always considered dependent thereafter.

The DRI-II is a very accurate screening or assessment instrument. This was discussed under risk range percentile scores for all DRI-II scales, scale score comparisons between multiple and first offenders and correct identification of problem drinkers and drug abusers. It can reasonably be assumed that the inclusion of a review of available records and interview would improve assessment accuracy even further. The DRI-II identifies offenders with substance (alcohol and other drugs) abuse problems. In addition, the DRI-II also accurately identifies malingerers (Truthfulness Scale), problematic drivers (Driver Risk Scale) and the emotionally disturbed (Stress Coping Abilities Scale). The DRI-II is both comprehensive and accurate. Comprehensive in the sense that it screens important areas of inquiry that are directly related to “driver risk.” Accurate in the sense that the DRI-II does what it is purported to do - - that is accurately identify risk.

#### 40. DRI-II Test Results in a Sample of DUI Offenders

This study (2000) compiled test results from DUI offenders from many agencies from around the country. The statistical analyses of previous research were studied. All participants were individuals who were arrested for DUI and tested as part of routine DUI program assessment.

##### Method and Results

The participants in this study (2000) consisted of 6,697 DUI offenders. There were 5,327 (79.5%) males and 1,370 (20.5%) females. Demographic composition of this sample is as follows. Age: 19 & under (6.9%); 20-29 (31.4%); 30-39 (30.2%); 40-49 (20.5%); 50-59 (7.9%) and 60 & Over (2.9%). Ethnicity: Caucasian (85.2%); Black (6.8%), Hispanic (4.8%), Asian (0.6%), Native American (1.5%) and Other (1.1%). Education: Eighth grade or less (2.3%); Some H.S. (20.7%); H.S. graduate/G.E.D. (42.6%); Some college (22.5%) and College graduate (11.9%). Marital Status: Single (52.4%), Married (24.4%), Divorced (17.7%), Separated (4.2%) and Widowed (1.3%).

Reliability coefficient alphas are presented in Table 84.

**Table 84. DRI-II reliability coefficient alphas. (2000, N=6,697)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.88	.001
Alcohol Scale	.93	.001
Driver Risk Scale	.87	.001
Drug Scale	.90	.001
Stress Coping Abilities	.92	.001
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Substance Abuse/ Dependency Scale*	.92	.001

\*The Substance Abuse/Dependency Classification Scale is a classification as opposed to a measurement scale derived from DSM-IV criteria. The dependency and abuse items are used to determine whether or not offenders meet dependency or abuse criteria.

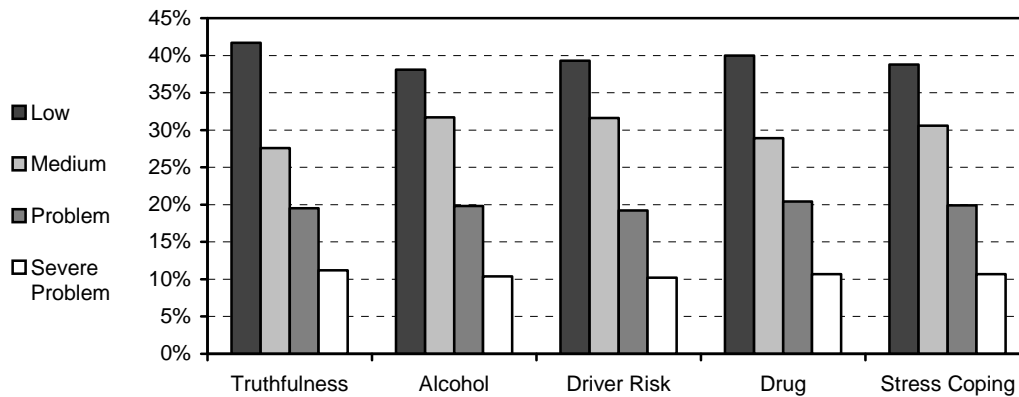


As found in previous research DRI-II scales reliability coefficients are near or above .90. These results demonstrate that the DRI-II is a reliable DUI offender assessment test.

Accuracy of the DRI-II

The percentages of offenders scoring in the four risk categories (low, medium, problem and severe problem) are presented in Table 85. These percentages are compared to the predicted percentages for each of the five measurement scales. The differences between obtained and predicted percentages are shown in parentheses in the table below the graph.

**Table 85. DRI-II Accuracy (2000, N=6,697)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	41.7 (2.7)	27.6 (2.4)	19.5 (0.5)	11.2 (0.2)
Alcohol	38.1 (0.9)	31.7 (1.7)	19.8 (0.2)	10.4 (0.6)
Driver Risk	39.3 (0.3)	31.3 (1.3)	19.2 (0.8)	10.2 (0.8)
Drug	40.0 (1.0)	28.9 (1.1)	20.4 (0.4)	10.7 (0.3)
Stress Coping	38.8 (0.2)	30.6 (0.6)	19.9 (0.1)	10.7 (0.3)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

As shown in the graph and table above, obtained risk range percentages for all risk categories and all DRI-II scales were within 2.7 percentage points of the predicted percentages. Of the 20 possible comparisons (5 scales x 4 risk ranges) between attained and predicted percentages, 15 were within one percentage point from the predicted percentage. Only three obtained risk range percentages were 1.7% or greater from the predicted percentage, and these were within 2.7 percent. These results demonstrate the accuracy of the DRI-II.

Validity of the DRI-II

Database validity analyses are presented in Table 86. DRI-II scale scores are compared between first offenders and multiple offenders. The answer sheet item “Number of DUI arrests” was used to operationally define first offenders (1 DUI) and multiple offenders (2 or more DUI’s). There were 5,042 first offenders and 1,655 multiple offenders. It was expected that multiple offenders would score significantly higher on DRI-II scales than first offenders. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 86. T-test comparisons between first offenders and multiple offenders. (2000, N=6,697)  
Offender status defined by number of lifetime DUI arrests.**

<u>DRI-II Scale</u>	<u>First Offenders Mean (N=32,483)</u>	<u>Multiple Offenders Mean (15,740)</u>	<u>T-value</u>	<u>Level of significance</u>
Truthfulness Scale	10.89	10.07	t = 4.87	p<.001
Alcohol Scale	7.67	17.77	t = 29.79	p<.001
Driver Risk Scale	8.37	11.63	t = 13.62	p<.001
Drugs Scale	3.31	5.15	t = 9.61	p<.001
Stress Coping Abilities	138.59	130.35	t = 6.38	p<.001

These results show that multiple offenders scored significantly higher on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales than did first offenders. First offenders scored significantly higher than did multiple offenders on the Truthfulness Scale. This finding has been found in previous research and appears to be trend in DUI offender assessment. First offenders try to minimize their problems more often than do multiple offenders.

These t-test results support the discriminant validity of the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales. We expected multiple offenders would score higher on these scales than first offenders. Having a prior arrest is indicative of problem behavior. These results show that offenders who have a prior arrest score higher on these scales than first time offenders. These results strongly support the discriminant validity of the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales.

Predictive validity

The DRI-II accurately identifies problem clients (drinkers or drug abusers). Having been in treatment (alcohol or drug) is the criterion for problem drinkers or drug abusers. In the DRI-II, treatment information is directly obtained from DUI offenders. It was predicted that DUI offenders with an alcohol or drug treatment history would score in the problem risk range or above (70<sup>th</sup> percentile and above) on the Alcohol and Drug Scales, respectively. Substance abuse treatment information was obtained from offender answers to DRI-II test items (#22, #41, #57, #75 & #133) regarding alcohol and drug treatment.

The DRI-II Alcohol Scale is very accurate in identifying DUI offenders who have alcohol problems. There were 1,265 offenders who reported having been in alcohol treatment and these offenders were classified as problem drinkers. Of these 1,265 offenders, nearly all of the individuals or 98.9 percent, had Alcohol Scale scores at or above the 70th percentile. The Alcohol Scale correctly identified nearly all of the offenders categorized as problem drinkers. These results strongly validate the DRI-II Alcohol Scale.

The DRI-II Drug Scale is also very accurate in identifying offenders who have drug problems. There were 1,363 offenders who reported having been in drug treatment, of these, 1,255 offenders, or 92.1 percent, had Drug Scale scores at or above the 70th percentile. These results validate the DRI-II Drug Scale.

The DRI-II identifies offenders with substance (alcohol and other drugs) abuse problems. In addition, the DRI-II also accurately identifies malingerers (Truthfulness Scale), problematic drivers (Driver Risk Scale) and the emotionally disturbed (Stress Coping Abilities Scale). The DRI-II is comprehensive and accurate. The DRI-II does what it is purported to do - - that is accurately identify driver risk.

## 41. DRI-II Results in a Large DUI Offender Sample

This study (2000) examined the test results from a statewide DUI program that included 49,539 DUI offenders. The DRI-II was administered to DUI offenders as part of routine DUI program assessment and evaluation procedures. Reliability, validity and accuracy of the DRI-II was studied.

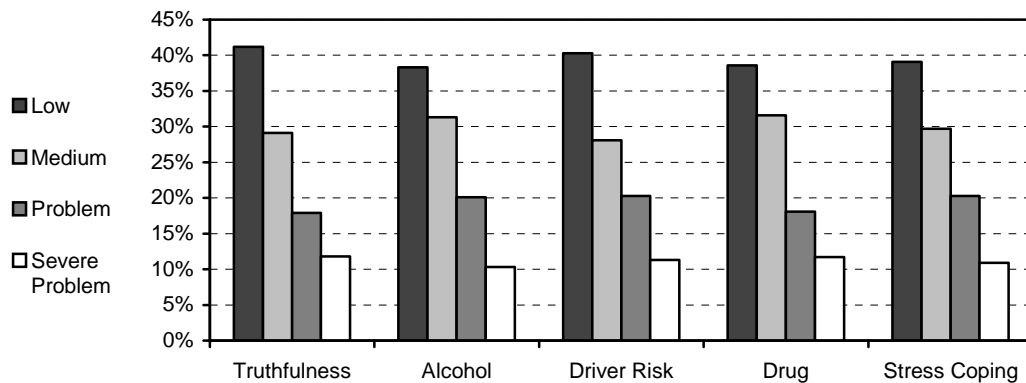
### Method and Results

The participants in this study (2000) consisted of 49,539 DUI offenders. There were 39,755 (80.2%) males and 9,784 (19.8%) females. Demographic composition of this sample is as follows. Age: 20 & under (5.4%); 21-30 (27.2%); 31-40 (32.2%); 41-50 (23.7%); 51-60 (8.4%) and 61 & Over (3.0%). Ethnicity: Caucasian (71.9%); Black (7.6%), Hispanic (17.4%), Native American (1.4%) and Other (1.7%). Education: Eighth grade or less (0.9%); Some H.S. (14.4%); H.S. graduate/G.E.D. (45.5%); Some college (23.5%) and College graduate (15.8%). Marital Status: Single (50.4%), Married (25.0%), Divorced (18.7%), Separated (4.3%) and Widowed (1.6%).

### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 87. Refer to previous studies for a discussion of this analysis.

**Table 87. DRI-II Scales Risk Range Accuracy (2000, N = 49,539)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.6 (1.6)	29.7 (0.3)	17.9 (2.1)	11.8 (0.8)
Alcohol	39.1 (0.1)	30.5 (0.5)	19.9 (0.1)	10.5 (0.5)
Driver Risk	40.3 (1.3)	30.6 (0.6)	18.9 (1.1)	10.2 (0.8)
Drugs	39.3 (0.3)	31.6 (1.6)	18.1 (1.9)	11.0 (0.0)
Stress Coping	38.7 (0.3)	30.3 (0.3)	20.0 (0.0)	11.0 (0.0)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

DRI-II obtained risk range percentages for all risk categories and all scales were within 2.1 percentage points of the predicted percentages. These results demonstrate that the DRI-II accuracy measures DUI offender risk. Obtained percentages were in close with the predicted percentages for all DRI-II scales. DUI offenders scale scores were within 2.1 of predicted percentages.

### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 88.

**Table 88. DRI-II reliability coefficient alphas (2000, N = 49,539)**

<b><u>DRI-II Scale</u></b>	<b><u>Coefficient Alpha</u></b>	<b><u>Significance Level</u></b>
Truthfulness Scale	.90	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.91	.001
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Substance Abuse/ Dependency Scale*	.92	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

All DRI-II scales have Alpha coefficients that are well above the professionally accepted standard of .75. High reliability statistics have been demonstrated on DRI-II tests results consistently year after year. These reliability statistics are very impressive for any test, especially for a DUI offender assessment instrument or test. These results show that the DRI-II is a highly reliable DUI risk assessment instrument.

### Validity of the DRI-II

Validity refers to the ability of a test to measure what it is supposed to measure. DRI-II scales represent areas of inquiry while DRI-II scale scores measure the severity of problems. Measures of severity must accurately differentiate between problem and non-problem clients. A comparison between groups selected on the basis of a known problem is a statistical validation method commonly referred to as discriminant validity. It is expected that offenders having problems would have higher scores than those offenders who do not have problems.

For the purpose of these analyses offenders with two or more DUI arrests (multiple offenders) were defined as offenders with problems. Those offenders with one DUI arrest (first offenders) were defined as non-problem offenders. It is expected that multiple offenders would have higher scale scores than first offenders. Discriminant validity of the DRI-II is shown by significant scale score differences between first and multiple offenders, in predicted directions.

The answer sheet item “Number of lifetime DUI arrests” was used to operationally define first offenders (1 DUI arrest) and multiple offenders (2 or more DUI arrests). There were 33,762 first offenders and 15,777 multiple offenders. The t-test comparisons between first offenders and multiple offenders for each DRI-II scale are presented in Table 89. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

Table 89 shows that the mean (average) scale scores of the first offenders were lower than the scores for multiple offenders on all DRI scales except the Truthfulness Scale. As expected, multiple offenders scored significantly higher on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales than did first offenders. With regards to the Truthfulness Scale, first offenders scored significantly higher than did multiple offenders. This result has been demonstrated many times over the years with different tests. The Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales results support the discriminant validity of the DRI.

**Table 89. T-test comparisons between first offenders and multiple offenders. (2000, N = 49,539)  
Offender status defined by number of lifetime DUI arrests.**

<b>DRI-II Scale</b>	<b>First Offenders Mean (N=33,762)</b>	<b>Multiple Offenders Mean (15,777)</b>	<b>T-value</b>	<b>Level of significance</b>
Truthfulness Scale	12.61	11.44	t = 19.34	p<.001
Alcohol Scale	6.77	15.00	t = 79.85	p<.001
Driver Risk Scale	7.50	11.23	t = 51.68	p<.001
Drugs Scale	3.28	4.84	t = 24.10	p<.001
Stress Coping Abilities	142.27	140.97	t = 2.78	p=.005

Note: Scores on the Stress Coping Abilities Scale are reversed in that higher scores are associated with better stress coping abilities.

#### Predictive validity

The criterion in this analysis for identifying offenders as problem drinkers or drug abusers is having been in treatment (alcohol or drug). Having been in treatment identifies DUI offenders as having had an alcohol or drug problem. In the DRI-II, treatment information is directly obtained from DUI offenders. Substance abuse treatment information is obtained from offender answers to DRI test items (#22, #41, #57, #75 & #133) regarding alcohol and drug treatment.

In these analyses Alcohol and Drugs Scale scores in the Low, Problem and Severe Problem risk ranges were used to represent no problem and problem groups, respectively. The DRI Alcohol Scale identified nearly all DUI offenders who have alcohol problems. There were 8,326 offenders who reported having been in alcohol treatment and these offenders are classified as problem drinkers. Of these 8,258 offenders, nearly all of the individuals or 99.2 percent, had Alcohol Scale scores at or above the 70th percentile. The Alcohol Scale correctly identified all of the offenders categorized as problem drinkers. These results strongly support the validity of the DRI-II Alcohol Scale.

The Drugs Scale is also very accurate in identifying offenders who have drug problems. There were 10,576 offenders who reported having been in drug treatment, of these, 10,099 offenders, or 95.5 percent, had Drugs Scale scores at or above the 70th percentile. These results support the validity and accuracy of the DRI-II Drugs Scale.

The results of this study (2000, N = 49,539) are similar to the results found in previous research studies reported above in this document. DRI-II test results consistently support the accuracy, reliability and validity of the DRI-II. The DRI-II achieves very accurate risk range percentages in comparison to predicted percentages. Reliability is well established by DRI-II scale reliability coefficients at or above .90. Validity analyses support discriminant validity of all DRI-II scales and predictive validity is demonstrated by correct identification of problem drinkers and drug abusers. The DRI-II is a reliable, valid and accurate DUI offender assessment test.

#### **42. DRI-II Test Statistics**

This study (2001) examined the DRI-II test statistics. The analyses used in the previous study were replicated. Data was obtained from a statewide DUI program that included 46,252 DUI offenders. DRI-II reliability, validity and accuracy were studied.

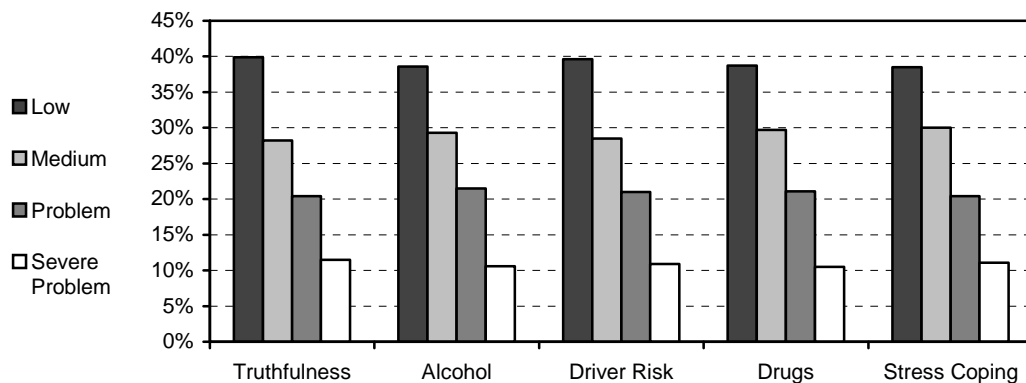
## Method and Results

The participants in this study (2001) consisted of 46,252 DUI offenders. There were 36,809 (79.6%) males and 9,443 (20.4%) females. Demographic composition of this sample is as follows. Age: 19 & under (3.7%); 20-29 (27.2%); 30-39 (30.3%); 40-49 (25.8%); 50-59 (9.7%) and 60 & Over (3.3%). Ethnicity: Caucasian (72.2%); Black (7.6%), Hispanic (17.4%), Native American (1.2%) and Other (1.5%). Education: Eighth grade or less (1.6%); Some H.S. (14.5%); H.S. graduate/G.E.D. (42.0%); Some college (22.4%) and College graduate (16.2%). Marital Status: Single (52.4%), Married (24.0%), Divorced (17.8%), Separated (4.3%) and Widowed (1.5%).

## Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 90. Refer to previous studies for a discussion of this analysis.

**Table 90. DRI-II Scales Risk Range Accuracy (2001, N = 46,252)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.9 (0.9)	28.2 (1.8)	20.4 (0.4)	11.5 (0.5)
Alcohol	38.6 (0.4)	29.3 (0.7)	21.5 (1.5)	10.6 (0.4)
Driver Risk	39.6 (0.6)	28.5 (1.5)	21.0 (1.0)	10.9 (0.1)
Drugs	38.7 (0.3)	29.7 (0.3)	21.1 (1.1)	10.5 (0.5)
Stress Coping	38.5 (0.5)	30.0 (0.0)	20.4 (0.4)	11.1 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

All DRI-II scales were within 1.8 percentage points of the predicted percentages. The differences between offender-obtained risk range percentages and predicted percentages are shown in parentheses in the table. These results demonstrate that the DRI-II accurately measures DUI offender risk. DUI offenders scale scores were 98 percent accurate.

## Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 91.

Alpha coefficients for all scales were .86 and above. These results demonstrate empirically that the DRI-II is a highly reliable DUI risk assessment test.

**Table 91. DRI-II reliability coefficient alphas (2001, N = 46,252)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.90	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.86	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.91	.001
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Substance Abuse/ Dependency Scale*	.92	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Validity of the DRI-II

Two database validity procedures were used in this study. Discriminant validity compared scale scores between first and multiple offenders. Predictive validity compared scale scores between offenders who had treatment versus no treatment. These methods are discussed in the previous study. There were 31,928 first offenders and 14,324 multiple offenders. The t-test comparisons between first offenders and multiple offenders for each DRI-II scale are presented in Table 92. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 92. T-test comparisons between first offenders and multiple offenders. (2001, N = 46,252)  
Offender status defined by number of lifetime DUI arrests.**

<b>DRI-II Scale</b>	<b>First Offenders Mean (N=31,928)</b>	<b>Multiple Offenders Mean (14,324)</b>	<b>T-value</b>	<b>Level of significance</b>
Truthfulness Scale	12.44	11.26	t = 21.29	p<.001
Alcohol Scale	9.03	17.62	t = 26.83	p<.001
Driver Risk Scale	7.60	11.06	t = 47.17	p<.001
Drugs Scale	3.59	14.82	t = 28.73	p<.001
Stress Coping Abilities	142.07	140.62	t = 2.94	p=.005

Note: Scores on the Stress Coping Abilities Scale are reversed in that higher scores are associated with better stress coping abilities.

Mean (average) scale scores of the first offenders were lower than the scores for multiple offenders on all DRI scales except the Truthfulness Scale. Multiple offenders scored significantly higher on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales than did first offenders. With regards to the Truthfulness Scale, first offenders scored significantly higher than did multiple offenders. This result has been demonstrated many times over the years with different tests. The Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales results support the discriminant validity of the DRI-II.

Predictive validity

The DRI-II Alcohol Scale identified all of the DUI offenders who had alcohol problems. All of the offenders who had been in alcohol treatment had Alcohol Scale scores at or above the 70th percentile. These results support the validity of the DRI-II Alcohol Scale.

The Drugs Scale accurately identified offenders who had drug problems. All of the offenders who reported having been in drug treatment had Drugs Scale scores at or above the 70th percentile. These

results support the validity of the DRI-II Drugs Scale. All of the offenders who admitted being an aggressive driver scored in the problem risk range on the Driver Risk Scale.

The results of this study (2001, N = 46,252) replicate the previous research studies reported above in this document. DRI-II test results consistently support the accuracy, reliability and validity of the DRI-II. The DRI-II is a reliable, valid and accurate DUI offender assessment test.

### 43. Replication Study of DRI-II Test Statistics

This study (2002) examined the DRI-II test statistics. The analyses used in the previous study were replicated. Data was obtained from a statewide DUI program that included 51,236 DUI offenders. DRI-II reliability, validity and accuracy were studied.

#### Method and Results

The participants in this study (2002) consisted of 51,236 DUI offenders. There were 40,403 (78.9%) males and 10,833 (21.1%) females. Demographic composition of this sample is as follows. Age: 19 & under (4.1%); 20-29 (29.0%); 30-39 (28.4%); 40-49 (25.1%); 50-59 (9.9%) and 60 & Over (3.5%). Ethnicity: Caucasian (71.6%); Black (7.5%), Hispanic (17.7%), Native American (1.2%) and Other (1.9%). Education: Eighth grade or less (2.1%); Some H.S. (16.3%); H.S. graduate/G.E.D. (43.8%); Some college (23.1%) and College graduate (14.7%). Marital Status: Single (53.4%), Married (23.2%), Divorced (17.8%), Separated (4.1%) and Widowed (1.5%).

#### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 93. Refer to previous studies for a discussion of this analysis.

**Table 93. DRI-II Scales Risk Range Accuracy (2002, N = 51,236)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.9 (0.9)	28.2 (1.8)	20.4 (0.4)	11.5 (0.5)
Alcohol	38.6 (0.4)	29.3 (0.7)	21.5 (1.5)	10.6 (0.4)
Driver Risk	39.6 (0.6)	28.5 (1.5)	21.0 (1.0)	10.9 (0.1)
Drugs	38.7 (0.3)	29.7 (0.3)	21.1 (1.1)	10.5 (0.5)
Stress Coping	38.5 (0.5)	30.0 (0.0)	20.4 (0.4)	11.1 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

All DRI-II scales were within 1.8 percentage points of the predicted percentages. These results empirically demonstrate that DRI-II scales accurately measure DUI offender risk. DUI offenders scale scores were over 98 percent accurate.

#### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 94.



**Table 94. DRI-II reliability coefficient alphas (2002, N = 51,236)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.90	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.92	.001
<hr/>		
Substance Abuse/ Dependency Scale*	.93	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .87 and above. These results demonstrate empirically that the DRI-II is a highly reliable DUI risk assessment test.

#### Validity of the DRI-II

Two database validity procedures were used in this study. Discriminant validity compared scale scores between first and multiple offenders. Predictive validity compared scale scores between offenders who had treatment versus no treatment. These methods are discussed in the previous study. There were 35,994 first offenders and 15,242 multiple offenders. The t-test comparisons between first offenders and multiple offenders for each DRI-II scale are presented in Table 95. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 95. T-test comparisons between first offenders and multiple offenders. (2002, N = 51,236)  
Offender status defined by number of lifetime DUI arrests.**

<b>DRI-II Scale</b>	<b>First Offenders Mean (N=35,994)</b>	<b>Multiple Offenders Mean (15,242)</b>	<b>T-value</b>	<b>Level of significance</b>
Truthfulness Scale	12.47	11.39	t = 18.16	p<.001
Alcohol Scale	9.38	17.76	t = 28.10	p<.001
Driver Risk Scale	8.10	11.60	t = 45.86	p<.001
Drugs Scale	3.83	15.21	t = 30.45	p<.001
Stress Coping Abilities	141.94	140.51	t = 3.00	p=.005

Note: Scores on the Stress Coping Abilities Scale are reversed in that higher scores are associated with better stress coping abilities.

Mean (average) scale scores of the first offenders were lower than the scores for multiple offenders on all DRI scales except the Truthfulness Scale. Multiple offenders scored significantly higher on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales than did first offenders. With regards to the Truthfulness Scale, first offenders scored significantly higher than did multiple offenders. This result has been demonstrated many times over the years with different tests. The Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales results support the discriminant validity of the DRI-II.

### Predictive validity

The DRI-II Alcohol Scale identified all of the DUI offenders who had alcohol problems. All of the offenders who had been in alcohol treatment had Alcohol Scale scores at or above the 70th percentile. These results support the validity of the DRI-II Alcohol Scale.

The Drugs Scale accurately identified offenders who had drug problems. All of the offenders who reported having been in drug treatment had Drugs Scale scores at or above the 70th percentile. These results support the validity of the DRI-II Drugs Scale. All of the offenders who admitted being an aggressive driver scored in the problem risk range on the Driver Risk Scale.

The results of this study (2002, N = 51,236) replicate the previous research studies reported above in this document. DRI-II test results consistently support the accuracy, reliability and validity of the DRI-II. The DRI-II is a reliable, valid and accurate DUI offender assessment test.

### **44. Study of DRI-II in a Midwest State DWI Program**

This study (2003) examined the DRI-II test statistics in a Midwest statewide DWI program. The analyses used in the previous study were replicated. Data was obtained from the agencies that administered the DRI-II. There were 21,400 DWI offenders included. DRI-II reliability, validity and accuracy were studied.

### Method and Results

The participants in this study (2003) consisted of 21,400 DWI or BAC offenders. There were 16,950 (79.2%) males and 4,450 (20.8%) females. Demographic composition of this sample is as follows. Age: 19 & under (7.7%); 20-29 (36.4%); 30-39 (25.2%); 40-49 (21.1%); 50-59 (7.4%) and 60 & Over (2.3%). Ethnicity: Caucasian (89.4%); Black (6.4%), Hispanic (2.7%), Native American (0.5%) and Other (1.1%). Education: Eighth grade or less (2.4%); Some H.S. (18.5%); H.S. graduate/G.E.D. (45.6%); Some college (22.6%) and College graduate (10.8%). Marital Status: Single (47.1%), Married (25.5%), Divorced (17.4%), Separated (8.1%) and Widowed (1.9%).

### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 96. Refer to previous studies for a discussion of this analysis.

**Table 96. DRI-II Scales Risk Range Accuracy (2003, N = 21,400)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.1 (0.1)	31.1 (1.1)	17.9 (2.1)	12.0 (1.0)
Alcohol	39.4 (0.4)	29.9 (0.1)	20.4 (0.4)	10.3 (0.7)
Driver Risk	41.1 (2.1)	29.3 (0.7)	18.9 (1.1)	10.7 (0.3)
Drugs	38.8 (0.2)	31.6 (1.6)	18.4 (1.6)	11.2 (0.2)
Stress Coping	38.5 (0.5)	30.6 (0.6)	20.0 (0.0)	10.9 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Offender-obtained risk range percentages were within 2.1 percentage points of the predicted percentages. Offenders scale scores were 98 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 97.

**Table 97. DRI-II reliability coefficient alphas (2003, N = 21,400)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.88	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.92	.001

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Substance Abuse/ Dependency Scale*	.92	.001
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\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .87 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DWI offender risk assessment test.

### Validity of the DRI-II

Discriminant validity compared scale scores between first (no or one DWI arrest), multiple offenders (2 or 3 DWI arrests) and chronic offenders (4 or more DWI arrests). Predictive validity compared scale scores between offenders who had treatment versus no treatment. There were 14,184 first offenders, 6,359 multiple offenders and 857 chronic offenders. The t-test comparisons for each DRI-II scale are presented in Table 98. All comparisons were statistically significant. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 98. T-test comparisons between first offenders and multiple offenders. (2003, N = 21,400)  
Offender status defined by number of lifetime DUI arrests.**

<b>DRI-II Scale</b>	<b>First Offenders Mean (N=14,184)</b>	<b>Multiple Offenders Mean (N=7,216)</b>	<b>Chronic Offenders Mean (N=857)</b>
Truthfulness Scale	8.86	8.20	7.71
Alcohol Scale	6.15	13.86	24.58
Driver Risk Scale	9.26	12.12	16.44
Drugs Scale	2.90	4.58	7.18
Stress Coping Abilities	139.68	133.78	122.34

Note: Scores on the Stress Coping Abilities Scale are reversed in that higher scores are associated with better stress coping abilities.

On all DRI scales except the Truthfulness Scale mean (average) scale scores for first offenders were lower than the scores for multiple offenders which were lower than scores for chronic offenders. Significantly higher scores for chronic and multiple offenders were obtained on the Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales. With regards to the Truthfulness Scale, first offenders scored significantly higher than did multiple offenders and chronic offenders. Chronic and multiple offenders are less likely than first offenders to deny or minimize their problems. This result has been

demonstrated many times over the years with different tests. The Alcohol, Driver Risk, Drugs and Stress Coping Abilities Scales results support the discriminant validity of the DRI-II.

Predictive validity

The DRI-II Alcohol Scale identified all of the DUI offenders who had alcohol problems. All of the offenders who had been in alcohol treatment had Alcohol Scale scores at or above the 70th percentile. The Drugs Scale accurately identified offenders who had drug problems. All of the offenders who reported having been in drug treatment had Drugs Scale scores at or above the 70th percentile. All of the offenders who admitted being an aggressive driver scored in the problem risk range on the Driver Risk Scale. These results support the validity of the DRI-II Alcohol, Drugs and Driver Risk Scales.

The results of this study (2003, N = 21,400) replicate the previous research studies reported above in this document. This study included statewide data from a Midwest state program whereas the previous study included statewide data from a Southeast state program. Yet, DRI-II test statistics are remarkably similar across these different populations. DRI-II accuracy is achieved by standardizing test scores on the population using the test. While offenders may differ in terms of composition, scale scores closely approximate predicted scores because the scores are standardized on each states’ offender population. DRI-II test results consistently support the accuracy, reliability and validity of the DRI-II. The DRI-II is a reliable, valid and accurate DUI/DWI offender assessment test.

**45. Study of DRI-II in a Midwest State DUI Program**

This study (2004) examined the DRI-II test statistics in a Midwest statewide DUI program. The analyses used in the previous studies were replicated. Data was obtained from the agencies that administered the DRI-II. There were 3,802 DUI offenders included. DRI-II reliability, validity and accuracy were studied.

Method and Results

The participants in this study (2004) consisted of 3,802 DUI or BAC offenders. There were 2,981 (78.4%) males and 821 (21.6%) females. Demographic composition of this sample is as follows. Age: 19 & under (6.9%); 20-29 (37.7%); 30-39 (23.9%); 40-49 (21.3%); 50-59 (8.0%) and 60 & Over (2.3%). Ethnicity: Caucasian (83.5%); African American (8.0%), Hispanic (6.1%), Native American (0.6%) and Other (1.8%). Education: Eighth grade or less (2.1%); Some H.S. (10.4%); H.S. graduate/G.E.D. (45.6%); Some college (26.0%) and College graduate (15.9%). Marital Status: Single (54.5%), Married (23.8%), Divorced (17.0%), Separated (3.7%) and Widowed (1.0%).

Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 96. Refer to previous studies for a discussion of this analysis.

**Table 99. DRI-II Scales Risk Range Accuracy (2004, N = 3,802)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	37.4 (1.6)	29.3 (0.7)	21.5 (1.5)	11.8 (0.8)
Alcohol	38.7 (0.3)	29.3 (0.7)	20.0 (0.0)	12.0 (1.0)
Driver Risk	36.3 (2.7)	28.0 (2.0)	19.8 (0.2)	15.9 (4.9)
Drugs	25.6 (13.4)	34.7 (4.7)	18.8 (1.2)	20.9 (9.9)
Stress Coping	39.3 (0.3)	29.7 (0.3)	19.8 (0.2)	11.2 (0.2)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Offender-obtained risk range percentages were within 13.4 percentage points of the predicted percentages. Offenders scale scores were 87 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 100.

**Table 100. DRI-II Reliability Coefficient Alphas (2004, N = 3,802)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.89	.001
Alcohol Scale	.94	.001
Driver Risk Scale	.88	.001
Drugs Scale	.92	.001
Stress Coping Abilities	.88	.001
Substance Abuse/ Dependency Scale*	.93	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .88 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test.

Validity of the DRI-II

Discriminant validity compared scale scores between first (no or one DUI arrest), multiple offenders (2 or 3 DUI arrests) and chronic offenders (4 or more DUI arrests). Predictive validity compared scale scores between offenders who had treatment versus no treatment. There were 3,568 first offenders, 210 multiple offenders and 9 chronic offenders. The analysis of variance (ANOVA) comparisons for each DRI-II scale are presented in Table 101. The Substance Abuse/Dependency Scale is not a measurement scale, consequently, it is not included in this analysis.

**Table 101. ANOVA Comparisons between First Offenders and Multiple Offenders. (2004, N = 3,787)  
Offender Status Defined by Number of Lifetime DUI Arrests.**

<b>DRI-II Scale</b>	<b>First Offenders Mean (N=3,568)</b>	<b>Multiple Offenders Mean (N=210)</b>	<b>Chronic Offenders Mean (N=9)</b>
Truthfulness Scale	10.00	9.16	11.89
Alcohol Scale	7.03	21.75	25.67
Driver Risk Scale	7.40	10.84	10.33
Drugs Scale	3.60	6.39	5.22
Stress Coping Abilities	140.71	121.83	135.67

Note: Scores on the Stress Coping Abilities Scale are reversed in that higher scores are associated with better stress coping abilities.

On the Truthfulness Scale, no statistically significant differences between groups were observed. Significantly higher scores for chronic and multiple offenders were obtained on the Alcohol Scale. On the Driver Risk, Drugs and Stress Coping Abilities Scales, statistically significant differences were

observed between first offenders and multiple offenders. These results are somewhat mixed compared to previous findings, with the chronic offender group exhibiting the most atypical pattern of scores. It should be noted, however, that there were only 9 chronic offenders. This small sample of chronic offenders may contribute to non-representative results for the Alcohol Scale, and to some degree the Driver Risk, Drugs and Stress Coping Abilities Scales, support the discriminant validity of the DRI-II.

The validity analysis also involved comparing offenders who have had treatment (either at present or in the past) with offenders who have never had treatment, on the basis of DRI-II percentile scale scores. Offenders who have had treatment are expected to score significantly higher on the DRI-II scales than those who have never had treatment. The same is expected for offenders who admit to being aggressive drivers.

The results of these analyses were as follows. Offenders who had been treated for drinking problems scored significantly higher on the Alcohol Scale than those who had never had treatment (average score of **87** for the treatment group compared to average score of **57** for the non-treatment group). Similarly, offenders who had been treated for drug problems scored significantly higher on the Drug Scale than those who had never had treatment (average score of **78** for the treatment group compared to average score of **28** for the non-treatment group). Offenders who admitted to being aggressive drivers scored significantly higher on the Driver Risk Scale than those who did not admit to being aggressive drivers (average score of **85** for admittedly aggressive drivers compared to average score of **48** for the comparison group).

#### **46. Study of DRI & DRI-Short Form in a Large Sample of DUI Offenders**

This study (2004) examined the DRI and DRI-Short Form test statistics in a large sample of DUI offenders. Data was obtained from providers that administered the DRI and DRI-Short Form. There were 50,027 DUI offenders included (44,053 completed the DRI and 5,974 completed the DRI-Short Form). DRI and DRI-Short Form reliability and validity were studied.

##### Method and Results

The participants in this study (2004) consisted of 50,027 DUI or BAC offenders. There were 39,654 (79%) males and 10,371 (21%) females. Demographic composition of this sample is as follows. Age: 16-20 (7.1%); 21-30 (29.3%); 31-40 (27.9%); 41-50 (23.6%); 51-60 (9.0%) and 61 & Over (2.9%). Ethnicity: Caucasian (71%); African American (8.0%), Hispanic (18%), and Other (3%). Education: Less than H.S. (25%); H.S. graduate/G.E.D. (42%); Some college (21.0%) and College graduate (12%). Marital Status: Single (52%), Married (24%), Divorced (18%), Separated (4%) and Widowed (2%).

##### Reliability of the DRI & DRI-Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI and DRI Short Form are presented in Table 102.

**Table 102. DRI & DRI-Short Form Reliability Coefficient Alphas (2004, N = 50,027)**

<u>DRI Scale</u>	<u>DRI</u>	<u>DRI-Short Form</u>
Truthfulness Scale	.89	.83
Alcohol Scale	.92	.84
Driver Risk Scale	.86	.80
Drugs Scale	.91	.76
Stress Coping Abilities	.92	-
Substance Abuse/Dependency Scale	.92	.77

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI were .86 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI is a highly reliable DUI offender risk assessment test. Although DRI-Short Form reliability coefficients are certainly acceptable (all scales on the DRI-Short Form were .76 and above, the DRI demonstrates stronger inter-item reliability. The DRI-Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

#### Validity of the DRI & DRI-Short Form

DRI validity results demonstrate that Alcohol Scale scores discriminate well between DUI offenders that have had treatment and DUI offenders that did not. All of the offenders who had alcohol treatment scored in the medium and problem risk ranges on the Alcohol Scale. Similarly, none of the offenders who had been admitted for treatment or admitted being aggressive drivers showed up in the low risk category of the Drug Scale and Driver Risk Scales. Almost all offenders that admitted problem behaviors ended up in the Problem Risk range of the DRI scales. Each scale demonstrated statistical significance at the .001 level [alcohol (chi-square=16,257;  $p < .001$ ) drugs (chi-square=21,056;  $p < .001$ ) driver risk (chi-square=823;  $p < .001$ )], demonstrating that the DRI scales identify problem behaviors.

DRI-Short Form validity results demonstrate the following. With the exception of 5 offenders who had previously been in treatment but ended up in the low-risk end of the Alcohol Scale, none of DUI offenders who admitted alcohol, drug or driver risk problems ended up in the low risk categories. The DRI-Short Form Drug Scale and the DRI-Short Form Driver Risk Scale were particularly good at identifying problem behavior. Yet, the Alcohol Scale on the DRI is even more accurate than the DRI-Short Form Alcohol Scale. Each scale demonstrated statistical significance at the .001 level [alcohol (chi-square=2061;  $p < .001$ ) drugs (chi-square=644;  $p < .001$ ) driver risk (chi-square=1263;  $p < .001$ )] demonstrating that the DRI-Short Form is very accurate.

#### **47. Study of DRI-II & DRI-II Short Form in a Sample of DUI Offenders**

This study (2004) examined the DRI-II and DRI-II Short Form test statistics in a sample of DUI offenders. Data was obtained from providers that administered the DRI – II. There were 6,841 DUI offenders included (825 completed the DRI-II and 6,016 completed the DRI-II Short Form). DRI-II and DRI-II Short Form reliability and validity were studied.

#### Method and Results

The participants in this study (2004) consisted of 6,841 DUI or BAC offenders. There were 5,585 (82%) males and 1,255 (18%) females. Demographic composition of this sample is as follows. Age: Under 21 (6.3%); 21-30 (26.9%); 31-40 (27.9%); 41-50 (25.5%); 51-60 (10.5%) and 61 & Over (2.8%). Ethnicity: Caucasian (74%); African American (24%); Latino, Native-American, Asian and Other (2%). Education: Eighth grade or less (3%); Some H.S. (23%); H.S. graduate/G.E.D. (44%). Marital Status: Single (45%), Married (26%), Divorced (19%), Separated (8%) and Widowed (2%).

#### Reliability of the DRI-II & DRI-II Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II and DRI-II Short Form are presented in Table 103.

**Table 103. DRI-II & DRI-II Short Form Reliability Coefficient Alphas (2004, N = 6,841)**

<u>DRI-II Scale</u>	<u>DRI-II</u>	<u>DRI-II Short Form</u>
Truthfulness Scale	.88	.76
Alcohol Scale	.90	.89
Driver Risk Scale	.85	.78
Drugs Scale	.92	.82
Stress Coping Abilities	.93	-
<hr/>		
Substance Abuse/Dependency Scale	.90	.81

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI-II were .85 and above. These results are consistent with those reported in prior studies for entirely different populations of offenders and empirically demonstrate that the DRI is a highly reliable DUI offender risk assessment test (compared to the widely accepted standard of .80). Although DRI-II Short Form reliability coefficients are certainly acceptable (all coefficient alphas, except those observed for the Truthfulness and Driver Risk Scales, were above .80 on the DRI-II Short Form), the DRI-II demonstrates stronger inter-item reliability. The DRI-II Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

#### Validity of the DRI-II & DRI-II Short Form

Correlation coefficients between DUI arrests, BAC and DRI-II Short Form scale scores are presented in Table 104. These results demonstrate that DUI arrests are significantly correlated with DRI-II scale scores. These findings support the validity of DRI-II scales.

**Table 104. Support for DRI-II Short Form Validity (2004, N = 6,016)**

	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Driver Risk</b>	<b>Drugs</b>
<b>DUI Arrests</b>	-.049*	.307*	.203*	.019
<b>BAC</b>	-.005	.108*	-.080*	-.058
<b>Alcohol Arrests</b>	-.044*	.252*	.126*	.077*
<b>Drug Arrests</b>	-.036	.058*	.093*	.267*
<b>Accidents</b>	-.078*	-.014	.281*	-.030
<b>Traffic Violations</b>	-.054*	-.025	.446*	.000

\* Significant at  $p < .001$ . For BAC correlations  $N = 2,833$

Correlations that are noteworthy are the following: (1) alcohol arrests and DUI arrests are correlated highest with Alcohol Scale scores; (2) drug arrests are correlated highest with Drugs Scale scores; and (3) accidents and traffic violations correlate highest with the Driver Risk Scale. These results support the convergent validity of the Alcohol, Drugs and Driver Risk scales.

#### **48. Study of DRI-II in a Midwest State DWI Program**

This study (2005) examined the DRI-II test statistics in a Midwest statewide DWI program. Data were obtained from the agencies that administered the DRI-II. Offenders were tested throughout the years



beginning January 2003 to May 2005. There were 8,651 DWI offenders included. DRI-II reliability, validity and accuracy were studied.

### Method and Results

The participants in this study (2005) consisted of 8,651 DWI or BAC offenders. There were 6,688 (77.3%) males and 1,963 (22.7%) females. Demographic composition of this sample is as follows. Age: 20 & under (9.3%); 20-30 (40.4%); 31-40 (23.3%); 41-50 (18.8%); 51-60 (6.4%) and 61 & Over (1.7%). Ethnicity: Caucasian (83.8%); African American (7.6%), Hispanic (5.5%), Asian (1.3%), Native American (0.5%) and Other (1.4%). Education: Eighth grade or less (56.3%); Some H.S. (23.0%); H.S. graduate/G.E.D. (4.8%); Some college (12.9%) and College graduate (2.9%). Marital Status: Single (1.9%), Married (9.6%), Divorced (46.3%), Separated (27.1%) and Widowed (15.1%).

### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 105. Refer to previous studies for a discussion of this analysis.

**Table 105. DRI-II Scales Risk Range Accuracy (2005, N = 8,651)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.6 (0.6)	29.0 (1.0)	19.9 (0.1)	11.5 (0.5)
Alcohol	41.9 (2.9)	29.5 (0.5)	20.7 (0.7)	10.5 (0.5)
Driver Risk	38.0 (1.0)	31.8 (1.8)	19.6 (0.4)	10.6 (0.4)
Drugs	37.8 (1.2)	31.9 (1.9)	18.8 (1.2)	11.5 (0.5)
Stress Coping	39.8 (0.8)	30.1 (0.1)	19.3 (0.7)	10.7 (0.3)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Offender-obtained risk range percentages were within 2.9 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 106.

**Table 106. DRI-II reliability coefficient alphas (2005, N = 8,651)**

<u>DRI-II Scale</u>	<u>Coefficient Alpha</u>	<u>Significance Level</u>
Truthfulness Scale	.88	.001
Alcohol Scale	.93	.001
Driver Risk Scale	.88	.001
Drugs Scale	.92	.001
Stress Coping Abilities	.93	.001
Substance Abuse/ Dependency Scale*	.93	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .88 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DWI offender risk assessment test.

### Validity of the DRI-II

Generally, a test validation procedure consists of a correlation between the test and a criterion. The criterion is often another test that measures the same thing. This type of validation has been conducted in several studies on DRI-II scales. These studies are presented earlier in this document. These studies are not practical in everyday settings, that is why unique database validity analyses were developed and these are presented in annual summary reports.

The validity analysis involved comparing offenders who have had treatment (either at present or in the past) with offenders who have never had treatment, on the basis of DRI-II percentile scale scores. Offenders who have had treatment are expected to score significantly higher on the DRI-II scales than those who have never had treatment. The same is expected for offenders who admit to being aggressive drivers.

The results of these analyses were as follows. Offenders who had been treated for drinking problems scored significantly higher on the Alcohol Scale than those who had never had treatment,  $t(3717.23) = 53.69, p < .001$  (average score of **81.67%** for the treatment group compared to average score of **59.45%** for the non-treatment group). Similarly, offenders who had been treated for drug problems scored significantly higher on the Drug Scale than those who had never had treatment,  $t(1764.33) = 90.19, p < .001$  (average score of **86.12** for the treatment group compared to average score of **27.91** for the non-treatment group). Offenders who admitted to being aggressive drivers scored significantly higher on the Driver Risk Scale than those who did not admit to being aggressive drivers,  $t(1646.05) = 49.16, p < .001$  (average score of **79.24** for admittedly aggressive drivers compared to average score of **44.36** for the comparison group).

The results of this study (2005, N = 8,651) replicate the previous research studies reported above in this document. This study included statewide data from a Midwest state program. DRI-II test statistics are remarkably similar across different populations. DRI-II accuracy is achieved by standardizing test scores on the population using the test. While offenders may differ in terms of composition, scale scores closely approximate predicted scores because the scores are standardized on each states' offender population. DRI-II test results consistently support the accuracy, reliability and validity of the DRI-II. The DRI-II is a reliable, valid and accurate DUI/DWI offender assessment test.

### **49. Study of DRI & DRI Short Form in a Sample of DUI Offenders**

This study (2005) examined the DRI and DRI Short Form test statistics in a sample of DUI offenders. Data was obtained from providers that administered the DRI. There were 64,670 DUI offenders included (50,899 completed the DRI and 13,771 completed the DRI Short Form). DRI and DRI Short Form reliability and validity were studied.

#### Method and Results

The participants in this study (2005) consisted of 64,670 DUI or BAC offenders. There were 51,712 (80%) males and 12,929 (20%) females. Demographic composition of this sample is as follows. Age: Under 21 (6.3%); 21-30 (27.7%); 31-40 (24.8%); 41-50 (23.4%); 51-60 (10.3%) and 61 & Over (3.8%). Ethnicity: Caucasian (67.1%); African American (7.6%); Latino (22.2%), Native-American (0.7%),

Asian and Other (2.2%). Education: Eighth grade or less (10.7%); Some H.S. (19.5%); H.S. graduate/G.E.D. (34.4%); Partial college (18.1%); College Graduate (11.4%). Marital Status: Single (51.8%), Married (24.0%), Divorced (16.8%), Separated (4.4%) and Widowed (1.8%).

Accuracy of the DRI

The accuracy of the five DRI measurement scales is presented in Table 107. Refer to previous studies for a discussion of this analysis.

**Table 107. DRI Scales Risk Range Accuracy (2005, N = 64,670)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	38.8 (0.2)	29.0 (1.0)	21.0 (1.0)	11.1 (0.1)
Alcohol	40.2 (0.8)	33.0 (3.0)	19.2 (0.8)	10.7 (0.3)
Driver Risk	40.9 (1.9)	28.4 (1.6)	20.6 (0.6)	10.1 (1.1)
Drugs	40.3 (1.3)	28.6 (0.4)	19.9 (0.1)	11.2 (0.2)
Stress Coping	39.0 (0.0)	30.0 (0.0)	20.1 (0.1)	10.9 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 3.0 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI scales accurately measure DWI offender risk.

Reliability of the DRI & DRI Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI and DRI Short Form are presented in Table 108.

**Table 108. DRI & DRI Short Form Reliability Coefficient Alphas (2005, N = 64,650)**

<u>DRI Scale</u>	<u>DRI</u>	<u>DRI Short Form</u>
Truthfulness Scale	.89	.83
Alcohol Scale	.92	.84
Driver Risk Scale	.87	.80
Drugs Scale	.91	.76
Stress Coping Abilities	.92	-
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Substance Abuse/Dependency Scale	.92	.77

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI were .87 and above. These results are consistent with those reported in prior studies for entirely different populations of offenders and empirically demonstrate that the DRI is a highly reliable DUI offender risk assessment test (compared to the widely accepted standard of .80). Although DRI Short Form reliability coefficients are certainly acceptable (all coefficient alphas, except those observed for the Drugs and Substance Abuse/Dependency Scales, were above .80 on the DRI Short Form), the DRI demonstrates stronger inter-item reliability. The DRI Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

## Validity of the DRI

Validity analyses demonstrate that DRI Alcohol, Drugs and Driver Risk Scales identified almost all (98%) self-admission offenders who are problem drinkers, drug abusers and dangerous drivers.

Offenders with low risk scale scores (0 to 39<sup>th</sup> percentile) do not represent serious drinking problems. Small percentages of offenders with medium risk (40 to 69<sup>th</sup> percentile) scores on the Alcohol Scale had self-admitted drinking problems. A vast majority of offenders who have identifiable drinking problems scored in the problem risk range (70<sup>th</sup> percentile and above). The DRI is a reliable and valid test for Florida DUI offender assessment.

## **50. Study of DRI-II & DRI-II Short Form in a Large Sample of DUI Offenders**

This study (2005) examined the DRI-II and DRI-II Short Form test statistics in a large sample of DUI offenders. Data was obtained from providers that administered the DRI-II and DRI-II Short Form. There were 32,533 DUI offenders included (30,838 completed the DRI-II and 1,695 completed the DRI-II Short Form). DRI-II and DRI-II Short Form accuracy, reliability and validity were studied.

### Method and Results

The participants in this study (2005) consisted of 32,533 DUI or BAC offenders. There were 25,570 (78.6%) males and 6,963 (21.4%) females. Demographic composition of the offenders who completed the DRI-II is as follows. Age: 20 & Under (11.7%); 21-30 (37.9%); 31-40 (22.5%); 41-50 (19.4%); 51-60 (6.8%) and 61 & Over (1.9%). Ethnicity: Caucasian (90%); African American (5.7%), Hispanic (2.6%), Asian (0.4%), Native American (0.4%), and Other (0.9%). Education: Eighth grade or less (2.0%); Some High School (16.2%); H.S. graduate/G.E.D. (45.2%); Some college (24.4%) and College graduate (12.2%). Marital Status: Single (54.3%), Married (21.8%), Divorced (18.5%), Separated (4.3%) and Widowed (1.2%).

Demographic composition of the offenders who completed the DRI-II Short Form is as follows. Age: 20 & Under (8.9%); 21-30 (30.7%); 31-40 (23.2%); 41-50 (22.3%); 51-60 (8.8%) and 61 & Over (6.0%). Ethnicity: Caucasian (70.0%); African American (6.4%), Hispanic (19.9%), Asian (2.1%), Native American (0.1%), and Other (1.4%). Education: Eighth grade or less (19.3%); Some High School (31.6%); H.S. graduate/G.E.D. (32.3%); Some college (11.8%) and College graduate (5.0%). Marital Status: Single (44.6%), Married (29.7%), Divorced (18.3%), Separated (4.8%) and Widowed (2.6%).

### Accuracy of the DRI-II & DRI-II Short Form

**Table 109. DRI-II Scales Risk Range Accuracy (2005, N = 30,870)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.3 <b>(0.3)</b>	30.6 <b>(0.6)</b>	19.8 <b>(0.2)</b>	10.4 <b>(0.6)</b>
Alcohol	39.4 <b>(0.4)</b>	30.1 <b>(0.1)</b>	19.5 <b>(0.5)</b>	11.0 <b>(0.0)</b>
Driver Risk	39.0 <b>(0.0)</b>	30.4 <b>(0.4)</b>	19.3 <b>(0.7)</b>	11.3 <b>(0.3)</b>
Drugs	41.4 <b>(2.4)</b>	28.8 <b>(0.2)</b>	18.0 <b>(2.0)</b>	11.8 <b>(0.8)</b>
Stress Coping	38.3 <b>(0.7)</b>	31.6 <b>(1.6)</b>	18.4 <b>(1.6)</b>	11.7 <b>(0.7)</b>

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.4 percentage points of the predicted percentages. Offenders scale scores were 98 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

**Table 110. DRI-II Short Form Scales Risk Range Accuracy (2005, N = 1,697)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	41.3 (2.3)	27.5 (2.5)	22.4 (2.4)	8.8 (2.2)
Alcohol	38.5 (0.5)	27.9 (2.1)	22.1 (2.1)	11.4 (0.4)
Driver Risk	42.3 (3.3)	29.6 (0.4)	18.0 (2.0)	10.1 (0.9)
Drugs	41.1 (2.1)	28.6 (1.4)	18.9 (1.1)	11.5 (0.5)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 3.3 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II Short Form scales accurately measure DWI offender risk.

Reliability of the DRI-II & DRI-II Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II and DRI-II Short Form are presented in Table 111.

**Table 111. DRI-II & DRI-II Short Form Reliability Coefficient Alphas (2005, DRI-II N = 30,870, DRI-II Short Form N=1,697)**

<u>DRI-II Scale</u>	<u>DRI-II</u>	<u>DRI-II Short Form</u>
Truthfulness Scale	.88	.86
Alcohol Scale	.92	.88
Driver Risk Scale	.87	.87
Drugs Scale	.92	.86
Stress Coping Abilities	.92	-
Substance Abuse/Dependency Scale	.92	-

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI-II were .87 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test. Although DRI-II Short Form reliability coefficients are certainly acceptable (all scales on the DRI-II Short Form were .86 and above, the DRI-II demonstrates stronger inter-item reliability. The DRI-II Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI-II measurement scales by a line.

## Validity of the DRI-II & DRI-II Short Form

DRI-II validity results demonstrate that the Alcohol Scale accurately identified 97.3 percent of the offenders who had been treated for drinking problems. All of the offenders who had alcohol treatment scored in the problem to severe problem range (the High Risk group) on the Alcohol Scale. Similarly, 99.1 percent of the offenders who had been treated for drug problems were High Risk offenders on the Drugs Scale. 97 percent of offenders who admitted being aggressive drivers were Driver Risk Scale High Risk offenders. Offenders who have identifiable problems (treatment or admissions) score in the problem (70<sup>th</sup> percentile and above) range on DRI-II scales. These results demonstrate that the DRI-II is valid.

DRI-Short Form validity results demonstrate the following. The Alcohol Scale scores correctly identified 95 percent of the offenders who had been treated for drinking problems. The Drugs Scale identified 89% of the offenders who had been treated for drug problems. These results empirically demonstrate that the DRI-II Short Form is a valid offender test.

### **51. Study of DRI-II in a State DUI Program**

This study (2006) examined the DRI-II test statistics in a statewide DUI program. Data were obtained from the agencies that administered the DRI-II. There were 4,914 DUI offenders included. DRI-II reliability, validity and accuracy were studied. The participants in this study (2006) consisted of 4,914 DUI or BAC offenders.

#### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 112. Refer to previous studies for a discussion of this analysis.

**Table 112. DRI-II Scales Risk Range Accuracy (2006, N = 4,914)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.4 (1.4)	29.2 (0.8)	18.5 (1.5)	11.9 (0.9)
Alcohol	38.0 (1.0)	30.1 (0.1)	20.5 (0.5)	11.6 (0.6)
Driver Risk	39.7 (0.7)	29.6 (0.4)	19.6 (0.4)	11.1 (0.1)
Drugs	37.5 (1.5)	29.1 (0.9)	22.3 (2.3)	11.1 (0.1)
Stress Coping	38.6 (0.4)	30.3 (0.3)	20.1 (0.1)	11.0 (0.0)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.3 percentage points of the predicted percentages. Offenders scale scores were 98 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

#### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 113.

**Table 113. DRI-II Reliability Coefficient Alphas (2006, N = 4,914)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.89	.001
Alcohol Scale	.94	.001
Driver Risk Scale	.88	.001
Drugs Scale	.92	.001
Stress Coping Abilities	.93	.001
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Substance Abuse/ Dependency Scale*	.94	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria. Alpha coefficients for all scales were .88 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test.

#### Validity of the DRI-II

DRI-II validity results demonstrated that the Alcohol Scale accurately identified **98 percent** of the offenders who had been in treatment for a drinking problem. All (**100%**) of the offenders who admitted being seriously aggressive drivers scored in the “problem range” (70<sup>th</sup> percentile and above) on the Driver Risk Scale. The Drugs Scale correctly identified **100 percent** of the offenders who had been in treatment for drug problems. DRI scales measure what they are designed to measure and have a very high degree of predictive validity.

## **52. Study of DRI-II in a Midwest State DUI Program**

This study (2006) examined the DRI-II test statistics in a Midwest statewide DUI program. The analyses used in the previous studies were replicated. Data was obtained from the agencies that administered the DRI-II. There were 4,565 DUI offenders included. DRI-II reliability, validity and accuracy were studied.

#### Method and Results

The participants in this study (2006) consisted of 4,565 DUI or BAC offenders. There were 3,556 (79.8%) males and 959 (21.2%) females. Demographic composition of this sample is as follows. Age: 20 & under (11.6%); 21-30 (37.3%); 31-40 (21.7%); 41-50 (19.3%); 51-60 (7.8%) and 61 & Over (2.4%). Ethnicity: Caucasian (75.7%); African American (6.9%), Hispanic (6.8%), Native American (9.1%), Asian (0.7%), and Other (0.7%). Education: Eighth grade or less (3.2%); Some H.S. (18.2%); H.S. graduate/G.E.D. (43.6%); Some college (25.8%) and College graduate (9.2%). Marital Status: Single (49.0%), Married (25.7%), Divorced (19.9%), Separated (3.6%) and Widowed (1.7%).

#### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 114. Refer to previous studies for a discussion of this analysis.

**Table 114. DRI-II Scales Risk Range Accuracy (2006, N = 4,515)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.8 (0.8)	31.6 (1.6)	18.8 (1.2)	9.8 (1.2)
Alcohol	39.4 (0.4)	30.4 (0.4)	19.9 (0.1)	10.3 (0.7)
Driver Risk	37.8 (1.2)	31.7 (1.7)	19.8 (0.2)	10.7 (0.3)
Drugs	39.2 (0.2)	27.9 (2.1)	21.6 (1.6)	11.3 (0.3)
Stress Coping	39.5 (0.5)	30.1 (0.1)	19.6 (0.4)	11.0 (0.0)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Offender-obtained risk range percentages were within 2.1 percentage points of the predicted percentages. Offenders scale scores were 98 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

#### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 115.

**Table 115. DRI-II Reliability Coefficient Alphas (2006, N = 4,515)**

<u>DRI-II Scale</u>	<u>Coefficient Alpha</u>	<u>Significance Level</u>
Truthfulness Scale	.87	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.91	.001
Substance Abuse/ Dependency Scale*	.92	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .87 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test.

#### Validity of the DRI-II

Validity can be understood as the ability of a scale or test to measure the specific behaviors that it was intended to measure. Thus, offender scores on the Driver Risk Inventory's Alcohol Scale, for example, should be highly correlated to measures that indicate the severity of an offender's alcohol problems.

Correlation coefficients between DUI arrests, BAC and DRI-II scale scores are presented in the table below. (N=4,515). These results demonstrate that **DUI arrests are significantly correlated with the DRI-II Alcohol Scale**. These findings support the validity of the DRI-II Alcohol Scale. These results demonstrate that the more DUI arrests offenders have, the higher their Alcohol Scale score is. However, some first offenders do score high on the Alcohol Scale and these offenders would be missed if only court records were used to determine offender risk.



**Table 116. Correlation Coefficients for Driver Risk Inventory Scales  
(n=4,515)**

	<b>Truthfulness</b>	<b>Alcohol</b>	<b>Driver Risk</b>	<b>Drugs</b>	<b>Stress</b>
<b>DUI Arrests</b>	-.025	.371*	.137*	.070*	-.052*
<b>BAC</b>	-.041	-.089*	.041	-.109*	.035
<b>Alcohol Arrests</b>	-.035	.310*	.131*	.154*	-.107*
<b>Drug Arrests</b>	-.029	.050*	.075*	.430*	-.044*
<b>Accidents</b>	-.076*	.021	.238*	.064*	-.068*
<b>Traffic Violations</b>	-.061*	-.024	.329*	.094*	-.047*

\* Significant at  $p < .001$ . For BAC correlations  $N=4,515$ .

Correlations that are noteworthy are the following: **Alcohol arrests** and **DUI arrests** are highly correlated with Alcohol Scale scores. **Drug arrests** are highly correlated with Drugs Scale scores. Accidents and traffic violations correlate most highly with the **Driver Risk Scale**. These results support the **concurrent validity** of the Alcohol, Drugs and Driver Risk scales.

A second measure of a test's validity is its ability to distinguish between offenders who have been predetermined to have a problem in a given area within the general population of offenders. This is called **discriminant validity**.

DRI-II validity results demonstrate that Alcohol Scale scores accurately identified **99.3 percent** of the offenders who had been treated for drinking problems. In other words, nearly all offenders who had undergone alcohol treatment scored in the "problem range" on the Alcohol Scale. Similarly, Drugs Scale scores identified **100 percent** of offenders who had been "treated for drug problems." Driver Risk Scale scores accurately identified **100 percent** of offenders who admitted being aggressive drivers.

### **53. Study of DRI-II & DRI-II Short Form in a Sample of DUI Offenders**

This study (2006) examined the DRI-II and DRI-II Short Form test statistics in a sample of DUI offenders. Data was obtained from providers that administered the DRI-II and DRI-II Short Form. There were 6,664 DUI offenders included (854 completed the DRI-II and 5,810 completed the DRI-II Short Form). DRI-II and DRI-II Short Form accuracy, reliability and validity were studied.

#### Method and Results

The participants in this study (2006) consisted of 32,533 DUI or BAC offenders. DRI-II long and short forms are combined. There were 5,438 (81.6%) males and 1,226 (18.4%) females. Demographic composition of the offenders who completed the DRI-II is as follows. Age: 20 & Under (5.2%); 21-30 (29.4%); 31-40 (25.0%); 41-50 (26.7%); 51-60 (11.2%) and 61 & Over (2.6%). Ethnicity: Caucasian (74.1%); African American (23.4%), Hispanic (1.1%), Asian (0.3%), Native American (0.4%), and Other (0.7%). Education: Eighth grade or less (2.7%); Some High School (20.9%); H.S. graduate/G.E.D. (44.0%); Some college (19.7%) and College graduate (12.7%). Marital Status: Single (48.5%), Married (25.1%), Divorced (17.6%), Separated (6.9%) and Widowed (1.8%).

Accuracy of the DRI-II & DRI-II Short Form

**Table 117. DRI-II Scales Risk Range Accuracy (2006, N = 854)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	38.2 <b>(0.8)</b>	30.4 <b>(0.4)</b>	19.9 <b>(0.1)</b>	11.5 <b>(0.5)</b>
Alcohol	39.1 <b>(0.1)</b>	30.1 <b>(0.1)</b>	19.9 <b>(0.1)</b>	10.9 <b>(0.1)</b>
Driver Risk	36.5 <b>(2.5)</b>	32.2 <b>(2.2)</b>	20.1 <b>(0.1)</b>	11.2 <b>(0.2)</b>
Drugs	41.6 <b>(2.6)</b>	30.7 <b>(0.7)</b>	17.4 <b>(2.6)</b>	10.3 <b>(0.7)</b>
Stress Coping	39.4 <b>(0.4)</b>	30.0 <b>(0.0)</b>	19.7 <b>(0.3)</b>	10.9 <b>(0.1)</b>

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.6 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

**Table 118. DRI-II Short Form Scales Risk Range Accuracy (2006, N = 5,810)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	42.5 <b>(3.5)</b>	27.6 <b>(2.4)</b>	21.3 <b>(1.3)</b>	8.6 <b>(2.4)</b>
Alcohol	41.2 <b>(2.2)</b>	29.2 <b>(0.8)</b>	19.2 <b>(0.8)</b>	10.4 <b>(0.6)</b>
Driver Risk	36.7 <b>(2.3)</b>	32.9 <b>(2.9)</b>	19.3 <b>(0.7)</b>	11.1 <b>(0.1)</b>
Drugs	38.7 <b>(0.3)</b>	31.7 <b>(1.7)</b>	19.2 <b>(0.8)</b>	10.4 <b>(0.6)</b>

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.9 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II Short Form scales accurately measure DWI offender risk.

Reliability of the DRI-II & DRI-II Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II and DRI-II Short Form are presented in Table 119.

**Table 119. DRI-II & DRI-II Short Form Reliability Coefficient Alphas  
(2006, DRI-II N = 854, DRI-II Short Form N=5,810)**

<u>DRI-II Scale</u>	<u>DRI-II</u>	<u>DRI-II Short Form</u>
Truthfulness Scale	.88	.78
Alcohol Scale	.90	.89
Driver Risk Scale	.86	.80
Drugs Scale	.91	.82
Stress Coping Abilities	.92	-
Substance Abuse/Dependency Scale	.92	.82

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI-II were .86 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test. Although DRI-II Short Form reliability coefficients are certainly acceptable (all scales on the DRI-II Short Form were .78 and above, the DRI-II demonstrates stronger inter-item reliability. The DRI-II Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

#### Validity of the DRI-II & DRI-II Short Form

DRI-II validity results demonstrate that Alcohol Scale scores accurately identified 95.6 percent of the offenders who had been treated for drinking problems. In other words, nearly all of the offenders who had alcohol treatment scored in the problem range on the Alcohol Scale. Similarly, Drugs Scale scores identified 92.7 percent of offenders who had been treated for drug problems and Driver Risk Scale scores accurately identified 91.4 percent of offenders who admitted being aggressive drivers.

DRI-II Short Form alcohol scale accurately identified 99.4 percent of the offenders who had been treated for drinking problems, 96.8 percent of those who had been treated for drug problems and 94.9 percent of the offenders who admitted being high risk drivers.

#### **54. Study of DRI-II in a State DUI Program**

This study (2006) examined the DRI-II test statistics in a statewide DUI program. The analyses used in the previous studies were replicated. Data was obtained from the agencies that administered the DRI-II. There were 1,896 DUI offenders included. DRI-II reliability, validity and accuracy were studied.

#### Method and Results

The participants in this study (2006) consisted of 1,896 DUI or BAC offenders. There were 1,469 (77.5%) males and 414 (22.5%) females. Demographic composition of this sample is as follows. Age: 20 & under (12.1%); 21-30 (39.7%); 31-40 (21.0%); 41-50 (17.5%); 51-60 (7.7%) and 61 & Over (2.1%). Ethnicity: Caucasian (85.1%); African American (8.8%), Hispanic (4.5%), Native American (0.5%), Asian (0.6%), and Other (0.5%). Education: Eighth grade or less (3.8%); Some H.S. (14.5%); H.S. graduate/G.E.D. (40.8%); Some college (31.3%) and College graduate (9.7%). Marital Status: Single (56.1%), Married (20.6%), Divorced (7.4%), Separated (1.5%) and Widowed (14.4%).

#### Accuracy of the DRI-II

The accuracy of the five DRI-II measurement scales is presented in Table 120. Refer to previous studies for a discussion of this analysis.

**Table 120. DRI-II Scales Risk Range Accuracy (2006, N = 1,896)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.4 (0.4)	29.4 (0.6)	18.9 (1.1)	12.3 (1.3)
Alcohol	33.3 (5.7)	33.8 (3.8)	21.2 (1.2)	11.7 (0.7)
Driver Risk	39.4 (0.4)	19.8 (0.2)	18.6 (1.4)	12.2 (1.2)
Drugs	39.9 (0.9)	28.0 (2.0)	20.9 (0.9)	11.2 (0.2)
Stress Coping	38.6 (0.4)	29.8 (0.2)	20.5 (0.5)	11.1 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Offender-obtained risk range percentages were within 2.0 percentage points of the predicted percentages. Offenders scale scores were 98 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 121.

**Table 121. DRI-II Reliability Coefficient Alphas (2006, N = 1,896)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.88	.001
Alcohol Scale	.92	.001
Driver Risk Scale	.87	.001
Drugs Scale	.91	.001
Stress Coping Abilities	.92	.001
Substance Abuse/ Dependency Scale*	.92	.001

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales were .87 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test.

Validity of the DRI-II

The current validity analysis involved comparing offenders who have had treatment (either at present or in the past) with offenders who have never had treatment, on the basis of DRI-II percentile scale scores. Offenders who have had treatment are expected to score significantly higher on the DRI-II scales than those who have never had treatment. The same is expected for offenders who admit to being aggressive drivers.

DRI-II validity results demonstrate that Alcohol Scale scores accurately identified **100 percent** of the offenders who had been treated for drinking problems. In other words, all of the 370 offenders who had alcohol treatment scored in the problem range on the Alcohol Scale. Similarly, Drugs Scale scores identified **100 percent** of the 371 offenders who had been treated for drug problems and Driver Risk Scale scores accurately identified **100 percent** of 27 offenders who admitted being aggressive drivers. These results substantiate the high level of validity of the DRI-II scales.

**55. Study of DRI-II & DRI-II Short Form in a Sample of DUI Offenders**

This study (2006) examined the DRI-II and DRI-II Short Form test statistics in a sample of DUI offenders. Data were obtained from providers that administered the DRI-II and DRI-II Short Form. There were 6,552 DUI offenders included (6,047 completed the DRI-II and 505 completed the DRI-II Short Form). DRI-II and DRI-II Short Form accuracy, reliability and validity were studied.

Method and Results

The participants in this study (2006) consisted of 6,552 DUI or BAC offenders. DRI-II and DRI-II Short Form demographics are combined. There were 5,077 (77.5%) males and 1,475 (22.5%) females. Age: 20 & Under (12.1%); 21-30 (38.1%); 31-40 (21.6%); 41-50 (19.0%); 51-60 (6.9%) and 61 & Over

(2.3%). Ethnicity: Caucasian (85.8%); African American (6.7%), Hispanic (5.0%), Asian (0.7%), Native American (0.6%), and Other (1.2%). Education: Eighth grade or less (3.2%); Some High School (16.2%); H.S. graduate/G.E.D. (43.6%); Some college (24.6%) and College graduate (12.5%). Marital Status: Single (56.0%), Married (20.9%), Divorced (17.5%), Separated (4.2%) and Widowed (1.3%).

Accuracy of the DRI-II & DRI-II Short Form

**Table 122. DRI-II/DRI-II Short Form Scales Risk Range Accuracy  
(2006, N = 6,552)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.8 (1.8)	30.3 (0.3)	19.9 (0.1)	9.0 (2.0)
Alcohol	41.1 (2.1)	27.7 (2.3)	20.2 (0.2)	11.0 (0.0)
Driver Risk	37.1 (1.9)	28.5 (1.5)	22.5 (2.5)	11.9 (0.9)
Drugs	40.1 (1.1)	30.9 (0.9)	19.7 (0.3)	9.3 (1.7)
Stress Coping	38.6 (0.4)	30.4 (0.4)	20.0 (0.0)	11.0 (0.0)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.5 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

Reliability of the DRI-II/DRI-II Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II and DRI-II Short Form are presented in Table 123.

**Table 123. DRI-II & DRI-II Short Form Reliability Coefficient Alphas  
(2006, N=6,552)**

<u>DRI-II Scale</u>	<u>DRI-II</u>
Truthfulness Scale	.88
Alcohol Scale	.91
Driver Risk Scale	.87
Drugs Scale	.90
Stress Coping Abilities	.91
Substance Abuse/Dependency Scale	.90

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI-II were .87 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

## Validity of the DRI-II & DRI-II Short Form

Predictive validity, is used to analyze unique databases like the DRI-II database. The validity analysis involves comparing the Low Risk (zero to 39<sup>th</sup> percentile range) and High Risk (70<sup>th</sup> to 100<sup>th</sup> percentile range) groups, on the basis of treatment versus no treatment (alcohol or drugs). Driver risk problems use direct admissions. Among offenders who have had treatment, a high percentage is expected to score in the High Risk range. The Low Risk group could have offenders who had treatment but the percentage overall should be significantly lower than the percentage who are classified in the High Risk group.

The results of the predictive validity analysis on the 6,552 DWI/BAC offenders in this study were as follows. The Alcohol Scale accurately identified **100 percent** of the offenders who had been treated for drinking problems. All of the offenders who had alcohol treatment scored in the problem to severe problem range (the High Risk group) on the Alcohol Scale. None of the offenders in the Low Risk group had treatment. Similarly, **100 percent** of the offenders who had been treated for drug problems were High Risk offenders on the Drugs Scale. Finally, **100 percent** of offenders who admitted being aggressive drivers were Driver Risk Scale High Risk offenders. **These results strongly support the predictive validity of the DRI-II for DWI/BAC offenders.**

## **56. Study of DRI & DRI Short Form in a Sample of DUI Offenders**

This study (2006) examined the DRI and DRI Short Form test statistics in a sample of DUI offenders. Data were obtained from providers that administered the DRI. There were 51,771 DUI offenders included (48,509 completed the DRI and 3,262 completed the DRI Short Form). DRI and DRI Short Form reliability and validity were studied.

### Method and Results

DRI and DRI-Short Form data are combined. The participants in this study (2006) consisted of 51,771 DUI or BAC offenders. There were 40,524 (78.3%) males and 11,244 (21.7%) females. Demographic composition of this sample is as follows. Age: Under 20 (4.3%); 20-29 (34.1%); 30-39 (23.7%); 40-49 (23.6%); 50-59 (10.6%) and 60 & Over (3.6%). Ethnicity: Caucasian (69.1%); African American (8.5%); Hispanic (19.5%), Native-American (0.7%), Asian (0.8%), and Other (1.3%). Education: Eighth grade or less (5.7%); Some H.S. (14.0%); H.S. graduate/G.E.D. (40.5%); Partial college (22.7%); College Graduate (15.5%). Marital Status: Single (57.3%), Married (21.8%), Divorced (15.7%), Separated (3.8%) and Widowed (1.4%).

### Accuracy of the DRI

The accuracy of the five DRI measurement scales is presented in Table 124. Refer to previous studies for a discussion of this analysis.

**Table 124. DRI Scales Risk Range Accuracy (2006, N = 48,509)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.5 (1.5)	29.9 (0.1)	20.8 (0.8)	10.2 (0.8)
Alcohol	37.6 (1.6)	30.0 (0.0)	20.4 (0.4)	9.4 (1.6)
Driver Risk	36.4 (2.6)	30.7 (0.7)	21.4 (1.4)	11.5 (0.5)
Drugs	39.0 (0.0)	28.4 (1.6)	20.6 (0.6)	10.4 (0.6)
Stress Coping	39.0 (0.0)	29.8 (0.2)	19.9 (0.1)	11.1 (0.1)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

Offender-obtained risk range percentages were within 2.6 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI scales accurately measure DWI offender risk.

Reliability of the DRI & DRI Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI and DRI Short Form are presented in Table 124.

**Table 124. DRI & DRI Short Form Reliability Coefficient Alphas  
(2006, DRI N = 48,509, DRI-Short Form N = 3,262)**

<u>DRI Scale</u>	<u>DRI</u>	<u>DRI Short Form</u>
Truthfulness Scale	.89	.81
Alcohol Scale	.92	.85
Driver Risk Scale	.91	.75
Drugs Scale	.87	.79
Stress Coping Abilities	.92	-
<hr/>		
Substance Abuse/Dependency Scale	.93	.76

\*The Substance Abuse/Dependency Classification Scale is a classification derived from DSM-IV criteria.

Alpha coefficients for all scales on the DRI were .87 and above. These results are consistent with those reported in prior studies for entirely different populations of offenders and empirically demonstrate that the DRI is a highly reliable DUI offender risk assessment test (compared to the widely accepted standard of .75). Although DRI Short Form reliability coefficients are certainly acceptable (all coefficient alphas, except those observed for the Driver Risk Scale, were above .75 on the DRI Short Form), the DRI demonstrates stronger inter-item reliability. The DRI Short Form does not contain the Stress Coping Scale. The Substance Abuse/Dependency Scale is derived directly from DSM-IV symptomatology and it is a classification (as opposed to a measurement) scale. Since this DSM-IV based scale is not a measurement scale, it is separated from the DRI measurement scales by a line.

Validity of the DRI

The current validity analysis involved comparing offenders who have had treatment (either at present or in the past) with offenders who have never had treatment, on the basis of DRI percentile scale scores. Offenders who have had treatment are expected to score significantly higher on the DRI scales than those who have never had treatment. The same is expected for offenders who admit to being aggressive drivers.

DRI validity results demonstrate that Alcohol Scale scores accurately identified **100 percent** of the offenders who had been treated for drinking problems. All of the offenders who had alcohol treatment scored in the problem risk range (70 to 89<sup>th</sup> percentile) on the Alcohol Scale. Similarly, Drugs Scale scores identified **100 percent** of the DUI offenders that had been treated for drug problems and Driver Risk Scale scores accurately identified **100 percent** of offenders that admitted to being aggressive drivers.

**57. Study of DRI-II & DRI-II Short Form in a Sample of DUI Offenders**

This study (2007) examined the DRI-II and DRI-II Short Form test statistics in a sample of DUI offenders. Data were obtained from providers that administered the DRI-II and DRI-II Short Form.

There were 4,453 DUI offenders included (925 completed the DRI-II and 3,587 completed the DRI-II Short Form). DRI-II and DRI-II Short Form accuracy, reliability and validity were studied.

Method and Results

The participants in this study (2007) consisted of 4,453 DUI or BAC offenders. DRI-II and DRI-II Short Form demographics are combined. There were 3,587 (80.6%) males and 845 (19.1%) females. Age: 20 & Under (5.6%); 21-30 (30.0%); 31-40 (25.0%); 41-50 (25.5%); 51-60 (10.8%) and 61 & Over (3.1%). Ethnicity: Caucasian (72.3%); African American (24.9%), Hispanic (1.7%), Asian (1.7%), Native American (0.3%), and Other (0.5%). Education: Eighth grade or less (2.5%); Some High School (24.5%); H.S. graduate/G.E.D. (42.6%); Some college (20.4%) and College graduate (10.1%). Marital Status: Single (47.6%), Married (25.2%), Divorced (17.7%), Separated (7.6%) and Widowed (1.9%).

Accuracy of the DRI-II & DRI-II Short Form

**Table 125. DRI-II Scales Risk Range Accuracy  
(2007, N = 925)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	37.8 <b>(1.2)</b>	26.1 <b>(2.9)</b>	24.9 <b>(4.9)</b>	11.2 <b>(0.2)</b>
Alcohol	36.6 <b>(3.4)</b>	32.6 <b>(2.6)</b>	20.3 <b>(0.3)</b>	10.7 <b>(0.7)</b>
Driver Risk	31.4 <b>(7.6)</b>	34.9 <b>(4.9)</b>	23.0 <b>(3.0)</b>	10.7 <b>(0.3)</b>
Drugs	38.6 <b>(0.4)</b>	28.6 <b>(1.4)</b>	21.9 <b>(1.9)</b>	10.8 <b>(0.2)</b>
Stress Coping	39.1 <b>(0.1)</b>	30.3 <b>(0.3)</b>	20.0 <b>(0.0)</b>	10.6 <b>(0.4)</b>

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

All but 4 offender-obtained risk range percentages were within 3.0 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.

**Table 126. DRI-II Short Form Scales Risk Range Accuracy  
(2007, N = 3,528)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	38.9 <b>(0.1)</b>	22.8 <b>(7.2)</b>	26.2 <b>(6.2)</b>	12.2 <b>(1.2)</b>
Alcohol	39.5 <b>(0.5)</b>	29.2 <b>(0.8)</b>	20.9 <b>(0.9)</b>	10.5 <b>(0.5)</b>
Driver Risk	34.4 <b>(4.6)</b>	31.8 <b>(1.8)</b>	20.9 <b>(0.9)</b>	12.8 <b>(1.8)</b>
Drugs	35.5 <b>(3.5)</b>	32.4 <b>(2.4)</b>	21.5 <b>(1.5)</b>	10.6 <b>(0.4)</b>

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

All but 4 offender-obtained risk range percentages were within 3.0 percentage points of the predicted percentages. Offenders scale scores were 97 percent accurate. These results empirically demonstrate that DRI-II scales accurately measure DWI offender risk.



### Reliability of the DRI-II/DRI-II Short Form

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II and DRI-II Short Form are presented in Table 126.

**Table 126. DRI-II & DRI-II Short Form Reliability Coefficient Alphas  
(2007, N = 3,528)**

<u>DRI Scale</u>	<u>DRI-II</u> <b>N=925</b>	<u>DRI-II Short Form</u> <b>N=3,528</b>
Truthfulness Scale	.86	.85
Alcohol Scale	.91	.89
Driver Risk Scale	.86	.79
Drugs Scale	.91	.84
Stress Coping Abilities	.92	-

Alpha coefficients for all scales on the DRI-II were .86 and above. These results are consistent with those reported in prior studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable DUI offender risk assessment test (compared to the widely accepted standard of .75). Although DRI-II Short Form reliability coefficients are certainly acceptable (all coefficient alphas, were above .75 on the DRI-II Short Form), the DRI demonstrates stronger inter-item reliability. The DRI-II Short Form does not contain the Stress Coping Scale.

### Validity of the DRI-II & DRI-II Short Form

DRI-II validity results demonstrate that Alcohol Scale scores accurately identified **88.6 percent** of the offenders who had been treated for drinking problems. Nearly all of the offenders who had alcohol treatment scored in the problem range on the Alcohol Scale. Similarly, Drugs Scale scores identified **96.6 percent** of offenders who had been treated for drug problems and Driver Risk Scale scores accurately identified **93.3 percent** of offenders who admitted being aggressive drivers.

DRI-II Short Form scales accurately identified **77.7 percent** of the offenders who had drug use and alcohol problems, **89.1 percent** of the offenders who had been treated for drug problems, and **93.2 percent** of the offenders who admitted being a 'high risk' driver.

## **58. Study of DRI-II in a State Probation Program**

This study (2007) examined the DRI-II test statistics in a statewide probation program. Data were obtained from the agencies that administered the DRI-II. Offenders were tested throughout January 2007 to December 2007. There were 2,160 offenders included. DRI-II reliability, validity and accuracy were studied.

### Method and Results

The participants in this study (2007) consisted of 2,160 offenders. There were 1,730 (80.1%) males and 430 (19.9%) females. Demographic composition of this sample is as follows. Age: 20 & under (8.6%); 21-30 (43.6%); 31-40 (22.1%); 41-50 (18.0%); 51-60 (6.2%) and 61 & Over (1.7%). Ethnicity: Caucasian (80.5%); African American (5.9%), Hispanic (10.0%), Asian (0.3%), Native American (2.7%) and Other (0.6%). Education: Eighth grade or less (1.9%); Some H.S. (16.0%); H.S. graduate/G.E.D. (46.1%); Some college (26.1%) and College graduate (10.0%).

### Accuracy of the DRI-II

During the calendar year 2007, there were 2,160 DUI/DWI offenders tested using the Driver Risk Inventory-II. Table 127 presents a comparison between offender obtained percentages and predicted percentages for all scale risk categories.

**Table 127. DRI-II Scales Risk Range Accuracy (2007, N = 2,160)**

Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	41.3 (2.3)	28.9 (1.1)	17.8 (2.2)	12.0 (1.0)
Alcohol	40.3 (1.3)	29.3 (0.7)	19.2 (0.8)	11.2 (0.2)
Driver Risk	39.5 (0.5)	28.3 (0.5)	20.0 (0.0)	12.1 (1.1)
Drugs	35.2 (3.8)	30.7 (0.7)	22.4 (2.4)	11.7 (0.7)
Stress Coping	39.5 (0.5)	30.2 (0.2)	20.0 (0.0)	10.3 (0.7)

Note: The Substance Abuse/Dependency Scale is a classification, not a measurement scale and is not included in this analysis.

All but one offender obtained risk range percentages were within 2.4 percentage points of the predicted percentages. Offenders' scores can be considered 97% accurate. DRI-II scales have impressive empirically demonstrated accuracy. The DRI-II is a very accurate DUI offender assessment instrument or test.

### Reliability of the DRI-II

Within-test reliability, or inter-item reliability coefficient alphas for the DRI-II are presented in Table 128.

**Table 128. DRI-II reliability coefficient alphas (2007, N = 2,160)**

<b>DRI-II Scale</b>	<b>Coefficient Alpha</b>	<b>Significance Level</b>
Truthfulness Scale	.89	.001
Alcohol Scale	.94	.001
Driver Risk Scale	.89	.001
Drugs Scale	.91	.001
Stress Coping Scale	.93	.001
Substance Abuse/Dependency	.94	.001

Alpha coefficients for all scales were .89 and above. These results are similar to those reported in previous studies for entirely different populations of offenders and empirically demonstrate that the DRI-II is a highly reliable offender risk assessment test.

### Validity of the DRI-II

Predictive validity analysis involves comparing the Low Risk (zero to 39<sup>th</sup> percentile range) and High Risk (70<sup>th</sup> to 100<sup>th</sup> percentile range) groups, on the basis of having previously received treatment versus no treatment. To assess Driver Risk Inventory-II validity DUI offender's scores were compared to relevant treatment and client admissions. The Alcohol Scale correctly identified 100 percent of DUI offenders that had been treated for a drinking problem. All (100%) DUI offenders that admitted being seriously aggressive drivers scored at or above the 70<sup>th</sup> percentile (problem risk) on the Driver Risk Scale. The Drugs Scale

correctly identified 100 percent of the offenders that had been in treatment for drug problems. Driver Risk Inventory-II scales measure what they were designed to measure. It is safe to conclude the DRI-II is a valid instrument or test.

### 59. Study of DRI-II in a Midwest State DWI Program

This study (2008) examined DRI-II test statistics in a Midwest statewide DWI program. Data were obtained from agencies that administered the DRI-II. Offenders were tested throughout the years beginning June 1, 2006 and ending May 31, 2008. There were 27,882 DWI offenders included. DRI-II reliability, validity and accuracy were examined.

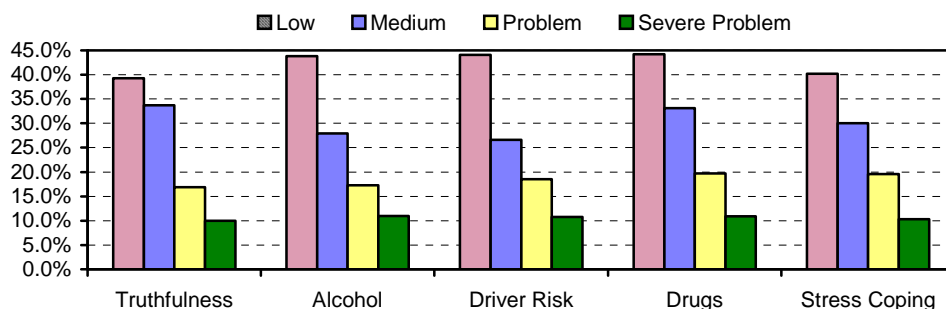
#### Method

Participants in this study (N=27,882, 2008) consisted of DWI offenders. There were 21,284 (76.3%) males and 6,587 (23.6%) females. Demographic composition of the sample follows. Age: 20 & under (12.1%); 21-30 (38.1%); 31-40 (21.6%); 41-50 (19.0%); 51-60 (6.9%) and 61 & over (2.3%). Ethnicity: Caucasian (87.1%); African American (7.2%); Hispanic (3.5%); Asian (0.6%); Native American (0.4%); and Other (0.9%). Education: Eighth grade or less (2.2%); Some H.S. (15.4%); H.S. graduate/G.E.D. (63.9%); Trade/Technical school (12.1%); Some college (4.4%); College graduate (1.5%); and Advanced Degree (0.2%). Marital Status: Single (56.1%); Married (21.2%); Divorced (17.5%); Separated (3.8%); and Widowed (1.2%).

#### 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 129 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 129 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 39.3%, which is a difference of 0.3 percentage points from what was predicted.

**Table 129. DRI-II Scales Risk Range Accuracy (N = 26,480, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.3 (0.6)	33.7 (3.7)	16.9 (3.1)	10.0 (1.0)
Alcohol	43.8 (4.8)	27.9 (2.1)	17.3 (2.7)	11.0 (0.0)
Driver Risk	44.1 (5.1)	26.6 (3.4)	18.5 (1.5)	10.8 (0.2)
Drugs	44.2 (5.2)	33.1 (3.1)	19.7 (0.3)	10.9 (0.1)
Stress Coping	40.2 (1.2)	30.0 (3.4)	19.6 (0.4)	10.3 (0.7)

Note: The Substance Abuse/Dependency Scale is a “classification”, not a measurement scale and is not included in this analysis. The differences between obtained percentages and predicted percentages are given in parentheses.

Seventeen out of 20 attained risk range percentiles were within **4.0** points of the predicted percentages. (The three exceptions- the Low Risk percentiles for the Alcohol, Driver Risk, and Drugs Scales- were all within 5.2 points of the predicted percentages.) The average difference between attained percentages and predicted percentages was **2.2** points. These results strongly support the accuracy of the DRI-II as an offender-assessment instrument.

### 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 130 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.

**Table 130. DRI-II Reliability Coefficient Alphas (N = 26,480, 2008)**

<u>DRI-II Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.86</b>
Alcohol Scale	<b>.90</b>
Driver Risk Scale	<b>.88</b>
Drugs Scale	<b>.89</b>
Stress Coping Abilities	<b>.91</b>
Substance Abuse/Dependency Scale is a classification scale.	

All DRI-II scales have a reliability of .86 or higher. The professionally accepted reliability standard is .75. All DRI-II scales exceed this standard and demonstrate very impressive reliability.

### 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, which are 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 offenders had been treated for alcohol and/or drug problems. It was predicted that the “treated” offenders would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of “treated” offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of “treated” offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. The majority (**85.8%**) of offenders who had been treated for alcohol problems scored in the High Risk range on the Alcohol Scale. Almost all (**99.5%**) of the offenders who had been treated for drug problems scored in the High Risk range on the Drugs Scale. These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who have been treated for alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- “aggressive drivers” and “non-aggressive drivers”- were established using direct admissions. The “aggressive driver” group made the self-admission that they were aggressive drivers, whereas the “non-aggressive driver” group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority of aggressive drivers (**88.2%**) were Driver Risk Scale “High Risk” offenders. The Driver Risk Scale accurately identifies aggressive drivers. This finding and the findings from the Alcohol and Drugs scale analyses support the predictive validity of the DRI-II.

A third validity analysis examined whether test scales could distinguish between offenders with known different levels of problem severity. It was predicted that First Offenders and Multiple Offenders would differ significantly from one another in terms of their scale scores. *T*-test results (presented in the table on the following page) revealed that Multiple Offenders scored significantly higher than First Offenders on the Alcohol Scale, Drugs Scale, Driver Risk Scale, and Stress Coping Abilities scale (on which higher scores indicate poorer stress coping abilities).

#### Independent Samples *t*-test Results

Scale	Mean Scores First Offenders	Mean Scores Multiple Offenders	<i>t</i> -value	Cohen’s <i>d</i> (effect size)
Truthfulness	46.61	42.89	10.428	0.14
Alcohol	53.13	79.50	-143.48*	1.76
Driver Risk	61.76	75.45	-62.98*	0.78
Drugs	23.28	35.76	-28.36	0.38
Stress Coping Abilities	48.46	52.29	-9.97	0.13

\*Significant at  $p < .001$

**These results strongly support the predictive validity of the DRI-II.** This is important because it shows that the Alcohol, Drugs, Driver Risk, and Stress Coping Abilities Scales do accurately measure levels of severity. The scales effectively discriminate between offenders who are known to have more severe problems (Multiple Offenders) and First Offenders.

#### Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as “substance dependent”, “substance abuse” or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual. Offenders 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.) This analysis included DRI-II and DRI-II Short Form data (combined).

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	25.6	35.0	7,378	27.9
Substance Abuse	50.8	47.9	13,269	50.1
Substance Dependent	23.4	17.0	5,795	21.9
Diagnosed dependent in past	8.6	6.8	2,162	8.2

The table above shows that approximately 20 percent (21.9%) of the total population was classified as “substance dependent” according to DSM-IV criteria. Almost nine percent (8.6%) of the population had been diagnosed “substance dependent” in the past. Half of offenders were classified as substance abusers and 27.9 percent of the population was classified as non-problematic. Over 70% of offenders were classified as either “substance dependent” or “substance abuse”.

When offender status is considered, more than half (54.1%) of Multiple Offenders were diagnosed “substance abuse”, and over one third (36.0%) were diagnosed “substance dependent”. Approximately 15 percent had been diagnosed “substance dependent” in the past. Less than ten percent (9.7%) of Multiple Offenders were classified as non-problematic.

The percentage of First Offenders that were diagnosed “substance abuse” (48.2%) was comparable to that of Multiple Offenders. However, unlike Multiple Offenders, the second largest proportion (36.6%) of First Offenders was classified as non-problematic. Only 15.0 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (4.5%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent” ( $\chi^2 = 1495.25$ ,  $p < .001$ ,  $V = .24$ ), “substance dependent” in the past ( $\chi^2 = 947.88$ ,  $p < .001$ ,  $V = .19$ ), and non-problematic ( $\chi^2 = 2083.44$ ,  $p < .001$ ,  $V = .28$ ) were all statistically significant.

## **60. Study of DRI-II in a Southern State DUI Program**

This study (2008) examined DRI-II test statistics in a southern statewide DUI program. Data were obtained from agencies that administered the DRI-II. Offenders were tested throughout the year beginning January 1, 2007 and ending December 31, 2007. There were 13,046 DUI offenders included. DRI-II reliability, validity and accuracy were examined.

### Method

Participants in this study (N=13,046, 2008) consisted of DUI offenders. There were 10,476 (80.3%) males and 2,510 (19.2%) females. Demographic composition of the sample follows. Age: 20 & under (4.8%); 21-30 (19.3%); 31-40 (23.1%); 41-50 (24.3%); 51-60 (11.4%) and 61 & over (3.2%). Ethnicity: Caucasian (72.4%); African American (24.0%); Hispanic (1.6%); Asian (0.3%); Native American (0.4%); Other (0.6%). Education: Eighth grade or less (2.3%); Some H.S. (21.0%); H.S. graduate (42.9%); Some college (20.5%); College graduate (12.0%). Marital Status: Single (49.5%) Married (24.1%); Divorced (16.8%); Separated (7.0%); Widowed (1.8%).

## Court History and DRI-II 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.

Correlation analyses examined relationships between the DRI-II and DRI-II Short Form scale scores and six of the court-related history items to which offenders responded on the tests: offender BAC level, number of DUI arrests in the past 10 years, number of alcohol-related (non-DUI) arrests in the past ten years, number of drug-related (non-DUI) arrests in the past ten years, number of at-fault accidents in the past ten years, and number of traffic violations in the past ten years. The resulting correlation coefficients are presented in Tables 131 and 132. Significant correlations with substantial effect sizes are accentuated with asterisks.

**Table 131. Correlation Coefficients (*r*)  
Court-Related History Items and DRI-II Scale Items (N = 1,949)**

Scale	BAC Level	DUI Arrests	Alcohol Arrests	Drug Arrests	At-Fault Accidents	Traffic Violations
Truthfulness	.002	-.088	-.062	-.002	-.086	-.074
Alcohol	.104*	.234*	.247*	.096	.034	-.025
Driver Risk	-.150*	.139*	.168*	.146*	.325**	.314**
Drugs	-.039	.067	.201*	.361**	.087	.033
Stress Coping Abilities	.013	-.072	-.059	-.024	-.090	.015

\*Small effect ( $r =$  between .10 and .24); \*\*Medium effect ( $r =$  between .25 and .39)

**Table 132. Correlation Coefficients (*r*)  
Court-Related History Items and DRI-II Short Form Scale Items (N = 11,097)**

Scale	BAC Level	DUI Arrests	Alcohol Arrests	Drug Arrests	At-Fault Accidents	Traffic Violations
Truthfulness	-.154*	-.028	-.007	.006	-.044	-.051
Alcohol	-.051	.242*	.221*	.082	.030	-.009
Driver Risk	-.160*	.157*	.119*	.103*	.247*	.358**
Drugs	-.167*	.049	.138*	.290**	.043	.057

\*Small effect ( $r =$  between .10 and .24); \*\*Medium effect ( $r =$  between .25 and .39)

Alcohol Scale scores were most closely associated with the number of DUI arrests and the number of alcohol-related arrests. Strong positive correlations were revealed, indicating that higher Alcohol Scale scores are associated with a higher number of DUI and alcohol-related arrests. This was true for both the DRI-II ( $r = .234$  and  $r = .247$ , respectively) and the DRI-II Short Form ( $r = .242$  and  $r = .221$ , respectively).

Drugs Scale scores were most highly correlated with the number of drug-related arrests on both the DRI-II ( $r = .361$ ) and the DRI-II Short Form ( $r = .290$ ). Higher Drugs Scale scores were strongly associated with a higher number of drug-related arrests.

Although Driver Risk Scale scores were correlated with all of the court-history variables to some degree, the strongest relationships, by far, were with the number of at-fault accidents and the number of traffic violations. Higher Driver Risk Scale scores were soundly associated with a higher number of accidents and traffic violations for both the DRI-II ( $r = .325$  and  $r = .314$ , respectively) and the DRI-II Short Form ( $r = .247$  and  $r = .358$ , respectively).

### 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 133 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.

**Table 133. DRI-II and DRI-II Short Form  
Reliability Coefficient Alphas (2008)**

<b>Scale</b>	<b>DRI-II</b> (N=1,949)	<b>DRI-II Short Form</b> (N= 11,097)
Truthfulness Scale	<b>.88</b>	<b>.86</b>
Alcohol Scale	<b>.90</b>	<b>.85</b>
Driver Risk Scale	<b>.90</b>	<b>.81</b>
Drugs Scale	<b>.86</b>	<b>.85</b>
Stress Coping Abilities	<b>.93</b>	-
Substance Abuse/Dependency Scale is a classification scale.		

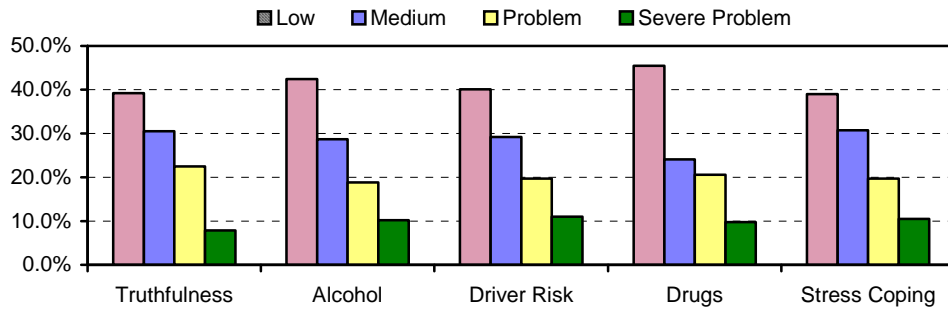
**All DRI-II scales have a reliability of .86 or higher, and all DRI-II Short Form scales have a reliability of .81 or higher.** The professionally accepted reliability standard is .75. All scales exceed this standard and demonstrate very impressive reliability.

### 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 134 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 134 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 39.2%, which is a difference of 0.2 percentage points from what was predicted.



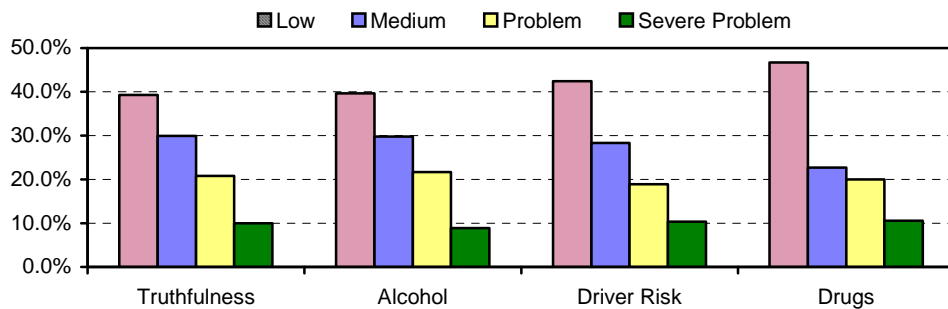
**Table 134. DRI-II Accuracy (N = 1,949, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.2 (0.2)	30.5 (0.5)	22.5 (2.5)	7.9 (3.1)
Alcohol	42.4 (3.4)	28.7 (1.3)	18.8 (1.2)	10.2 (0.8)
Driver Risk	40.1 (1.1)	29.2 (0.8)	19.7 (0.3)	11.0 (0.0)
Drugs	45.5 (6.5)	24.1 (5.9)	20.6 (0.6)	9.8 (1.2)
Stress Coping Abilities	39.0 (0.0)	30.7 (0.7)	19.7 (0.3)	10.5 (0.5)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

**Table 135. DRI-II Short Form Accuracy (N=11,097, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.3 (0.3)	29.9 (0.1)	20.8 (0.8)	10.0 (1.0)
Alcohol	39.6 (0.6)	29.8 (1.2)	21.7 (1.7)	8.9 (1.1)
Driver Risk	42.4 (3.4)	28.3 (1.7)	18.9 (1.1)	10.4 (0.6)
Drugs	46.7 (7.7*)	22.7 (7.3*)	20.0 (0.0)	10.6 (0.4)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

\*These slightly larger differences are probably a sampling artifact. Since we haven't seen this before, it is likely due to a transitional sampling effect.

In terms of the DRI-II: 18 out of 20 attained risk range percentiles were within **3.5** points of the predicted percentages. (The two exceptions- the Low Risk and Medium Risk percentiles for the Drugs Scales- were both within 6.5 points of the predicted percentages.) The average difference between attained percentages and predicted percentages was **1.5** points.

In terms of the DRI-II Short Form: 14 out of 16 attained risk range percentiles were within **3.4** points of the predicted percentages. (The two exceptions- the Low Risk and Medium Risk percentiles for the

Drugs Scales- were both within 7.7 points of the predicted percentages.) The average difference between attained percentages and predicted percentages was **1.8** points.

These results strongly support the accuracy of both the DRI-II and the DRI-II Short Form as offender-assessment instruments.

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, which are 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 offenders considered themselves to have alcohol and/or drug problems. Direct self-admissions were utilized. It was predicted that the self-admitted “problem drinkers” and self-admitted “problem drug users” would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of these offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of these offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. Almost all of offenders who admitted to having alcohol problems scored in the High Risk range on the Alcohol Scale on both the DRI-II (**98.2%**) and the DRI-II Short Form (**90.5%**). Almost all of the offenders who admitted to having drug problems scored in the High Risk range on the Drugs Scale on both the DRI-II (**98.1%**) and the DRI-II Short Form (**94.2%**). These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who admit to having alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- “aggressive drivers” and “non-aggressive drivers”- were established using direct admissions. The “aggressive driver” group made the self-admission that they were aggressive drivers, whereas the “non-aggressive driver” group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority of aggressive drivers were Driver Risk Scale “High Risk” offenders on both the DRI-II (**87.3%**) and DRI-II Short Form (**89.9%**). The Driver Risk Scale accurately identifies aggressive drivers.

**Correct Identification of Problem Behavior**

<b>Scale</b>	<b>DRI-II</b> (N = 1,949)	<b>DRI-II Short Form</b> (N = 10,476)
Alcohol Scale	<b>98.2%</b>	<b>90.5%</b>
Drugs Scale	<b>98.1%</b>	<b>94.2%</b>
Driver Risk Scale	<b>87.3%</b>	<b>89.9%</b>

These findings support the predictive validity of the DRI-II and the DRI-II Short Form.

## Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as “substance dependent”, “substance abuse” or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual. Offenders 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.) This analysis includes DRI-II and DRI-II Short form data (combined).

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	23.0	28.2	3,126	24.0
Substance Abuse	57.2	52.1	7,309	56.0
Substance Dependent	19.3	19.1	2,253	19.3
Diagnosed dependent in past	10.4	13.1	1,429	11.0

The table above shows that approximately 20 percent (19.3%) of the total population was classified as “substance dependent” according to DSM-IV criteria. Additionally, 11.0 percent of the population had been diagnosed “substance dependent” in the past. Just over half (56.0%) of offenders were classified as substance abusers and 24.0 percent of the population was classified as non-problematic. Three quarters (75.3%) of offenders were classified as either “substance dependent” or “substance abuse”.

When Offender status is considered, more than half (58.8%) of Multiple Offenders, were diagnosed “substance abuse”, and almost one third (30.5%) were diagnosed “substance dependent”. Additionally, 18.4 percent had been diagnosed “substance dependent” in the past. Approximately ten percent (10.2%) of Multiple Offenders were classified as non-problematic.

The percentage of First Offenders that were diagnosed “substance abuse” (55.9%) was comparable to that of Multiple Offenders. However, unlike Multiple Offenders, the second largest proportion (26.8%) of First Offenders was classified as non-problematic. Only 16.8 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (9.2%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent” ( $\chi^2 = 225.85$ ,  $p < .001$ ,  $V = .13$ ), “substance dependent” in the past ( $\chi^2 = 161.56$ ,  $p < .001$ ,  $V = .11$ ), and non-problematic ( $\chi^2 = 285.06$ ,  $p < .001$ ,  $V = .15$ ) were all statistically significant.

### **60. Study of DRI-II: City of Phoenix Municipal Court**

This study (2008) examined DRI-II test statistics for offenders tested by the City of Phoenix Municipal Court. Data was obtained from the Court’s Substance Abuse Screening Services (SAS) DUI program. Offenders were tested throughout the years beginning June, 2005 and ending July, 2008. There were 30,977 DUI offenders included. DRI-II reliability, validity and accuracy were examined.

## Method

Participants in this study (N=30,977, 2008) consisted of DUI offenders. There were 22,713 (73.3%) males and 8,240 (26.6%) females. Demographic composition of the sample follows. Age: 20 & under (8.7%); 21-30 (44.1%); 31-40 (23.5%); 41-50 (15.6%); 51-60 (6.1%); 61 & over (1.9%). Ethnicity: Caucasian (60.0%); African American (4.9%); Hispanic (22.3%); Asian (1.0%); Native American (7.1%); Other (2.4%). Education: Eighth grade or less (1.2%); Some H.S. (11.5%); H.S. graduate (30.4%); Some college (36.4%); College graduate (18.5%). Marital Status: Single (66.1%) Married (17.3%); Divorced (10.8%); Separated (3.0%); Widowed (0.8%).

### Court History and DRI-II 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.

Correlation analyses examined relationships between the DRI-II scale scores and six of the court-related history items to which offenders responded on the tests: offender BAC level, number of DUI arrests in the past 10 years, number of alcohol-related (non-DUI) arrests in the past ten years, number of drug-related (non-DUI) arrests in the past ten years, number of at-fault accidents in the past ten years, and number of traffic violations in the past ten years. The resulting correlation coefficients are presented in Table 136. Significant correlations with substantial effect sizes are accentuated with asterisks.

**Table 136. Correlations Coefficients  
Court-Related History Items and DRI-II Scale Items (N = 30,977)**

Scale	BAC Level	DUI Arrests	Alcohol Arrests	Drug Arrests	At-Fault Accidents	Traffic Violations
Truthfulness	-.040	-.036	-.081	-.043	-.159*	-.115*
Alcohol	.536***	.256**	.137*	.025	-.071	.002
Driver Risk	-.045	.141*	.124*	.067	.325**	.300**
Drugs	.038	.108	.124*	.277**	.044	.043
Stress Coping Abilities	.026	.022	.069	.026	-.005	.033

\*Small effect ( $r =$  between .10 and .24); \*\*Medium effect ( $r =$  between .25 and .39); \*\*\*Large effect ( $r \geq .40$ )

Alcohol Scale scores were most closely associated with offender BAC levels. The correlation between scores and BAC levels was strongly positive, (i.e. higher Alcohol Scale scores are associated with higher BAC levels;  $r = .536$ ). Alcohol Scale scores were also highly correlated with the number of DUI arrests in the past ten years and the number of alcohol-related arrests in the past ten years. Strong positive correlations were revealed, indicating that higher Alcohol Scale scores are associated with a higher number of DUI and alcohol-related arrests ( $r = .256$  and  $r = .137$ , respectively).

Drugs Scale scores were most highly correlated with the number of drug-related arrests ( $r = .277$ ). Higher Drugs Scale scores are strongly associated with a higher number of drug-related arrests in the past ten years.

Although Driver Risk Scale scores were correlated with multiple court-history variables to some degree, the strongest relationships were with the number of at-fault accidents and the number of traffic violations. Higher Driver Risk Scale scores were soundly associated with a higher number of accidents in the past ten years ( $r = .325$ ) and a higher number of traffic violations in the past ten years ( $r = .300$ ).

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 137 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.

**Table 137. DRI-II Reliability (N=30,977, 2008)**

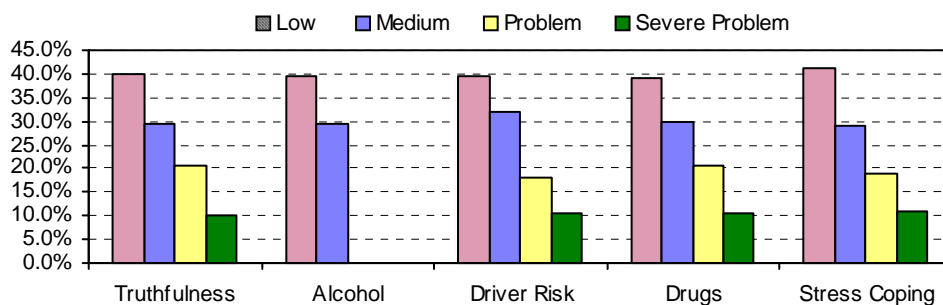
<u>DRI-II Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.89</b>
Alcohol Scale	<b>.91</b>
Driver Risk Scale	<b>.86</b>
Drugs Scale	<b>.88</b>
Stress Coping Abilities	<b>.92</b>
Substance Abuse/Dependency Scale is a classification scale.	

**All DRI-II scales have a reliability of .86 or higher.** The professionally accepted reliability standard is .75. All DRI-II scales exceed this standard and demonstrate very impressive reliability.

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 137 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 137 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 39.9%, which is a difference of 0.9 percentage points from what was predicted.

**Table 138. DRI-II Accuracy (N=30,977, 2008)**



Scale	Low Risk (39%)		Medium Risk (30%)		Problem Risk (20%)		Severe Problem (11%)	
Truthfulness	39.9	(0.9)	29.4	(0.6)	20.8	(0.8)	9.9	(1.1)
Alcohol	39.7	(0.7)	29.5	(0.5)	30.8*	(10.8)	0.0*	(11.0)
Driver Risk	39.4	(0.4)	31.9	(1.9)	18.0	(2.0)	10.6	(0.4)
Drugs	39.2	(0.2)	29.9	(0.1)	20.4	(0.4)	10.5	(0.5)
Stress Coping Abilities	41.1	(2.1)	28.9	(2.2)	19.1	(0.9)	11.0	(0.0)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

\*In marked contrast to prior DRI-II Alcohol Scale analyses, an unusually large number of offenders scored in the Alcohol Scale’s Problem Risk range, which resulted in fewer offenders scoring in the Severe Problem Risk range. This may be a one-time sampling occurrence, or it could represent a trend. To adequately understand this “phenomenon”, we will evaluate further in 2009.

Eighteen out of 20 attained risk range percentiles were within **2.2** points of the predicted percentages. The average difference between attained percentages and predicted percentages was **1.9** points (or **0.9** points excluding the Problem and Severe Problem risk ranges for the Alcohol Scale). These results strongly support the accuracy of the DRI-II as an offender-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, which are 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 offenders considered themselves to have alcohol and/or drug problems. Direct self-admissions were utilized. It was predicted that the self-admitted “problem drinkers” and self-admitted “problem drug users” would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of these offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of these offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. Almost all (**98.1%**) of offenders who admitted to having alcohol problems scored in the High Risk range on the Alcohol Scale. Additionally, almost all (**98.2%**) of the offenders who admitted to having drug problems scored in the High Risk range on the Drugs Scale. These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who admit to having alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- “aggressive drivers” and “non-aggressive drivers”- were established using direct admissions. The “aggressive driver” group made the self-admission that they were aggressive drivers, whereas the “non-aggressive driver” group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority (**80.2%**) of aggressive drivers were Driver Risk Scale “High Risk” offenders.

The Driver Risk Scale accurately identifies aggressive drivers. This finding and the findings from the Alcohol and Drugs scale analyses support the predictive validity of the DRI-II.

Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as “substance dependent”, “substance abuse” or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual. Offenders 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.) The DSM-IV substance abuse and substance dependency criteria literally reflect these scales as presented in the DSM-IV, and are widely used for classification purposes.

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	37.8	47.1	12,461	40.2
Substance Abuse	41.8	36.4	12,505	40.4
Substance Dependent	18.9	14.9	1,813	17.9
Diagnosed dependent in past	5.9	5.7	2,162	5.9

The table above shows that almost 20 percent of the total population was classified as “substance dependent” according to DSM-IV criteria. Approximately six percent of the population had been diagnosed “substance dependent” in the past. Approximately forty percent of offenders were classified as substance abusers and forty percent were classified as non-problematic. Almost 60% of offenders were classified as either “substance dependent” or “substance abuse”.

When offender status is considered: half (50.1%) of Multiple Offenders were diagnosed “substance abuse”, and over one third (34.0%) were diagnosed “substance dependent”. Thirteen percent had been diagnosed “substance dependent” in the past. Approximately fifteen percent (15.6%) of Multiple Offenders were classified as non-problematic.

Whereas the largest proportion of Multiple Offenders were classified as substance abusers, the largest proportion (45.1%) of First Offenders were classified as non-problematic. Another 39.3% of First Offenders were diagnosed “substance abuse”. Only 15.0 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (4.6%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent” ( $\chi^2 = 982.78, p < .001, V = .18$ ), “substance dependent” in the past ( $\chi^2 = 516.04, p < .001, V = .13$ ), and non-problematic ( $\chi^2 = 1458.72, p < .001, V = .22$ ) were all statistically significant.

## 61. Study of DRI-II in a Midwest State DUI Program

This study (2008) examined DRI-II test statistics in a Midwest statewide DUI program. Data were obtained from agencies that administered the DRI-II. Offenders were tested throughout the years beginning November 1, 2007 and ending October 31, 2008. There were 4,677 DUI offenders included. DRI-II reliability, validity and accuracy were examined.

### Method

Participants in this study (N=4,677, 2008) consisted of DUI offenders. There were 3,576 (76.5%) males and 1,061 (22.7%) females. Demographic composition of the sample follows. Age: 20 & under (10.1%); 21-30 (38.6%); 31-40 (21.6%); 41-50 (19.1%); 51-60 (8.1%) and 61 & over (2.0%). Ethnicity: Caucasian (79.9%); African American (10.0%); Hispanic (6.9%); Other (1.9%). Education: Eighth grade or less (3.3%); Some High School (15.8%); High School graduate (46.1%); Some college (25.3%); College graduate (8.0%). Marital Status: Single (54.9%); Married (21.1%); Divorced (16.9%); Separated (4.2%); and Widowed (1.1%).

### Court History and DRI-II 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.

Correlation analyses examined relationships between the DRI-II Alcohol, Drugs, and Driver Risk Scale scores and six of the court-related history items to which offenders responded on the tests: offender BAC level, number of prior DUI arrests in the last ten years, number of alcohol-related (non-DUI) arrests in the last ten years, number of drug-related (non-DUI) arrests in the last ten years, number of at-fault accidents in the last ten years, and number of traffic violations in the last ten years.

Alcohol Scale scores were most closely associated with the number of prior DUI arrests in the last ten years and the number of alcohol-related arrests in the last ten years. Strong positive correlations were revealed, indicating that higher Alcohol Scale scores are associated with a higher number of DUI arrests,  $r(4642)=.39$ ,  $p<.001$ , and a higher number of alcohol-related arrests,  $r(4602)=.33$ ,  $p<.001$ . Alcohol Scale scores were also strongly positively correlated with offender BAC levels,  $r(2793)=.23$ ,  $p<.001$ , (i.e. higher Alcohol Scale scores are associated with higher BAC levels).

Drugs Scale scores were most highly correlated with the number of drug-related arrests,  $r(4603)=.40$ ,  $p<.001$ . Higher Drugs Scale scores are strongly associated with a higher number of drug-related arrests in the last ten years.

Although Driver Risk Scale scores were correlated with all of the court-history variables to some degree, the strongest relationships were with the number of at-fault accidents and the number of traffic violations. Higher Driver Risk Scale scores were soundly associated with a higher number of accidents in the last ten years,  $r(4606)=.20$ ,  $p<.001$ , and a higher number of traffic violations in the last ten years,  $r(4609)=.33$ ,  $p<.001$ .



## 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 139 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.

**Table 139. DRI-II Reliability (N=4,677, 2008)**

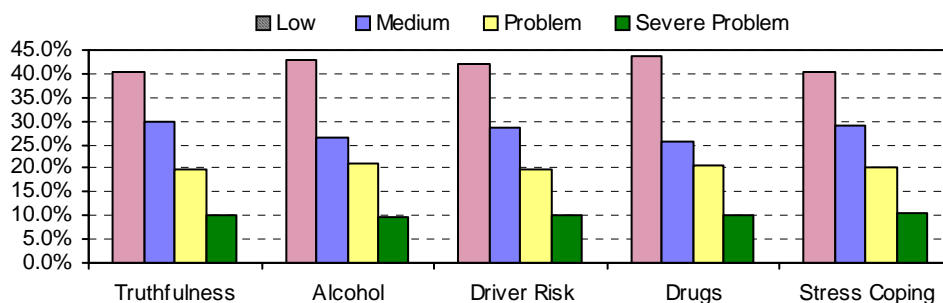
<u>DRI-II Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.88</b>
Alcohol Scale	<b>.91</b>
Driver Risk Scale	<b>.88</b>
Drugs Scale	<b>.91</b>
Stress Coping Abilities	<b>.92</b>
Substance Abuse/Dependency Scale is a classification scale.	

**All DRI-II scales have a reliability of .88 or higher.** The professionally accepted reliability standard is .75. All DRI-II scales exceed this standard and demonstrate very impressive reliability.

## 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 140 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 140 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 40.2%, which is a difference of 1.2 percentage points from what was predicted.

**Table 140. DRI-II Accuracy (N=4,677, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.2 (1.2)	30.0 (0.0)	19.8 (0.2)	10.0 (1.0)
Alcohol	42.7 (3.7)	26.5 (3.5)	21.2 (1.2)	9.6 (1.4)
Driver Risk	41.9 (2.9)	28.4 (1.6)	19.8 (0.2)	9.9 (1.1)
Drugs	43.6 (4.6)	25.5 (4.5)	20.6 (0.6)	10.3 (0.7)
Stress Coping Abilities	40.2 (1.2)	29.1 (0.9)	20.1 (0.1)	10.6 (0.4)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

Eighteen out of 20 attained risk range percentiles were within **4.0** points of the predicted percentages. (The two exceptions- the Low Risk and Medium Risk percentiles for the Drugs Scale- were both within 4.6 points of the predicted percentages.) The average difference between attained percentages and predicted percentages was **1.6** points. These results strongly support the accuracy of the DRI-II as an offender-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, which are 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 offenders considered themselves to have alcohol and/or drug problems. Direct self-admissions were utilized. It was predicted that the self-admitted "problem drinkers" and self-admitted "problem drug users" would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of these offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of these offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. Almost all (**95.7%**) of offenders who admitted to having alcohol problems scored in the High Risk range on the Alcohol Scale. Additionally, almost all (**98.1%**) of the offenders who admitted to having drug problems scored in the High Risk range on the Drugs Scale. These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who admit to having alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- "aggressive drivers" and "non-aggressive drivers"- were established using direct admissions. The "aggressive driver" group made the self-admission that they were aggressive drivers, whereas the "non-aggressive driver" group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority (**84.7%**) of aggressive drivers were Driver Risk Scale "High Risk" offenders. The Driver Risk Scale accurately identifies aggressive drivers. This finding and the findings from the Alcohol and Drugs scale analyses support the predictive validity of the DRI-II.

### Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as "substance dependent", "substance abuse" or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual. Offenders 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.) The DSM-IV substance abuse and substance dependency criteria literally reflect these scales as presented in the DSM-IV, and are widely used for classification purposes.

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	24.6	34.5	1,255	26.8
Substance Abuse	46.1	40.5	2,096	44.8
Substance Dependent	28.4	24.2	1,280	27.4
Diagnosed dependent in past	14.7	14.9	2,162	14.7

\*Note: There were 46 cases of missing information.

The table above shows that just over one quarter of the total population was classified as “substance dependent” according to DSM-IV criteria. Approximately 15 percent of the population had been diagnosed “substance dependent” in the past. Approximately 45 percent of offenders were classified as substance abusers and approximately one quarter were classified as non-problematic. Almost 75% of offenders were classified as either “substance dependent” or “substance abuse”.

When offender status is considered: 46.5% of Multiple Offenders were diagnosed “substance abuse”, and 43.7% were diagnosed “substance dependent”. One quarter (26.0%) had been diagnosed “substance dependent” in the past. Approximately ten percent (9.4%) of Multiple Offenders were classified as non-problematic.

The percentage of First Offenders that were diagnosed “substance abuse” (44.7%) was comparable to that of Multiple Offenders. However, unlike Multiple Offenders, the second largest proportion (34.6%) of First Offenders was classified as non-problematic. Only 20.6 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (9.9%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent” ( $\chi^2 = 258.45$ ,  $p < .001$ ,  $V = .24$ ), “substance dependent” in the past ( $\chi^2 = 201.59$ ,  $p < .001$ ,  $V = .21$ ), and non-problematic ( $\chi^2 = 306.66$ ,  $p < .001$ ,  $V = .26$ ) were all statistically significant.

## **62. Study of DRI-II in a Midwest State DUI Program**

This study (2008) examined DRI-II test statistics in a Midwest statewide DUI program. Data were obtained from agencies that administered the DRI-II. Offenders were tested throughout the years beginning in April, 2006 and ending in March, 2008. There were 8,539 DUI offenders included. DRI-II reliability, validity and accuracy were examined.

### Method

Participants in this study (N=8,539, 2008) consisted of DUI offenders. There were 6,705 (78.5%) males and 1,829 (21.4%) females. Demographic composition of the sample follows. Age: 20 & under (10.9%); 21-30 (38.9%); 31-40 (20.9%); 41-50 (18.9%); 51-60 (8.0%) and 61 & over (2.4%). Ethnicity: Caucasian (74.1%); African American (6.8%); Hispanic (5.9%); Asian (0.5%); Native American (11.3%); Other (0.8%). Education: Eighth grade or less (2.9%); Some High School (16.7%); High School graduate (44.8%); Some college (27.0%); College graduate (7.9%). Marital Status: Single (50.4%); Married (24.5%); Divorced (19.3%); Separated (4.0%); and Widowed (1.5%).

## Court History and DRI-II 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.

Correlation analyses examined relationships between the DRI-II Alcohol, Drugs, and Driver Risk Scale scores and six of the court-related history items to which offenders responded on the tests: offender BAC level, number of lifetime DUI arrests, number of alcohol-related (non-DUI) arrests in the past ten years, number of drug-related (non-DUI) arrests in the past ten years, number of at-fault accidents in the past ten years, and number of traffic violations in the past ten years.

Alcohol Scale scores were most closely associated with the lifetime number of DUI arrests and the number of alcohol-related arrests in the past ten years. Strong positive correlations were revealed, indicating that higher Alcohol Scale scores are associated with a higher number of DUI arrests,  $r(8493) = .498$ ,  $p < .001$ , and a higher number of alcohol-related arrests,  $r(8508) = .325$ ,  $p < .001$ . Alcohol Scale scores were also positively correlated with offender BAC levels, (i.e. higher Alcohol Scale scores are associated with higher BAC levels;  $r(3591) = .205$ ,  $p < .001$ ).

Drugs Scale scores were most highly correlated with the number of drug-related arrests,  $r(8509) = .426$ ,  $p < .001$ . Higher Drugs Scale scores are strongly associated with a higher number of drug-related arrests in the past ten years.

Although Driver Risk Scale scores were correlated with all of the court-history variables to some degree, the strongest relationships were with the number of at-fault accidents and the number of traffic violations. Higher Driver Risk Scale scores were soundly associated with a higher number of accidents in the past ten years,  $r(8510) = .216$ ,  $p < .001$ , and a higher number of traffic violations in the past ten years,  $r(8495) = .304$ ,  $p < .001$ .

## 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 141 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.

**Table 141. DRI-II Reliability (N=8,539, 2008)**

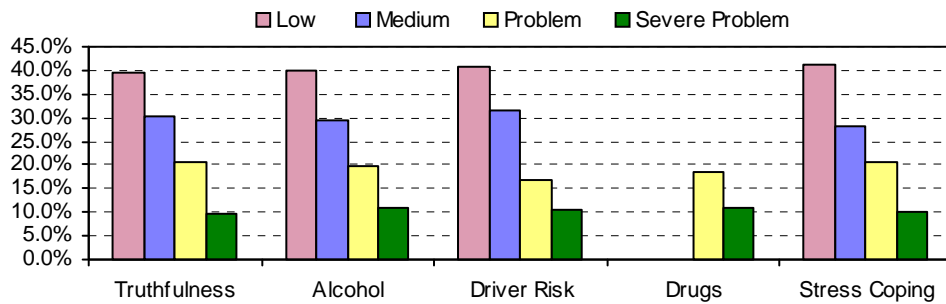
<u>DRI-II Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.86</b>
Alcohol Scale	<b>.91</b>
Driver Risk Scale	<b>.86</b>
Drugs Scale	<b>.88</b>
Stress Coping Abilities	<b>.91</b>
Substance Abuse/Dependency Scale is a classification scale.	

**All DRI-II scales have a reliability of .86 or higher.** The professionally accepted reliability standard is .75. All DRI-II scales exceed this standard and demonstrate very impressive reliability.

## 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 142 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 142 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 39.4%, which is a difference of 0.4 percentage points from what was predicted.

**Table 142. DRI-II Accuracy (N=8,539, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	39.4 (0.4)	30.4 (0.4)	20.6 (0.6)	9.6 (1.4)
Alcohol	40.0 (1.0)	29.5 (0.5)	19.6 (0.4)	10.9 (0.1)
Driver Risk	41.0 (2.0)	31.4 (1.4)	17.0 (3.0)	10.6 (0.4)
Drugs	52.5* (13.5)	18.0* (12.0)	18.6 (1.4)	10.9 (0.1)
Stress Coping Abilities	41.1 (2.1)	28.0 (2.0)	20.5 (0.5)	10.3 (0.7)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

\*In marked contrast to prior DRI-II Drugs Scale analyses, an unusually large number of offenders scored in the Drugs Scale's Low Risk range, which resulted in fewer offenders scoring in the Medium Risk range. This may be a one-time sampling occurrence, or it could represent a trend. To adequately understand this "phenomenon", we will evaluate further in 2009.

Eighteen out of 20 attained risk range percentiles were within **3.0** points of the predicted percentages. The average difference between attained percentages and predicted percentages was **2.2** points, (or **1.0** points excluding the Low and Medium risk ranges for the Drugs Scale). These results strongly support the accuracy of the DRI-II as an offender-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, which are 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 offenders had been treated for alcohol and/or drug problems. It was predicted that the “treated” offenders would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of “treated” offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of “treated” offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. The majority (**89.2%**) of offenders who had been treated for alcohol problems scored in the High Risk range on the Alcohol Scale. Almost all (**96.9%**) of the offenders who had been treated for drug problems scored in the High Risk range on the Drugs Scale. These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who have been treated for alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- “aggressive drivers” and “non-aggressive drivers”- were established using direct admissions. The “aggressive driver” group made the self-admission that they were aggressive drivers, whereas the “non-aggressive driver” group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority of aggressive drivers (**86.4%**) were Driver Risk Scale “High Risk” offenders. The Driver Risk Scale accurately identifies aggressive drivers. This finding and the findings from the Alcohol and Drugs scale analyses support the predictive validity of the DRI-II.

A third validity analysis examined whether test scales could distinguish between offenders with known different levels of problem severity. It was predicted that First Offenders and Multiple Offenders would differ significantly from one another in terms of their scale scores. *T*-test results (presented in Table 143) revealed that Multiple Offenders scored significantly higher than First Offenders on the Alcohol Scale, Drugs Scale, Driver Risk Scale, and Stress Coping Abilities scale (on which higher scores indicate poorer stress coping abilities).

**Table 143. Independent Samples *t*-test Results**

Scale	Mean Scores First Offenders	Mean Scores Multiple Offenders	<i>t</i> -value	Cohen’s <i>d</i> (effect size)
Truthfulness	42.78	43.81	-1.93	0.04
Alcohol	42.68	66.75	-47.63*	1.03
Driver Risk	54.01	61.73	-19.19*	0.42
Drugs	21.49	36.62	-19.57*	0.43
Stress Coping Abilities	49.16	53.44	-7.41*	0.16

\*Significant at  $p < .001$

**These results strongly support the predictive validity of the DRI-II.** This is important because it shows that the Alcohol, Drugs, Driver Risk, and Stress Coping Abilities Scales do accurately measure levels of severity. The scales effectively discriminate between offenders who are known to have more severe problems (Multiple Offenders) and First Offenders.

## Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as “substance dependent”, “substance abuse” or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual. Offenders 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.) The DSM-IV substance abuse and substance dependency criteria literally reflect these scales as presented in the DSM-IV, and are widely used for classification purposes.

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	26.4	35.2	2,416	28.3
Substance Abuse	49.1	41.8	4,058	47.5
Substance Dependent	24.3	22.7	2,043	23.9
Diagnosed dependent in past	9.9	10.9	862	10.1

\*Note: There were 16 cases of missing information.

The table above shows that almost one fourth (23.9%) of the total population was classified as “substance dependent” according to DSM-IV criteria. Ten percent of the population had been diagnosed “substance dependent” in the past. Almost half (47.5%) of offenders were classified as substance abusers and 28.3 percent of the population was classified as non-problematic. Over 70% of offenders were classified as either “substance dependent” or “substance abuse”.

When offender status is considered, approximately half (49.6%) of Multiple Offenders were diagnosed “substance abuse”, and over one third (35.9%) were diagnosed “substance dependent”. Seventeen percent had been diagnosed “substance dependent” in the past. Just over fourteen percent (14.2%) of Multiple Offenders were classified as non-problematic.

The percentage of First Offenders that were diagnosed “substance abuse” (46.0%) was comparable to that of Multiple Offenders. However, unlike Multiple Offenders, the second largest proportion (39.1%) of First Offenders was classified as non-problematic. Only 14.7 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (4.6%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent” ( $\chi^2 = 517.82$ ,  $p < .001$ ,  $V = .25$ ), “substance dependent” in the past ( $\chi^2 = 358.49$ ,  $p < .001$ ,  $V = .21$ ), and non-problematic ( $\chi^2 = 634.8$ ,  $p < .001$ ,  $V = .27$ ) were all statistically significant.

### **63. Reliability, Accuracy, and Validity of the DRI-II in a Five-Year Study of Online Test Users**

This study (2008) examined DRI-II test statistics for offenders tested online by DUI/DWI evaluators throughout the United States and Canada. Offenders were tested during the five-year period beginning January 1, 2004 and ending January 1, 2008. There were 119,543 DUI/DWI offenders included. DRI-II reliability, validity and accuracy were examined.

## Method

Participants in this study (N=119,543, 2008) consisted of DUI offenders. There were 91,480 (76.5%) males and 28,061 (23.5%) females. Demographic composition of the sample follows. Age: 20 & under (7.8%); 21-30 (37.6%); 31-40 (22.3%); 41-50 (20.5%); 51-60 (8.9%) and 61 & over (2.7%). Ethnicity: Caucasian (71.0%); African American (8.0%); Hispanic (17.0%); Asian (0.8%); Native American (1.2%); Other (1.3%). Education: Eighth grade or less (3.0%); Some High School (12.6%); GED (9.3%); High School graduate (35.4%); Trade/Technical School (2.4%); Some college (20.6%); College graduate (13.4%); Advanced Degree (2.1%). Marital Status: Single (59.4%); Married (20.3%); Divorced (15.0%); Separated (3.5%); and Widowed (1.3%).

## Court History and DRI-II 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.

Correlation analyses examined relationships between the DRI-II Alcohol, Drugs, and Driver Risk Scale scores and six of the court-related history items to which offenders responded on the tests: offender BAC level, number of DUI/DWI arrests, number of alcohol-related (non-DUI/DWI) arrests, number of drug-related (non-DUI/DWI) arrests, number of at-fault accidents, and number of traffic violations.

Alcohol Scale scores were most closely associated with the number of DUI/DWI arrests and the number of alcohol-related arrests. Strong positive correlations indicated that higher Alcohol Scale scores are associated with a higher number of DUI/DWI arrests,  $r(112370) = .41$ ,  $p < .001$ , and a higher number of alcohol-related arrests,  $r(112072) = .23$ ,  $p < .001$ . Alcohol Scale scores were also strongly positively correlated with offender BAC levels,  $r(71181) = .21$ ,  $p < .001$ , (i.e. higher Alcohol Scale scores are associated with higher BAC levels.)

Drugs Scale scores were most highly correlated with the number of drug-related arrests,  $r(112088) = .35$ ,  $p < .001$ . Higher Drugs Scale scores are strongly associated with a higher number of drug-related arrests.

Driver Risk Scale scores were most strongly correlated the number of at-fault accidents and the number of traffic violations. Higher Driver Risk Scale scores were soundly associated with a higher number of traffic violations,  $r(110190) = .39$ ,  $p < .001$ , and a higher number of accidents,  $r(112060) = .23$ ,  $p < .001$ .

## 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 144 shows the reliability scores for each DRI-II scale. Perfect reliability is 1.00.



**Table 144. DRI-II Reliability (N=119,543, 2008)**

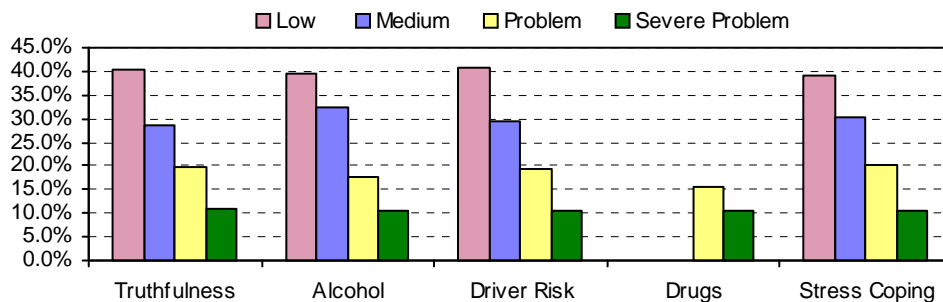
<u>DRI-II Scale</u>	<u>Alpha coefficient</u>
Truthfulness Scale	<b>.89</b>
Alcohol Scale	<b>.91</b>
Driver Risk Scale	<b>.86</b>
Drugs Scale	<b>.90</b>
Stress Coping Abilities	<b>.92</b>
Substance Abuse/Dependency Scale is a classification scale.	

All DRI-II scales have a reliability of .86 or higher. The professionally accepted reliability standard is .75. All DRI-II scales exceed this standard and demonstrate very impressive reliability.

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 145 shows the percentages of offenders that were predicted to score within each risk range. (These predicted percentages for each DRI-II scale risk category were obtained from DRI-II standardization data.) The body of Table 145 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 offenders were predicted to score within this range; the attained percentage of offenders who scored in this range was 40.4%, which is a difference of 1.4 percentage points from what was predicted.

**Table 145. DRI-II Accuracy (N=119,543, 2008)**



Scale	Low Risk (39%)	Medium Risk (30%)	Problem Risk (20%)	Severe Problem (11%)
Truthfulness	40.4 (1.4)	28.8 (1.2)	19.8 (0.2)	10.9 (0.1)
Alcohol	39.5 (0.5)	32.2 (2.2)	17.8 (2.2)	10.5 (0.5)
Driver Risk	40.7 (1.7)	29.6 (0.4)	19.3 (0.7)	10.5 (0.5)
Drugs	51.6* (12.6)*	22.2* (7.8)*	15.7 (4.3)	10.5 (0.5)
Stress Coping Abilities	39.1 (0.1)	30.3 (0.3)	20.0 (0.0)	10.6 (0.4)

**Note:** The Substance Abuse/Dependency Scale is a classification, not a measurement scale; consequently, it is not included in this analysis.

\*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 for the remaining four scales was slightly smaller- less by 6,805 (the number of offenders with invalid Scale scores).

\*A trend emerged in which too large a number of offenders were scoring in the Low Risk range on the Drugs Scale (resulting in too few offenders scoring in the Medium Risk range). This issue had already been addressed. Appropriate scoring adjustments have been made and applied to all online DRI-II tests from here on out.

Seventeen out of 20 attained risk range percentiles were within **2.2** points of the predicted percentages. The average difference between attained percentages and predicted percentages was **1.9** points. These results strongly support the accuracy of the DRI-II as an offender-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, which are 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 offenders considered themselves to have alcohol and/or drug problems. Direct self-admissions were utilized. It was predicted that the self-admitted "problem drinkers" and self-admitted "problem drug users" would be identified by their higher scores on the Alcohol and/or Drugs Scales. More specifically, it was predicted that a large percentage of these offenders would have Alcohol and/or Drugs Scale scores that fell within the 70<sup>th</sup> and 100<sup>th</sup> percentile range (the High Risk range). The possibility of these offenders 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 High Risk range on the Alcohol and/or Drugs Scales than the Low Risk range. The results of the analysis confirmed these predictions. Almost all (**97.9%**) of offenders who admitted to having alcohol problems scored in the High Risk range on the Alcohol Scale. Additionally, almost all (**96.6%**) of the offenders who admitted to having drug problems scored in the High Risk range on the Drugs Scale. These findings indicate that the Alcohol and Drugs Scales accurately identify offenders who admit to having alcohol and/or drug problems.

Another analysis was performed for the Driver Risk Scale. Two comparative groups- "aggressive drivers" and "non-aggressive drivers"- were established using direct admissions. The "aggressive driver" group made the self-admission that they were aggressive drivers, whereas the "non-aggressive driver" group did not. It was predicted that a large percentage of aggressive drivers would score within the High Risk range (70<sup>th</sup> to 100<sup>th</sup> percentile) on the Driver Risk Scale. Analysis results confirmed this prediction. The majority (**88.0%**) of aggressive drivers were Driver Risk Scale "High Risk" offenders. The Driver Risk Scale accurately identifies aggressive drivers. This finding and the findings from the Alcohol and Drugs scale analyses support the predictive validity of the DRI-II.

### Substance Abuse/Dependency Scale

The DRI-II Substance Abuse/Dependency Scale classifies offenders as "substance dependent", "substance abuse" or non-problematic according to their responses regarding DSM-IV criteria. Offenders 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 DRI-II Orientation and Training Manual.

Offenders 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.) The DSM-IV substance abuse and substance dependency criteria literally reflect these scales as presented in the DSM-IV, and are widely used for classification purposes.

<b>DSM-IV Classification</b>				
<b>Classification</b>	<b>Males %</b>	<b>Females %</b>	<b>Total N</b>	<b>%</b>
Non-Problematic	33.2	41.8	42,139	35.3
Substance Abuse	43.6	38.2	50,633	42.4
Substance Dependent	22.1	19.1	25,530	21.4
Diagnosed dependent in past	8.9	9.5	10,804	9.0

\*Note: There were 1,241 cases of missing information.

The table above shows that more than one fifth (21.4%) of the total population was classified as “substance dependent” according to DSM-IV criteria. Nine percent of the population had been diagnosed “substance dependent” in the past. More than two fifths (42.4%) of offenders were classified as substance abusers, and approximately one third (35.3%) of the population was classified as non-problematic. Almost two thirds of offenders were classified as either “substance dependent” or “substance abuse”.

When offender status is considered, almost half (48.4%) of Multiple Offenders were diagnosed “substance abuse”, and over one third (35.7%) were diagnosed “substance dependent”. Approximately eighteen percent (18.3%) had been diagnosed “substance dependent” in the past. Just over fifteen percent (15.8%) of Multiple Offenders were classified as non-problematic.

The percentage of First Offenders that were diagnosed “substance abuse” (40.3%) was only slightly smaller than that of Multiple Offenders. In contrast to Multiple Offenders, the second largest proportion (44.3%) of First Offenders was classified as non-problematic. Only 15.3 percent were diagnosed “substance dependent”. A considerably smaller percentage of First Offenders (5.0%) had been diagnosed “substance dependent” in the past than Multiple Offenders.

The results of chi-square analyses indicated that the differences between the percentages of First Offenders and Multiple Offenders that were classified “substance dependent”,  $\chi^2(1) = 6165.39$ ,  $p < .001$ ,  $V = .23$ , “substance dependent” in the past,  $\chi^2(1) = 5381.56$ ,  $p < .001$ ,  $V = .21$ , and non-problematic,  $\chi^2(1) = 8774.55$ ,  $p < .001$ ,  $V = .27$ , were all statistically significant.

## **SUMMARY**

This document is not intended as an exhaustive compilation of DRI-II research. Yet it does summarize many studies and research that support the reliability, validity and accuracy of the DRI-II. More than 1.3 million DUI/DWI offenders are represented herein. Based on this research, the DRI-II presents an increasingly accurate picture of DUI/DWI offenders and the driving risk they represent. The DRI-II provides a sound empirical foundation for responsible decision making.

Summarized research demonstrates that the DRI-II is a reliable, valid and accurate instrument for DUI offender assessment. It is reasonable to conclude that the DRI does what it purports to do. The DRI-II acquires a vast amount of relevant information for staff review prior to decision making. Empirically

based scales are objective and accurate. Assessment has shifted from subjective opinions to objective accountability.

The DRI-II is not a personality test, nor is it a clinical diagnostic instrument. It is a DUI/DWI offender risk and needs assessment instrument. The population studied consists of convicted DUI/DWI offenders and the criterion is driver risk. Future DRI-II research will continue to explore important parameters for accurate identification of driver risk.

The research presented in this document strongly supports the reliability, validity and accuracy of the DRI-II. Reliability coefficient alphas exceeded the professional standard for all DRI-II scales. Risk range percentile scores show that obtained offender scores closely approximate the predicted percentages on all DRI-II scales and all risk range categories. Reliability validity, and accuracy of the DRI-II provide a sound basis for decision making. And, when available, court histories are included in the DRI-II scoring methodology.

Areas for future research are many and complex. To date, only a handful of demographic, socioeconomic and driver history variables have been studied. Gender differences have been identified and gender specific scoring procedures implemented. DRI-II research continues to evaluate age, gender, ethnicity and education. Consistent with the foregoing, we encourage more research on demographic, cultural and environmental factors impacting on driver risk.

DRI-II research has demonstrated important relationships between driver risk and number of prior DUI/DWI convictions, BAC level at time of arrest, and court-related records. However, many other relationships need to be better understood for even more accurate identification of driver risk. Similarly, we need more empirical information on the effects of client intervention, education program effectiveness and substance (alcohol and other drugs) abuse treatment outcome--in terms of their effect on recidivism and driver risk. Few fields of assessment represent such important opportunities for creative discovery. The DRI-II is committed to this research.

**\*This document is the first of two volumes that present information related to DRI-II development and research. In this Volume (Volume 1), research was presented chronologically from 1980 to 2008. For research conducted from 2009 on, see Volume 2.**

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