DRIVER RISK INVENTORY (DRI)

An Inventory of Scientific Findings

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CONTENTS

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DUI/DWI offender assessment research has historically represented two schools of thought: one, the practical application of testing; the other, theoretical analysis of test results. Historically, these two lines of thought often have been independent. This document brings together practical application of the DRI with psychometric perspective.

Obviously, differences of viewpoint exist among researchers and statisticians. Diverse disadvantages and advantages are associated with different methodologies and procedures. Researchers in the DUI/DWI field are encouraged to pursue their own DRI studies and research interests. This document summarizes Driver Risk Inventory (DRI) research and analysis. However, no attempt was made to incorporate all DRI research; rather, this document is representative of the DRI research that has been done. These studies and empirical findings will provide a foundation for future DRI research in the DUI/DWI field. Behavior Data Systems, Ltd. is strongly committed to ongoing DRI research.

PREFACE

Driver Risk Inventory (DRI) research and development began in 1979 and has continued to the present. The copyrighted DRI data base insures continued research and development.

All major DUI assessment instruments and tests were evaluated by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) in a two year study reported in DOT HS 807 475. As reported in Government Technology (Vol. 3, No. 5, May 1990), NHTSA concluded that the Driver Risk Inventory was the best automated test.

By merging the latest psychometrics with computer technology the DRI accurately assesses client behavior and identifies client risk as well as need. DUI/DWI staff can now objectively gather a vast amount of relevant information, identify client problems and formulate specific intervention and treatment strategies.

Some newcomers to computerized assessment in the DUI/DWI field naively advocate doing away with evaluators and only using "fully automated" procedures. This issue made better reading in the 1960's when it was termed the actuarial versus clinical controversy. As Gardner Lindzey noted in his article (1965) Seer Versus Sign, "sophisticated examination of the problem reveals little or no real basis for maintaining such a distinction or issue." Today, we can acknowledge the growing role of computers in the assessment process **and** the importance of evaluator experience and judgment. We are all familiar with the "special case" wherein test data does not adequately portray the client's situation, risk or need.

DUI/DWI evaluators are typically not clinicians or diagnosticians. Their role has been to identify driver risk and related substance (alcohol and other drugs) abuse prior to recommending intervention--for example, an educational program, further clinical evaluation or treatment, court-related sanctions or levels of supervision. The evaluator may obtain important information from another source--interview with the victim, police report, court records, etc.--that should not be overlooked or ignored. That is why space is provided in DRI reports for evaluator observations and recommendations. We must be able to accommodate the "special case" if we are to have accurate assessment.

DUI/DWI offender assessment is not to be taken lightly as the decisions made can be vitally important. The decision as to whether or not a test protocol indicates that a client is a driver risk can be a life or death issue. For this reason DRI research is ongoing in nature, so that we can provide the DUI/DWI evaluator with the most accurate data possible.

This document describes the DRI and gathers together research as well as descriptive materials into one source. Its purpose is to provide understanding about the DRI and the automated risk and needs assessment system it represents. This collection of readings reflects the growth and development of the DRI into a state-of-the-art DUI/DWI assessment instrument. DRI research is ongoing and future studies will be reported in updated documents.

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DRIVER RISK INVENTORY (DRI)

The Driver Risk Inventory (DRI) is a brief, easily administered and automated (computer scored 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 description of the DRI. The DRI is a test uniquely suited for identifying problem drinkers, substance (alcohol and other drugs) abusers and high risk drivers.

The Driver Risk Inventory (DRI) gathers important DWI/DUI information from the client in an objective, valid and timely manner. The DRI is a multi-dimensional (5 scales) empirically based test that has been researched and standardized on the DUI/DWI offender population. When screening substance (alcohol and other drugs) abusers and high risk drivers is the goal, the DRI is an important instrument. When measuring the degree of severity of driver risk, substance (alcohol and other drugs) abuse and stress coping is important, the DRI is a particularly valuable instrument. The DRI offers the following unique features:

* Clear and consistent screening/evaluation criteria
* Classification system solidly based on this criteria
* Recommendations based on attained DRI scores
* Empirical foundation for responsible decision-making
* Expanding database for ongoing research/analysis
* Objective test validated on the DUI/DWI population
* Summary reports descriptive of the tested population

The DRI represents years of research and development and has been researched on the DUI/DWI offender population. The DRI acquires a vast amount of relevant information quickly in an objective and timely manner. The DRI integrates the latest psychometric procedures with computerized technology to provide a state-of-the-art DUI/DWI assessment instrument.

The DRI consists of 139 items and requires 25 minutes for completion. The DRI can be administered individually or in groups and is appropriate for people (male and female) with sixth grade or higher reading abilities. The DRI can be administered directly on computer (IBM-PC compatibles) screens or by using paper-and-pencil test booklets (available in English and Spanish). Regardless of how the DRI is administered, all tests are scored and interpreted with computers which automatically generate DRI reports.

The DRI was designed to provide relevant driver risk-related information for DUI/DWI staff decision-making. The language is direct, non-offensive and uncomplicated. Automated scoring and computerized interpretive procedures insure objectivity and accuracy. The DRI is a DUI/DWI risk assessment instrument.

The advantages of the DRI are many. The National Highway Traffic Safety Administration (NHTSA) concluded after a 2 year study (DOT HS 807 475) of DUI/DWI tests that **"the DRI appears to be by far the most carefully constructed from a psychometric standpoint" (pg 37)..."Of the instruments reviewed, this test (DRI) is the most carefully constructed" (pg. 38).**

FIVE EMPIRICALLY BASED MEASURES: The Driver Risk Inventory (DRI) includes five empirically based measures (or scales) of behavioral patterns and traits relevant to understanding problem drinkers, substance (alcohol and other drugs) abusers, and high risk drivers. These five measures or scales are briefly summarized as follows:

    1. TRUTHFULNESS: The Truthfulness (Validity) 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 (Keastner 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, Steer and Fine, 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.

2. ALCOHOL: 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.

3. DRUGS: 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.

4. **DRIVER RISK:** 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)[1] concluded that alcoholics were significantly more involved in inappropriate driving behavior and moving violations. Selzer (1971)[2] 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". (pg.3, DOT HS 807 475).

5. **STRESS QUOTIENT:** The Stress Quotient 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

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[1] Mortimer, R.G., Filkins, L.D., and Lower, J.S., 1971. Court Procedures for Identifying Problem Drinkers: Phase II (U.S. Department of Transportation, Report No. HSRI 71-120, HUF-II) Ann Arbor, Michigan: University of Michigan Highway Traffic Safety Research Institute.

[2] Selzer, M.L., 1971. Differential Risk Among Alcoholic Drivers. Proceedings of the American Association for Automotive Medicine 14: (07-213).

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.

In summary, the Driver Risk Inventory (DRI) contains five independent measures (scales): VALIDITY (TRUTHFULNESS) scale, ALCOHOL scale, DRUG scale, DRIVER RISK scale, and the STRESS COPING ABILITIES scale) that are important to DUI/DWI client assessment.

When evaluating problem drinkers, high risk drivers and substance (alcohol and other drugs) abusers is the goal, the DRI is an important instrument. When measuring the degree of severity of driver risk, substance abuse and stress coping abilities are important; the DRI is a particularly valuable instrument.

UNIQUE DRI FEATURES

ACCOUNTABILITY: Over the past few years we have witnessed dramatic changes in DUI/DWI legislation, and laws. Recent legislation has placed increased responsibilities for accountability on all persons working with DUI/DWI offenders. Most people involved in the DUI/DWI system--including the offenders--have been searching for a reliable, valid, and accurate way to identify driver risk-related problems. DUI/DWI evaluation and assessment personnel are now accountable to the Courts for their intervention, decisions and recommendations. A need has existed for an instrument (test) that could meet these criteria in a professionally acceptable and responsible manner. Practical considerations include ongoing research, standardization of the instrument on the DUI/DWI offender population, and strong accountability to the courts. Additional features to be considered include short administration time, cost effectiveness and availability of test results on-site in a timely manner. The DRI was developed to meet all

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of these needs. The DRI provides a vast amount of relevant information on-site in a timely manner. The empirical basis of the DRI helps insure accuracy and fairness. DRI reports are automated, objective and can be available on-site within four minutes of test completion.

RISK RANGE CATEGORIES: As explained earlier, the Driver Risk Inventory (DRI) includes five independent and empirically based measures (scales). Each scale has been researched, normed and validated on the DUI/DWI population. Unique DRI programming permits "risk levels" or "risk classification ranges" to be calculated independently for each of these five scales **each time the DRI is administered and scored.** Risk level classification ranges are derived from the population data base of DUI/DWI clients and attained scores are presented as percentiles. Thus, each DRI scale score is independently calculated each time a DRI is scored and then presented numerically (percentiles), by attained risk level category (descriptive paragraphs) and graphically (DRI profile).

RISK RANGE	PERCENTILE SCORES
Low Risk	0 to 39th percentile
Medium Risk	40 to 69th percentile
Problem Risk	70 to 89th percentile
Severe Problem	90 to 100th percentile

Risk range categories are: **Low Risk** (0 to 39th percentile), **Medium Risk** (40 to 69th percentile), **Problem Risk** (70 to 89th percentile), and **High Risk** or **Severe Problem** (90 to 100th percentile). Risk levels represent important classifications of the degree of severity of **each** DRI scale score.

TRUTH CORRECTED SCALE SCORES: Another sophisticated psychometric technique permitted by computer technology involves "truth corrected" scores which are individually calculated for **each** of the five DRI scales **each time** a test is scored. Since it would be naive to assume everybody responds truthfully while completing any test, the Validity (Truthfulness) scale was developed. The Validity (Truthfulness) scale establishes how honest or truthful a person is while completing the DRI. Correlations between the Validity scale and all other DRI scales were statistically determined. This procedure

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permits identification of the amount of error variance associated with a person's guardedness or defensiveness. The amount of error variance associated with untruthfulness is then added back into each DRI scale score resulting in "truth-corrected" scores. These truth-corrected scale scores are more accurate than raw scores because they account for the measured amount of untruthfulness of the respondent while completing the DRI. Unidentified denial 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.**

CRIMINAL JUSTICE INFORMATION: In 1971 Selzer[3] concluded that for maximal screening effectiveness, test results and arrest records should be used jointly. DRI research supports this conclusion. The Blood Alcohol Content (BAC) level at time of arrest and the number of prior DUI/DWI's have been demonstrated to be important sources of information for accurate DUI/DWI client assessment.

Discriminant validity for the DRI is clearly demonstrated by the fact that **only** the Alcohol Scale correlates significantly with the BAC (Blood Alcohol Content) level at time of arrest. Simililarly, significant correlations are only obtained between the client's number of prior DUI/DWI's and the Driver Risk and Alcohol scales. DRI research provides the empirical basis for selectively "weighting" an offender's DRI scale scores when these other sources of information (number of priors and BAC level) are available at the time of DUI/DWI client assessment.

SIGNIFICANT ITEMS: The DRI report prints out "significant items" which are client self-admissions or particularly relevant responses. These "significant" items provide added insight into the client's situation and should be clarified in subsequent interview. Significant items are reported in the DRI report for the Alcohol, Drugs and Driver Risk scales.

STRUCTURED INTERVIEW: The "structured interview" refers to the last section

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[3] Selzer, M.L., 1971 Differential Risk Among Alcoholic Drivers. Proceedings of the American Association for Automotive Medicine, 14: 107-213.

of the DRI test that contains a sequence of multiple choice questions and answers. The answers that are selected by the client are printed in the structured interview section of the DRI report. Structured interview responses incorporate important self-report life history, motivational and adjustment information. These areas of inquiry permit a very personal and highly individualized understanding of the client. The structured interview presents the **client's own perception of his or her situation and needs.** This additional source of information enables the DUI/DWI evaluator to perform content analysis of DRI protocols and compare the client's opinions with objective test results. This comparison can help in understanding the client's motivation, attitude and behavior.

USER FRIENDLY: The DRI is a brief, easily administered and interpreted DUI/DWI risk assessment instrument. The language is direct, non-offensive and uncomplicated. Test booklets are written at the sixth grade level and available in English and Spanish. Reports are easy to read and quickly understood. Space is provided in DRI reports for staff comments and recommendations. Thus, staff report writing, substantiation of decision-making and record keeping needs are met with DRI reports.

The straightforward nature of the DRI may appear to some people as intrusive. However, 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.

EFFICIENCY: With the DRI staff time required for data gathering, interviewing and scoring is significantly reduced--with no compromise in the quality of DUI/DWI client assessment. DRI software is contained in DRI diskettes and handles all of the scoring, calculations and interpretive logic. DRI's can be scored and interpreted on-site within four minutes. These automated procedures ensure objectivity and accuracy. Each time a DRI is scored, the five scale scores are independently calculated and presented numerically (percentiles), by attained risk level category (descriptive paragraphs) and graphically (DRI profile). **Few DUI/DWI evaluators would have the time, let alone the inclination, to acquire and process such a vast amount of information.** The DRI provides the evaluator relevant information for client-related decision making. The DRI provides additional insight and depth of understanding regarding areas of inquiry that can be pursued in subsequent interview. In addition, DRI reports provide space for evaluator

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recommendations. Thus, in one document (DRI report), we have the client's self-report, attained risk levels, risk-related recommendations, and evaluator's recommendations. **Staff report-writing, substantiation of decision-making and record-keeping needs are met with DRI reports.**

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 9 minutes. The DRI-SHORT FORM consists of 49 items and has a fifth (5th) grade reading level. DRI-SHORT FORM scales correlate significantly with comparable scales on the DRI. The DRI-SHORT FORM contains four scales: Validity (Truthfulness), Alcohol, Drugs, and Driver Risk. DRI-SHORT FORM tests can be administered orally in individual or group testing settings.

DRI UTILIZATION PROCEDURES: DRI tests are available on 5 1/4" and 3 1/2" floppy diskettes for on-site use. DRI diskettes contain 51 DRI test applications, but we only charge for 50. DRI software has a built-in counter so that the number of the test being used is printed in each test report. Thus, DUI/DWI staff always know how many tests remain on their diskette. This permits realistic scheduling of DRI diskette reorders. When all tests are used on a diskette, the diskette is returned to Behavior Data Systems, Ltd. Upon receipt of used diskettes, the test data is included in the **DRI database** in a confidential (no names) manner for subsequent analysis. These procedures facilitate positive and timely research. **Annual analysis of the DRI database is conducted and findings are used to update the DRI on an annual basis, thereby insuring accuracy and fairness.**

DRI STANDARDIZATION DATA: The DRI was designed to facilitate research. The DRI was (and continues to be) researched on the DUI/DWI population. DRI software is designed with the capability of "**saving**" test data from each test that is administered and scored, in a confidential (no names) manner, for ongoing research. This procedure allows **continual expansion** of the **DRI database** with each DRI test that is scored. The DRI expanding database is analyzed annually. Thus, demographic changes in the DUI/DWI population are identified and subsequent software changes reflect trends as they emerge. DRI gender (male and female) differences have been statistically identified by

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data base analysis and corrected in the DRI software. Different scoring procedures have been established for male and female clients. Age, ethnicity and educational factors continue to be studied and reviewed. Data base research and annual summary reports represent unique and desirable features of the DRI.

The **DRI database** also permits the compilation of testing program summary reports. These **annual summary reports** are helpful in program planning, description and test program summary.

EMPIRICAL RESEARCH

The Driver Risk Inventory (DRI) has been researched and normed on the DUI/DWI population. Reliability refers to consistency of results regardless of who uses the instrument. DRI results are objective, verifiable and reproducible. The DRI is also practical, economical and accessible. Validity refers to a test measuring what it is purported to measure. The DRI was validated in a series of studies that are summarized in this document. The National Highway Traffic Safety Administration (NHTSA) concluded that "DRI reliability is well established and validity is based on the instrument's relationship to other established measures" (pg 38, DOT HS 807 475). However, it should be emphasized that DRI research is ongoing in nature. The DRI's data base ensures ongoing research on the DUI/DWI offender population itself.

STRESS QUOTIENT

The Stress Quotient (SQ) 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.

A study was conducted (1980) to demonstrate the SQ's ability to differentiate between High Stress and Low Stress Groups. High Stress subjects (N=10, 5 males and 5 females, average age 39) were randomly selected from outpatients seeking treatment for stress. Low Stress subjects (N=10, 5 males and 5 females, average age 38.7) were 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. Statistical analysis resulted in a t of 4.9, significant at the p < .001 level.

Another study (1980) evaluated the relationship between the SQ scale and two other tests: Taylor Manifest Anxiety Scale (high score indicates a high level of anxiety) and the Cornell Index (high score indicates neuroticism). The three tests were administered to forty-three (43) subjects. Subjects consisted of 21 males and 22 females selected from the general population and ranging in age from 15 to 64 years. It was hypothesized that SQ scores would correlate negatively with the other two tests. Utilizing a Pearson 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. Ten subjects (5 male and 5 female) were randomly chosen from this (1980) study for SQ reliability analysis. A split-half analysis was conducted on items weighted on this variable. The Pearson Product Moment Correlation Coefficient (r) was .85, significant at the p < .01 level.

A study (1981) was conducted to demonstrate the relationship between the SQ scale and the Holmes Rahe Social Readjustment Rating Scale (SRRS). The SRRS comprises a self-rating of stressful life events. Thirty outpatient psychotherapy patients (N=30, 14 males and 16 females, average age 35) were alternately administered the SQ and the SRRS. SRRS scores were correlated (Pearson Product Moment Correlation Coefficient) 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

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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. Results were as follows: SQ and SRRS (r -.4006, p < .01); CS and SRRS (r -.1355, N.S.); S and SRRS (r .6183, p < .001). All 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 scale.

A study (1982) was conducted to evaluate the relationship between factor C (Ego Strength) in the 16 PF Test and the SQ. Thirty-four adjudicated delinquent adolescents (N=34, 30 male and 4 female, average age 16.2) were jointly administered the Cattell 16 PF Test and the SQ scale. Subjects ranged in age from 15 to 18 years. All subjects had at least a 6.0 grade equivalent reading level. High scores on factor C indicate high ego strength and emotional stability, whereas high SQ scores reflect good coping skills. Factor C scores were correlated with SQ scores utilizing the Pearson Product Moment Correlation Coefficient, resulting in an r of .695, significant at the p < .01 level. Results were significant and in the predicted direction.

It was later decided to evaluate the relationship between factor Q4 (Free Floating Anxiety) on the 16 PF Test and S (Stress) on the SQ scale. High Q4 scores reflect free floating anxiety and tension, whereas high S scores measure experienced stress. Twenty-two of the original 34 subjects were included in this analysis since the remainder of the original files were unavailable. All 22 subjects were male. Factor Q4 scores were correlated (Pearson Product Moment Correlation Coefficient) with S scores, resulting in an r of .584, significant at the p < .05 level. 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.

A study was conducted (1982) to evaluate the relationship between selected Wiggin's MMPI supplementary content scales (Es, A, MAS) and the SQ scale. Es measures ego strength, A measures anxiety, and MAS measures manifest anxiety. Fifty-one psychotherapy outpatients (N=51, 23 male and 28 female, average age 34) ranging

in age from 22 to 56 years were alternately administered the MMPI and the SQ. The Pearson Product Moment Correlation Coefficient was utilized in the data analysis. 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. Es and CS correlations resulted in an r of .29, significant at the $p < .001$ level. 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. 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 Pearson Product Moment Correlation Coefficient resulted in an r of .58, significant at the $p < .001$ level. Results were significant and in the predicted direction. The significant correlations between MMPI scales (Es, A, MAS, Pt) and the SQ scale components (CS, S) support the construct validity of the SQ scale.

A study (1984) was conducted to evaluate the reliability of the Stress Quotient (SQ) scale. One hundred outpatient psychotherapy patients (N=100, 41 male and 59 female, average age 37) were administered the SQ soon after intake. The most common procedure for reporting inter-item (within test) reliability is with Coefficient Alpha. The analysis resulted in a Coefficient Alpha of 0.81 (F Value 46.74) with a $p < 0.001$. Highly significant inter-item scale consistency was demonstrated.

Another reliability study (1985) was conducted on the Stress Quotient (SQ) scale. One hundred and eighty-nine job applicants (N=189, 120 male and 69 female, average age 31) were administered the SQ at the time of pre-employment screening. This analysis resulted in a Coefficient Alpha of 0.73 (F Value 195.86) with a $p < 0.001$. Highly significant Cronbach Coefficient Alpha reveals that all SQ scale items are significantly ($p < 0.00$) related and measure one factor or trait.

Another study (1985) was conducted to further evaluate the reliability and validity

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of the Stress Quotient (SQ). One hundred chemical dependency inpatients (N=100, 62 male and 38 female, average age 41) were administered the SQ and the MMPI in counterbalanced order. Analysis of the SQ data resulted in a Coefficient Alpha of 0.84 (F Value 16.20) with a $p < 0.001$. Highly significant inter-item scale consistency was demonstrated.

In the same study (1985, inpatients), Pearson Product Moment Correlations were calculated between the Stress Quotient (SQ) and selected MMPI scales. The SQ is inversely related to other MMPI scales; consequently, negative correlations were predicted. All selected MMPI scale and SQ correlations were significant (0.001 level) and in predicted directions. The SQ correlated (0.001 level of significance) with the following scales: 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 SQ correlated (0.001 level) significantly in predicted directions with selected MMPI scales. 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.

In a replication and expansion of earlier research, another study (1986) was conducted to further evaluate the reliability and validity of the Stress Quotient (SQ). Two hundred and twelve inpatients (N=212, 122 male and 90 female, average age 44) in chemical dependency programs were alternately administered the SQ and MMPI. Analysis of the SQ data resulted in a Coefficient Alpha of 0.986 (F Value 27.77) with a $p < 0.00$. 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), Pearson Product Moment Correlations were calculated between the Stress Quotient (SQ) and selected MMPI scales. **All SQ correlations with selected MMPI scales were significant (at the 0.001 level of significance) and in predicted directions.** The SQ correlated significantly (0.001 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

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Conflict (AUT), Manifest Hostility (HOS), Suspiciousness/Mistrust (TSC-II), Resentment/Aggression (TSC-V) and Tension/Worry (TSC-VII).

The studies cited above demonstrate empirical relationships between the SQ scale and other indices of stress, anxiety and coping skills. This research demonstrates that the Stress Quotient (SQ) is a reliable and valid instrument. The SQ has high inter-item scale consistency. 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 evaluation of driver risk. In the research that follows, the **Stress Quotient** or **SQ** is also referred to as the **Stress Coping Abilities scale.**

DRI RESEARCH

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. Thus, the DRI has been researched, normed and validated on convicted DUI/DWI offenders.

A study was conducted (1987) to establish the internal consistency of the DRI scales. All respondents (N=563) were convicted DWI offenders being screened and processed by the courts. DWI offenders ranged in age from 16 to 75 years. Education varied from 8 to 19 years. The sample consisted of 458 men and 105 women (451 Caucasians, 63 Hispanics, 31 American Indians, 15 Blacks, and 3 other ethnicities). All of the data in this 1987 study was analyzed by an independent consultant, a Psychology Professor on full-time faculty status at Arizona State University.

The original pool of test items for each DRI scale was analyzed and the items with

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the best statistical properties, i.e., "item-whole correlation coefficient" with the remaining scale items, were selected and retained. The Driver Risk Inventory (DRI) is a 139-item self-report test. Four of the DRI scales (Validity or Truthfulness, Alcohol, Driver Risk and Drugs) contain 20 items each; whereas the Stress Quotient scale contains 40 items. The Validity or Truthfulness scale is designated the Validity scale in the following research. Additional self-report structured interview items are included in the DRI test booklet. After item selection was completed, Cronbach's Coefficient Alpha, as well as the Standardized Alpha (considered the two most important indices of internal consistency reliability), were computed on the remaining DRI scale items. These coefficients were as follows:

TABLE 1. (1987, N=563)
DRI SCALES INTERNAL CONSISTENCY

DRI SCALES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.81	.81	$P < .0001$
Alcohol Scale	.89	.90	$P < .0001$
Drugs Scale	.74	.77	$P < .0001$
Driver Risk	.75	.75	$P < .0001$
Stress Coping Abilities	.89	.90	$P < .0001$

The results of this study demonstrate the reliability (internal consistency) of the DRI scales. Reliability refers to consistency of results regardless of who uses the DRI test. DRI results are objective, verifiable and reproducible. These findings support the reliability of the DRI.

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: Validity or 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.

The results of this validity study demonstrates the relationship between staff ratings and DRI scales (measures), as determined by Pearson Product Moment Coefficients computed between corresponding variables. The actual coefficients are presented below:

TABLE 2. (1987, N-563) AGREEMENT COEFFICIENTS BETWEEN STAFF RATINGS AND DRI SCALES

DRI SCALES	AGREEMENT COEFFICIENT	SIGNIFICANCE LEVEL
Alcohol	.63	P < .0001
Drugs	.54	P < .0001
Driver Risk	.44	P < .0001
Validity (Truthfulness)	.09	P < .02
Stress Coping Abilities	.02	P < .54

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

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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, Drugs and Driver Risk) and DWI evaluator ratings was impressive and highly statistically significant.

The less significant Agreement Coefficient obtained between the DRI Truthfulness (Validity) 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 (validity) 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 Quotient (SQ) 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 Pearson Product Moment Correlation Coefficient relating the DRI Alcohol scale to offender's Blood Alcohol Content (BAC) level was highly significant (P < .001; r = 24). **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).

As explained earlier, 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 Validity or Truthfulness scale. The "truth-corrected" scoring procedure was described earlier under the heading "truth-corrected scores." In the DWI normative study described herein, each of the three validity correlation coefficients, reported earlier, 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.

Pearson 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 below:

TABLE 3. 1987 (N=563)
CORRELATION COEFFICIENTS: DRI SCALES AND THE MAST,
SANDLER AND COURT PROCEDURES

DRI SCALES	MAST	SANDLER	COURT
Driver Risk	.24	.22	.46
Drug	.37	.11	.32
Alcohol	.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 Pearson 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 (P < .001; r = .24). **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.**

This 1987 research was a necessary prerequisite for understanding the statistical properties of the DRI and the relationships between DRI scales and other indices used in DUI/DWI risk assessment. Based on this research, offender risk level classification ranges or categories were established for each DRI measure or scale. For example:

TABLE 4. (DRI SCALES)
RISK RANGE CLASSIFICATION

PERCENTILE SCORES	RISK LEVEL CLASSIFICATION
0--39 percentile	Low Risk
40--69 percentile	Medium Risk
70--89 percentile	**Problem** Risk
90-100 percentile	High Risk **(Severe Problem)**

DRI risk range classification percentile scores, as cited above, are the same for each of the five DRI scales: VALIDITY or TRUTHFULNESS, ALCOHOL, DRIVER RISK,

DRUGS and STRESS COPING ABILITIES.

This 1987 research also provides an empirical basis for selectively "weighting" an offender's DRI scale scores when other sources of information, e.g., number of prior DUI's/DWI's, BAC (Blood Alcohol Content) level at time of arrest, etc., are available at the time of DUI/DWI offender risk evaluation and screening.

As noted earlier, this DRI research (1987) demonstrated a significant correlation between the BAC (Blood Alcohol Content) level at time of arrest and the DRI Alcohol Scale. This BAC level research demonstrated the discriminant validity of the DRI Alcohol scale while providing an empirical basis for beta weighting procedures.

The Blood Alcohol Concentration (BAC) level obtained at the time of DUI/DWI arrest correlates significantly with the Alcohol scale. However, since state DUI/DWI laws vary, **weighting of the BAC on the Alcohol scale is adjusted on a state-by-state basis to be in compliance with state statutes.**

When the BAC level is not available, the Alcohol scale is scored by adding the client's cumulative scale score. When the cumulative scale score exceeds the client's BAC weighted score, the higher cumulative scale score is presented in the DRI report. However, when the client's Alcohol scale score is BAC weighted, that scale score cannot be lower than their BAC weighted score.

To review, a client's scale score is determined by his or her pattern of responding to that scale's items or questions. For example, if a scale has 20 scale items, then the client's score is obtained by adding the number of scale items that were answered in a deviant or negative direction. If that client's BAC level is high enough to be weighted, then the BAC weighted alcohol scale score would apply. Yet, when a client's Alcohol scale score is higher than their BAC weighted score, the higher scale score applies and is presented in the DRI report. On the other hand, if the client's Alcohol scale score is lower than their BAC weighted score, the higher weighted score applies and is presented in the DRI report.

The following **example** of BAC weighting is provided for clarification in Table 5.

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A multiple DUI/DWI offender refers to a client with at least one prior DUI/DWI offense.

TABLE 5. EXAMPLE BAC WEIGHTING

FIRST DUI/DWI OFFENDER		MULTIPLE DUI/DWI OFFENDER	
BAC LEVEL	WEIGHTED SCORE	BAC LEVEL	WEIGHTED SCORE
.12 to .14	39th percentile	Refer to prior DUI (below)	
.15 to .19	69th percentile	.15 to .19	70th percentile
.20 or higher	70th percentile	.20 or higher	87th percentile

The 39th percentile is the highest score obtained in the low risk range. The 69th percentile is the highest score in the medium risk range. The 70th percentile is the lowest score in the problem risk range. The 90th percentile is the lowest score in the severe problem risk range.

ONLY THE DRI ALCOHOL SCALE CORRELATES SIGNIFICANTLY WITH THE BAC (BLOOD ALCOHOL CONTENT) LEVEL OBTAINED AT TIME OF DUI/DWI ARREST.

Number of prior DUI/DWI convictions correlates significantly with the Alcohol scale and to a less significant degree with the Driver Risk Scale. **Weighting of the Alcohol and Driver Risk scales for number of prior DUI/DWI convictions may vary on a state-by-state basis to be in compliance with state statutes.**

When the number of prior DUI/DWI convictions is not available, the Alcohol and Driver Risk scales are scored by adding the client's cumulative scale scores. When the cumulative scale score exceeds the client's "number of priors" weighted score, the higher cumulative scale score is presented in the DRI report. However, when the client's Alcohol or Driver Risk scale score is "number of priors" weighted, that scale score cannot be lower than their "number of prior DUI/DWI conviction" weighted score. In brief, the higher score always takes precedence.

The following **example** of "number of prior DUI/DWI conviction weighting is provided for clarification in Table 6.

TABLE 6. EXAMPLE PRIOR WEIGHTING
NUMBER OF PRIOR DUI/DWI CONVICTIONS

LIFETIME DUI'S/DWI'S	ALCOHOL SCALE	DRIVER RISK SCALE
One prior conviction	40th percentile	Not applicable
Two prior convictions	69th percentile	40th percentile
Three prior convictions	70th percentile	69th percentile
Four prior convictions	89th percentile	70th percentile
Five or more convictions	90th percentile	89th percentile

DUI'S PAST 5 YEARS	ALCOHOL SCALE	DRIVER RISK SCALE
One prior conviction	69th percentile	40th percentile
Two prior convictions	70th percentile	69th percentile
Three prior convictions	89th percentile	70th percentile
Four or more convictions	90th percentile	89th percentile

ONLY THE ALCOHOL AND DRIVER RISK SCALES CORRELATE SIGNIFICANTLY WITH THE NUMBER OF DUI/DWI CONVICTIONS IN THE PAST FIVE YEARS AND IN THE CLIENT'S LIFETIME.

With regard to the **DRIVER RISK SCALE**, the number of prior DUI's/DWI's are weighted as described in Table 6. In addition, three or more moving violations and two or more "at fault" accidents within the past five years automatically scores the offender at the 70th percentile or in the lowest limits of the problem risk range. Similarly, ten or more moving violations or four or more "at fault" accidents in the offender's lifetime automatically scores the offender at the 89th percentile or in the highest limits of the problem risk range. In situations involving less than these established limits for moving violations or "at fault" accidents, or when this information is not available, the Driver Risk scale score is calculated by adding the number of scale items answered in a deviant or negative direction. When the Driver Risk score is weighted, the scale score can be higher than the weighted score but cannot be lower than the weighted score.

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DISCRIMINANT VALIDITY IS DEMONSTRATED BY THE FACT THAT ONLY THE DRIVER RISK SCALE CORRELATES SIGNIFICANTLY WITH AT-FAULT ACCIDENTS AND PRIOR MOVING VIOLATIONS.

With regard to the **DRUG SCALE**, one or more prior other drug-related (marijuana, cocaine, heroin, etc.) convictions within the past five years or three or more drug-related convictions in the offender's lifetime automatically scores the offender at the 69th percentile or in the highest limit of the medium risk range. When a client's Drug scale score is higher than their other drug-related "prior convictions" weighted score, the higher score applies. On the other hand, if the client's Drug scale score is lower than their weighted score, the higher weighted score takes precedence. In situations involving no prior drug-related convictions, or when this information is not available, the Drug scale score is calculated by adding the number of scale items answered in a deviant or negative direction.

DISCRIMINANT VALIDITY OF THE DRUG SCALE IS DEMONSTRATED BY THE FACT THAT NO OTHER DRI SCALE CORRELATES SIGNIFICANTLY WITH PRIOR OTHER DRUG-RELATED CONVICTIONS.

In summary, the DRI is a self-contained risk evaluation and assessment instrument or test. The offender's test performance results in five reliable, valid and accurate behavioral measures that are important for an adequate understanding of that person's situation, driver risk and need. This is important because intervention recommendations, countermeasures and sentencing are often based upon the information obtained.

As noted earlier, Selzer (1971) concluded that for maximal screening effectiveness, test results and arrest records should be used jointly. DRI research supports this conclusion. When additional sources of relevant information are available, e.g., number of priors, MVD report, BAC level, etc., at the time of DUI/DWI offender assessment, they can be included into the DRI scoring methodology via the procedures discussed earlier. **This results in an even more comprehensive and accurate risk measurement and predictive system.** This flexibility in data acquisition and scoring represents a very important, as well as desirable, feature.

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In an expansion of earlier DRI research, another study was completed in 1988. All respondents (N = 1899) were convicted DWI offenders who were being screened and evaluated for the courts. This sample consisted of 1583 males and 316 females (1359 Caucasians, 33 Hispanics, 112 American Indians, 80 Blacks, 6 Asians and 12 other ethnicities).

Five age categories were established and are summarized as follows: 16 to 25 (N = 576); 26 to 35 (N = 785); 36 to 45 (N = 345); 46 to 55 (N = 136); and 56 + years (N = 48). Similarly, eight educational categories were established and are summarized as follows: Eighth grade or less (N = 70); partially completed high school (N = 309); GED certificate (N = 128); high school graduate (N = 695); partially completed college (N = 523); technical/business school (N = 23); college graduate (N = 131); and professional/graduate school (N = 20). All 1988 DRI test data was analyzed by an independent Arizona State University faculty consultant.

Cronbach's Coefficient Alpha, as well as the Standardized Alpha (considered the two most important measures of internal consistency and reliability) were computed. These coefficients were as follows:

TABLE 7. (1988, N=1899)
DRI SCALES INTERNAL CONSISTENCY

DRI SCALES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.82	.82	$P < .0001$
Alcohol Scale	.90	.90	$P < .0001$
Drugs Scale	.73	.76	$P < .0001$
Driver Risk	.77	.77	$P < .0001$
Stress Coping Ability	.90	.91	$P < .0001$

Comparing these (1988) findings with those reported earlier (1987), we find similar results. These findings (1988) corroborate those reported earlier (1987) and strongly support the reliability (internal consistency) of the DRI.

People often develop firm masculine or feminine identifications that contribute to consistent "gender differences" responding on psychometric tests. F-tests were calculated for all DRI scales to evaluate possible gender differences. Significant gender differences were found on three DRI scales, i.e., Validity (Truthfulness) Scale, Alcohol Scale and the Driver Risk Scale.

TABLE 8.
GENDER DIFFERENCES, 1988

VARIABLE	TRUTHFULNESS	ALCOHOL	DRIVER RISK
Gender (Male-Female)	7.61	5.33*	11.13

*P < .05, other significance levels 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 Validity (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 Validity (Truthfulness) scale are of interest. Females had a mean score 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., Validity, Alcohol and Driver Risk) are likely to be 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.

This is an example of why gender-specific research on the DRI Validity (Truthfulness), Alcohol, and Driver Risk is important. With more accurate measures the DUI/DWI evaluation agency can make more accurate risk-related recommendations.

Gender specific norms or separate male and female scoring procedures have been developed and incorporated in the DRI software program for men and women on

these three DRI scales. 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. This uniform guardedness appears to neutralize or perhaps cancel out any significant gender differences on the Drug Scale. Similarly, no significant gender differences were found on the Stress Coping Abilities scale. Our analysis 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.

As the DRI data base continues to grow and incorporate more demographic (e.g., age, gender, ethnicity and education) diversification and representation, DRI research will continue to study these important variables.

Another study was conducted (1988) to further establish the internal consistency of the DRI and concurrently examine DRI-related correlations with a wide number of variables, e.g., staff member risk level ratings, Mortimer-Filkins, MAST, MacAndrews, etc. Three established DUI screening agencies participated in this research. All respondents (N=1299) were DUI offenders being screened and processed by the courts.

The first sample consisted of 503 males and 97 females (530 Caucasians, 17 Hispanics, 3 American Indians, 46 Blacks, and 4 other ethnicities). The sample was analyzed by five age categories: 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). Eight educational levels were established: Eighth grade or less (N=57); Partially completed high school (N=100); GED (N=21); High school graduate (N=263); Partially completed college (N=125); Technical/Business scale (N=3); College graduate (N=45); and Professional/graduate school (N=13).

The second sample consisted of 348 males and 80 females (392 Caucasians, 14 Hispanics, 1 American Indian, and 21 Blacks). Age categories were represented as follows: 16-25 (N=113); 26-35 (N=179); 36-45 (N=83); 46-55 (N=37); and 56 or older (N=16). Eight educational levels were represented as follows: Eighth grade or less (N=14); Partially completed high school (N=89); GED (N=19); High school graduate (N=197); Partially completed college (N=55); Technical/business school (N=5); College

graduate (N=40); and Professional/graduate school (N=9).

The third sample consisted of 216 males and 55 females (245 Caucasians, 1 Asian, 3 Hispanics, 1 American Indian, 20 Blacks, and 1 other ethnicity). Five age categories were represented: 16-25 (N=75); 26-35 (N=112);36-45 (N=55); 46-55 (N=17); and 56 or older (N=12). Four educational levels were represented: Eighth grade or less (N=12); Partially completed high school (N=59); High school graduate (N=114); and partially completed college (N=86).

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 combined sample (N=1299).

TABLE 9. (1988, N=1299)
CRONBACH'S ALPHA AND STANDARDIZED ALPHA

DRI SCALES OR MEASURES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.81	.81	P < .0001
Alcohol	.91	.91	P < .0001
Drugs	.74	.77	P < .0001
Driver Risk	.79	.79	P < .0001
Stress Quotient	.89	.90	P < .0001

The results of this study demonstrate the reliability (Internal consistency) of the DRI measures or scales. These findings correspond very closely with the 1987 DRI research (N=563) and 1988 DRI research (N=1583) reported earlier, and strongly support the internal consistency (reliability) of the DRI. Reliability refers to consistency of test results regardless of who used the test. DRI results are objective, verifiable, reproducible and reliable.

This study (N=1299) was designed to replicate an earlier (1987, N=563) study that examined the relationship between DWI evaluator ratings and DRI scale scores, e.g., concurrent validity. As noted earlier, three established DUI offender evaluation agencies (hereinafter referred to as First, Second and Third Samples) participated in this (1988)

study. All participating DUI agencies' staff were highly trained and experienced in providing DUI-related evaluation services and recommendations to 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's/DWI's, 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 MacAndrews.

The results of this validity study demonstrate relationships between staff member ratings and DRI scales, as determined by Pearson Product Moment Correlation Coefficients, computed between corresponding variables. The Coefficients are presented below:

TABLE 10. (1988, N=1299)
STAFF MEMBER RISK LEVEL RATINGS AND DRI SCORES
PEARSON PRODUCT MOMENT CORRELATION COEFFICIENTS

DRI SCALES OR MEASURES	FIRST SAMPLE AGREEMENT COEFFICIENT	SECOND SAMPLE AGREEMENT COEFFICIENT	THIRD SAMPLE AGREEMENT COEFFICIENT
Validity (Truthfulness)	.2976	.3560	.0764*
Alcohol Scale	.6837	.5612	.6724
Drugs Scale	.5002	.4376	.5321
Driver Risk	.6754	.3870	.4737
Stress Coping Ability	.4903	.3047	.3957

*P < .05, all other values .0001 < P < .001

In reviewing the coefficients cited above, 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's/DWI's and other objective test results. In contrast, DRI scores were arrived at after approximately 25 minutes of test administration. The agreement between staff member ratings and DRI scale scores is impressive and statistically significant.

Some caution is suggested as some staff members in one of the samples may have had access to some DRI results (summary reports) prior to completing their offender ratings. If this was the case, these results are not that surprising. However, in the 1987 (N=563) 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 (P < .02), which is similar to the Third Sample's Validity (Truthfulness) coefficient (P < .05), cited above. With regard to the significant Stress Coping Abilities correlations, these stress coping ratings were not significant in the 1987 study. A possible explanation of these differences may involve staff instructions. In the 1987 study, staff were instructed to rate the offender's "stress coping ability", whereas in the present (1988) 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 1098 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. Approximately ninety-five percent of staff member alcohol ratings and DRI Alcohol scale score ratings were either exactly the same or only differed by one (adjacent) rating category. These results are impressive since the staff members rating the offenders' alcohol risk were relying on their established interview and evaluation procedures. However, these results are understandable when the correlations between the DRI and other objective instruments

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and tests are discussed later in this paper. 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.

Any statistic has a certain variation from one sample to another. Even if subjects are drawn randomly from the same population, the correlation coefficients between two variables will differ from sample to sample. Using a large sample makes the correlation more dependable.

In the present study (1988, N=1299) the Pearson Product Moment Correlation Coefficient relating the DRI Alcohol scale to offender's Blood Alcohol Content (BAC) level was found to be highly significant.

TABLE 11. (1988, N=1299)
BAC LEVEL VERSUS DRI SCALES

DRI SCALES OR MEASURES	FIRST SAMPLE AGREEMENT COEFFICIENT	SECOND SAMPLE AGREEMENT COEFFICIENT	THIRD SAMPLE AGREEMENT COEFFICIENT
Truthfulness	.0216	.0195	.0928
Alcohol	.5968**	.6568**	.3357**
Drugs	-.0322	-.1146	.1006
Driver Risk	.1048	-.0180	-.0159
Stress Quotient	-.0200	-.0553	-.0954

**$P < .001$

These findings are similar to those reported in the 1987 (N=563) study. **Discriminant validity for the Alcohol scale is again demonstrated by the fact that 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 predictivity 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 criterions such as staff ratings, BAC level and number of prior DUI/DWI convictions. Test users want to know how a test can be interpreted, and how confidently.

Also, in the present study (1988), the Pearson Product Moment Correlation Coefficients relating the offender's number of prior DUI's/DWI's to DRI scales or measures were calculated.

TABLE 12. (1988, N=1299)
PRIOR DUI'S/DWI'S VERSUS DRI SCALES

DRI SCALES OR MEASURES	FIRST SAMPLE AGREEMENT COEFFICIENT	SECOND SAMPLE AGREEMENT COEFFICIENT	THIRD SAMPLE AGREEMENT COEFFICIENT
Truthfulness (Validity)	.0185	.0518	.0554
Alcohol Scale	.2949**	.1811*	.3573**
Drugs Scale	-.0115	.2827**	.0716
Driver Risk	.3268	.2508**	.3946**
Stress Quotient	-.0327	.3307**	.0315

** 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 one sample (1988), both the Drugs and Stress Quotient scales correlated significantly with number of prior DUI's/DWI's. These empirical 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 polydrug differentiation

in the 1980's. If this is the case, these findings can be expected to contine in the 1990's. However, it is important to note that high correlations do not show that "one variable causes another". Random error of measurement lowers a correlation. Only controlled experiments permit identification of underlying causes of a correlation. Until such research is done, it is safe to conclude that correlated measures are influenced by a common factor.

As noted earlier, 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. Pearson Product Moment Correlation Coefficients were calculated between MAST scores and all DRI Scale scores. Only those DRI scales or measures reflecting significant correlations are represented.

TABLE 13. (1988, N=1299)
MAST VERSUS DRI ALCOHOL AND DRUG SCALES

DRI SCALES OR MEASURES	FIRST SAMPLE, MAST COEFFICIENTS	SECOND AND THIRD SAMPLE MAST COEFFICIENTS
DRI Alcohol	.3778**	.1754*
DRI Drug	.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 (Validity) 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 Drugs, Driver Risk or Stress Coping Abilities scales or 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).

Pearson Product Moment Coefficients were calculated between Mortimer-Filkins total scores and all DRI scale scores. Only those DRI scales or measures reflecting significant correlations are represented.

TABLE 14. (1988, N=1299)
MORTIMER-FILKINS VERSUS DRI ALCOHOL AND DRUG SCALES

DRI SCALES OR MEASURES	FIRST SAMPLE MORTIMER-FILKINS COEFFICIENTS	SECOND SAMPLE MORTIMER-FILKINS COEFFICIENTS
DRI Alcohol	.4508**	.3232**
DRI Drug	.2404**	.2368**
DRI Driver Risk	.2459**	.1264 (N.S.)

** P < .001

The Mortimer-Filkins total score correlated highly significantly with the DRI Alcohol scale and to a lesser extent the DRI Drugs Scale. In one sample, the Driver Risk scale

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correlated significantly with the Mortimer-Filkins, whereas, in the other sample a non-significant correlation was demonstrated. Historically, the Mortimer-Filkins has been the most widely used DUI/DWI screening procedure. Thus, 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[4], 1976, Hammond and Tamble[5], 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 Drugs, Driver Risk or Stress Coping scales or 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 or 1990's) research as well as norms based on the DUI/DWI population itself.

The National Highway Traffic Safety Administration (NHTSA) is the highest federal authority in the DUI/DWI field. After NHTSA's two year study (DOT HS 807 475) of DUI/DWI tests, they concluded that the Driver Risk Inventory (DRI) "appears to be by far the most carefully constructed from a psychometric standpoint". They rated the MAST and Mortimer-Filkins tests as average. With regard to the DRI, NHTSA concluded "reliability is well established and validity is based on the DRI's relationship to other established measures".

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[4]Jacobson, G.R.: The Alcoholisms. Human Science Press, New York, 1976.

[5]Hammond, H. & Tamble, L.: DWI Assessment. Hazeldon Foundation, 1983.

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In earlier DRI research (1988, N=1899), significant gender (male versus female) differences were demonstrated on the DRI Truthfulness, Alcohol and Driver Risk scales. Gender specific norms or separate male and female scoring procedures were developed for the DRI to insure both accuracy and fairness for men and women DUI/DWI offenders. Since the Mortimer-Filkins has been demonstrated to correlate significantly with the DRI Alcohol Scale, Drug Scale and the Driver Risk Scale, the possibility of Mortimer-Filkins gender (male versus female) differences must be empirically investigated. It is now reasonable to assume that such gender (male versus female) differences may exist in Mortimer-Filkins scoring outcomes or results. Until such time as these possible gender differences in Mortimer-Filkins results can be adequately studied in research involving DUI/DWI offenders, caution is warranted regarding these Mortimer-Filkins results. If gender differences do exist in the Mortimer-Filkins scoring methodology and test, the Mortimer-Filkins could be considered biased or possibly unfair. This is an important area for Mortimer-Filkins-related research to investigate and resolve. It should be emphasized that separate scoring procedures and keys were empirically developed and established for males and females using the Driver Risk Inventory (DRI) to insure both accuracy and fairness.

One of the agencies participating in this (1988) research study utilized the MacAndrews scale in their screening procedures. Pearson Product Moment Correlation Coefficients were calculated between the MacAndrews scale and all DRI scale scores. Only those DRI scales reflecting significant correlations are represented.

TABLE 15. (1988, N=1299)
MACANDREWS VERSUS DRI SCALES

DRI SCALES OR MEASURES	MACANDREWS COEFFICIENTS	SIGNIFICANCE LEVEL
Truthfulness	-.2698	P < .001, NEGATIVE
Alcohol	.1660	P < .02
Drugs	.1694	P < .02

The highly significant **negative** correlation between the MacAndrews scale and the DRI Truthfulness scale suggests many low scoring MacAndrews offenders are either defensive, recalcitrant or untruthful in their self-report. If the MacAndrews scale is

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removed from the 566-item Minnesota Multiphasic Personality Inventory (MMPI) test, then it would only contain an alcoholism scale. In other words, the MacAndrews scale would not contain an independent Truthfulness (Validity) scale. It would also have to be standardized and normed on the DUI/DWI population. These findings emphasize the importance of the DRI Validity (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. Pearson Product Moment Correlation Coefficients were calculated between number of prior moving violations and the DRI Driver Risk Scale. **Discriminant validity is demonstrated by the fact that the only DRI measure or scale to correlate significantly with prior moving violations is the DRI Driver Risk scale.**

TABLE 16. (1988, N=1299)
<u>MOVING VIOLATIONS VERSUS DRIVER RISK SCALE</u>

DRI SCALE OR MEASURE	FIRST SAMPLE AGREEMENT COEFFICIENT	SECOND SAMPLE AGREEMENT COEFFICIENT	THIRD SAMPLE AGREEMENT COEFFICIENT
Driver Risk (Lifetime)	.3742***	.1688*	.3490***
Driver Risk (Past 5 years)	N.A.	.2302**	.2561***

*** P < .001, ** P < .01, * P < .02

Pearson Product Moment Correlation Coefficients were calculated between prior "at fault" accidents and the Driver Risk Inventory (DRI) measures or scales. **Discriminant validity is demonstrated by the fact that the only DRI measure or scale**

to correlate significantly with prior at-fault accidents is the DRI Driver Risk scale.

TABLE 17. (1988, N=1299)
AT-FAULT ACCIDENTS VERSUS DRIVER RISK SCALE

DRI SCALE OR MEASURE	FIRST SAMPLE AGREEMENT COEFFICIENT	SECOND SAMPLE AGREEMENT COEFFICIENT	THIRD SAMPLE AGREEMENT COEFFICIENT
Driver Risk (Lifetime	.2695**	.2578**	.1648*
Driver Risk (Past 5 years)	N.A.	.3364**	.0359

**P < .001, * P < .02

This research provides an empirical basis for "weighting" an offender's DRI **Driver Risk scale** score when other sources of information (i.e., number of prior moving violations and number of prior at-fault accidents) are available. With regard to the **Driver Risk Scale,** the number of prior moving violations and at-fault accidents are weighted. These weighting procedures were discussed in the 1987 DRI research summary cited earlier.

The discriminant validity of the Driver Risk Scale is demonstrated by the fact that no other DRI measures or scales correlate significantly with either the number of prior moving violations or the number of prior at-fault accidents.

It's interesting to note the marginal correlation in the third sample. This is not surprising in light of the fact that there was 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.

One agency reported offender cigarette consumption. Pearson Product Moment

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Correlations were calculated between offender cigarette consumption and all other variables or measures in this study. Only significant correlations are presented.

TABLE 18. (1988, N=1299)
CIGARETTES VERSUS OTHER VARIABLES

VARIABLES	COEFFICIENTS	SIGNIFICANCE
Staff ratings-Alcohol	.2344	P < .001
Staff ratings-Driver Risk	.2316	P < .001
Mortimer-Filkins	.4625	P < .001
DRI Alcohol Scale	.2828	P < .001
DRI Drugs Scale	.1801	P < .01

These significant correlations are interesting and may relate to the research literature on the addictive personality. The DRI does not ask any questions regarding an offender's smoking habits.

In summary, the 1988 research study (N=1299) cited above is both a replication and expansion of earlier DRI research. Results in both the 1987 and 1988 studies strongly support the reliability and internal consistency of the DRI measures (scales). As noted earlier, reliability refers to consistency of test results regardless of who uses the test. It's reasonable to conclude that DRI results are objective, verifiable, reproducible, and reliable. These results also support the validity of the DRI.

After a two year study of DUI/DWI assessment instruments, NHTSA (National Highway Traffic Safety Administration) concluded, "DRI reliability is well established and validity is based on the instrument's relationship to other established measures" (pg 38, DOT HS 807 475).

Does the DRI measure what it purports to measure? An earlier study (1987, N=563) was replicated to further examine the relationship between DUI/DWI evaluator risk level ratings of offenders and DRI scale scores. The agreement coefficients (validity) between staff member ratings and DRI scale scores in 1987 and 1988 studies were statistically significant and quite impressive. The DRI also correlates significantly with other DUI/DWI tests. It's reasonable to conclude that DRI results are valid. The DRI does measure what it purports to measure.

The discriminant validity of the DRI Alcohol scale was again 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 again correlated significantly with the offender's number of prior DUI's/DWI's.

Both the MAST and the Mortimer-Filkins scores correlated significantly with the DRI Alcohol and Drugs scales. Of possibly equal significance was the fact that the MAST and the Mortimer-Filkins do not correlate with, indeed do not measure, Truthfulness (Validity), Driver Risk, or Stress Coping Ability. Thus, although the MAST and the Mortimer-Filkins do provide important alcohol (and possibly drug-related) information, they provide little else. Questions regarding the MAST's face validity and the Mortimer-Filkins one dimensional (substance use) screening were noted. Perhaps the most common criticism of the Mortimer-Filkins centers on the lengthy time required for proper administration of the Mortimer-Filkins interview and questionnaire. In contrast, the Driver Risk Inventory (DRI) provides more 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.

The highly significant <u>negative</u> correlation between the MacAndrews scale and the DRI Truthfulness scale emphasizes the importance of the DRI truth-corrected scale scores, especially in court-related evaluation settings.

As the 1987 DRI research provided an empirical basis for selectively weighting DRI Alcohol and Driver Risk scales (e.g., BAC levels and number of prior DUI's/DWI's); **the present (1988) DRI research demonstrates the empirical relationships necessary for weighting the Driver Risk scale on both number of prior moving violations and number of prior at-fault accidents.** Both number of prior moving violations and prior at-fault accidents correlate significantly with the Driver Risk scale.

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.

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Finally, cigarette consumption was demonstrated to be related to staff ratings of both Alcohol and Driver risk, Mortimer-Filkins total score, and the DRI Alcohol and DRI Drugs scales. These significant positive correlations are consistent with available DUI/DWI research literature.

The Driver Risk Inventory (DRI) is a DUI/DWI risk assessment instrument that has been researched and normed on the DUI/DWI offender population. This research 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.

A 1988 study (Incarcerated DWI offenders, N=154) was designed to examine relationships (correlations) between the Substance Abuse Questionnaire (SAQ) and the Driver Risk Inventory (DRI) in an inmate population of incarcerated DWI offenders.

The SAQ is a 153-item automated (computerized) test designed for adult chemical (alcohol and other drugs) dependency screening and evaluation. The SAQ contains six empirically based measures or scales: VALIDITY, ALCOHOL, DRUGS, AGGRESSIVITY, RESISTANCE and STRESS COPING ABILITIES. Five of these six SAQ empirically based scales are similar (although independent) and directly comparable to DRI scales.

In contrast, the DRI is a 139-item automated test designed for DWI (Driving While Intoxicated) and DUI (Driving Under the Influence) assessment. The DRI contains five empirically based scales: TRUTHFULNESS (VALIDITY), ALCOHOL, DRUGS, DRIVER RISK AND STRESS COPING ABILITIES.

Although the scales designated TRUTHFULNESS (VALIDITY), ALCOHOL, and DRUGS 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

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COPING ABILITIES scale in the SAQ is the same as the STRESS COPING ABILITIES scale in the DRI.

The SAQ and DRI (1988) were administered in group settings to 154 DWI inmate offenders, in counterbalanced order, at Arizona Department of Corrections (ADOC) facilities. This ADOC (1988) sample consisted of 154 male inmates (98 Caucasians, 25 Hispanics, 13 American Indians, 12 Blacks and six other ethnicities). Five age categories were represented: 16-25 years (N=26), 26-35 years (N=74), 36-45 years (N=38), 46-55 years (N=11), and 56 or older (N=5). Six educational levels were represented: Eighth grade or less (N=7), Partially completed high school (N=50), high school graduates (N=70), Partially completed college (N=16), College graduates (N=9), and professional/graduate school (N=2). Each inmate completed both the SAQ and the DRI. Although all inmates volunteered to participate in this research study, inmate motivation varied widely.

The results of this 1988 (ADOC) validity study demonstrate the relationships between the independent but analogous SAQ and DRI scales. Pearson Product Moment Correlation Coefficients were computed between corresponding scales on these two (SAQ and DRI) tests. The actual correlation coefficients are presented below.

TABLE 19. (1988, N=154)
COMPARISON OF DRI AND SAQ SCALES

SAQ VERSUS DRI SCALES	AGREEMENT COEFFICIENTS	SIGNIFICANCE LEVELS
Truthfulness (Validity)	.6405	P < .001
Alcohol Scale	.3483	P < .001
Drugs Scale	.3383	P < .001
Driver Risk (DRI) versus Aggressivity (SAQ)	.4070	P < .001
Stress Coping Abilities	.7642	P < .001

Earlier 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

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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, Agreement Coefficients for all five sets of scale comparisons were highly significant (P < .001).

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. In addition, the present study (ADOC, 1988) provides important information relevant to the administration of the SAQ and DRI to inmates or incarcerated individuals who are serving their sentences in maximum security facilities. Finally, the present (1988, ADOC) study provides impressive findings that strongly support the validity of the DRI and SAQ.

As part of an ongoing study, DRI data (Kentucky, 1989) was analyzed to further review and on a regional basis re-examine the DRI's internal consistency while examining correlations between a wide number of DRI-related variables. All respondents (N=480) were convicted DWI offenders being screened and processed by the courts.

This sample consisted of 402 males and 78 females (424 Caucasians, 48 Blacks, 2 Hispanics, and 6 of other ethnicities). The sample was broken down by five age categories; 16-25 (N=156), 26-35 (N-171), 36-45 (N=80), 46-55 (N=44) and 56 and over (N=29). Eight educational levels were also considered; Eighth grade or less (N=53); partially completed high school (N=118); GED (N=28); High school graduate (N=199); Partially completed college (N=52); Technical/business school (N=5); College graduate (N=18) and professional or graduate school (N=7).

Cronbach's alpha and standardized alpha were computed as a measure of internal reliability.

TABLE 20. (1989, N=480)
CRONBACH'S ALPHA AND STANDARDIZED ALPHA

DRI SCALES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.79	.79	P < .0001
Alcohol Scale	.89	.90	P < .0001
Drugs Scale	.82	.83	P < .0001
Driver Risk	.73	.74	P < .0001
Stress Coping Abilities	.90	.91	P < .0001

TABLE 21. (1989, N=480) CORRELATION COEFFICIENTS:
BAC, PRIOR DUI/DWI'S, PRIOR ACCIDENTS

DRI SCALES RAW SCORES	BAC LEVEL CORRELATION COEFFICIENT	PRIOR DWI CORRELATION COEFFICIENT	ACCIDENT CORRELATION COEFFICIENT
Validity (Truthfulness)	.0593	.0255	-.0900
Alcohol Scale	.1424**	.4061**	.1232*
Drugs Scale	.0845	.1355*	.0874
Driver Risk	.0671	.4278**	.4268**
Stress Coping Abilities	-.0332	-.0764	-.0393

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

TABLE 22. (1989, N=480) CORRELATION COEFFICIENTS
ALCOHOL, DRUGS, AND DRIVER RISK

DRI SCALES ADJ SCORES	BAC LEVEL CORRELATION COEFFICIENT	PRIOR DWI CORRELATION COEFFICIENT	ACCIDENT CORRELATION COEFFICIENT
Alcohol Scale	.1505**	.4107**	.1346*
Drugs Scale	.0951	.1426**	.1017
Driver Risk	.0799	.4465**	.4333**

The usual strong correlation on all DRI scales with number of prior DWI's is again apparent. Also, once again BAC correlates significantly with the Alcohol scale.

The following table demonstrates how the DRI scales correlate among themselves in the Kentucky sample of DUI offenders.

TABLE 23. (1989, N=480)
DRI SCALE CORRELATIONS

DRI SCALES ADJ SCORES	VALIDITY	ALCOHOL	DRUGS	DRIVER
Validity (Truthfulness)	1			
Alcohol Scale	.0197	1		
Drugs Scale	.0173	.4789**	1	
Driver Risk	-.0530	.3952**	.2801**	1
Stress Coping	.3477**	-.3109**	-.2990**	-.1845**

Cumulative percentages of subjects falling into risk categories: Gender differences were not in place for this version or analysis.

TABLE 24. (1989, N=480) MALES
CUMULATIVE PERCENTAGES IN RISK RANGES

DRI SCALES ADJ SCORES	* * * MALES * * *			
	LOW	MEDIUM	PROBLEM	HIGH
Validity (Truthfulness)	41.3	70.6	89.6	100
Alcohol Scale	39.6	69.4	88.8	100
Drugs Scale	35.1	68.2	88.1	100
Driver Risk	38.1	68.7	89.3	100
Stress Coping	39.3	69.7	89.1	100

TABLE 25. (1989, N=480) FEMALES
CUMULATIVE PERCENTAGES IN RISK RANGES

DRI SCALES ADJ SCORES	* * * FEMALES * * *			
	LOW	MEDIUM	PROBLEM	HIGH
Validity (Truthfulness)	33.3	55.1	76.9	100
Alcohol Scale	46.2	76.9	93.6	100
Drugs Scale	43.6	84.6	92.3	100
Driver Risk	48.7	75.6	98.7	100
Stress Coping	44.9	70.5	93.6	100

As part of an ongoing study, DRI data (1989, N=1487) was analyzed to further study internal consistency and concurrently examine correlations between a wide number of DRI-related variables. All respondents were convicted DWI offenders being assessed and processed by the courts.

This (1989, N=1487) sample consisted of 1223 males and 264 females (1068 Caucasians, 225 Hispanics, 97 American Indians, 61 Blacks and 6 of other ethnicities). The sample was broken down by five age categories: 16-25 (N=22), 26-35 (N=573), 36-45 (N=311), 46-55 (N=125) and 56 and over (N=56). Eight educational categories were also considered: Eighth grade or less (N=59); Partially completed high school (N= 264); GED (N=101); High school graduate (N=527); Partially completed college (N=398); Technical/business school (N=30); College graduate (n=85) and Professional or graduate school (N=23).

Cronbach's alpha and standardized alpha were computed as a measure of internal reliability.

TABLE 26. (1989, N=1487)
CRONBACH'S ALPHA AND STANDARDIZED ALPHA

DRI SCALES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.82	.82	P < .0001
Alcohol Scale	.91	.92	P < .0001
Drugs Scale	.84	.86	P < .0001
Driver Risk	.75	.76	P < .0001
Stress Coping Abilities	.90	.91	P < .0001

TABLE 27. (1989, N=1487)CORRELATION COEFFICIENTS:
BAC, PRIOR DWI'S, PRIOR ACCIDENTS

DRI SCALES RAW SCORES	BAC LEVEL CORRELATION COEFFICIENTS	PRIOR DWI CORRELATION COEFFICIENTS	ACCIDENT CORRELATION COEFFICIENTS
Validity (Truthfulness)	.0459	.0059	-.1565**
Alcohol Scale	.0524	.4048**	.1645**
Drugs Scale	-.0044	.1016**	.0693*
Driver Risk	.0471	.3820**	.3860**
Stress Coping Abilities	-.0424	-.1225**	-.0983**

* = p < .01, ** = p <.001, no asterisk = not significant

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TABLE 28. (1989, N=1487) CORRELATION COEFFICIENTS:
ALCOHOL, DRUG, AND DRIVER RISK

DRI SCALES ADJ SCORES	BAC LEVEL CORRELATION COEFFICIENTS	PRIOR DWI CORRELATION COEFFICIENTS	ACCIDENT CORRELATION COEFFICIENTS
Alcohol Scale	.0758*	.4112**	.1821**
Drug Scale	.0055	.1051**	.0971**
Driver Risk	.0555	.3947**	.4049**

The usual strong correlation on these DRI scales with number of prior DWI's is again apparent. Also, once again BAC correlates significantly with the Alcohol scale.

The following table demonstrates how the DRI scales correlate among themselves in this sample of DWI offenders.

TABLE 29. (1989, N=1487)
DRI SCALE CORRELATIONS

DRI SCALES ADJ SCORES	VALIDITY	ALCOHOL	DRUGS	DRIVER
Validity (Truthfulness)	1			
Alcohol Scale	-.0464	1		
Drugs Scale	.0033	.4753**	1	
Driver Risk	-.0585	.3982**	.2261**	1
Stress Coping Abilities	.4044**	-.3226**	-.2811**	-.1773**

Cumulative percentage of subjects falling into risk categories are presented in the following table.

TABLE 30. (1989, N=1487)
CUMULATIVE PERCENTAGES IN RISK RANGES

DRI SCALES ADJ SCORES	LOW	MEDIUM	PROBLEM	HIGH
Validity (Truthfulness)	46.6	70.9	92.5	100
Alcohol Scale	38.9	69.9	89.1	100
Drugs Scale	36.7	72.9	90.2	100
Driver Risk	39.7	71.1	91.3	100
Stress Coping Abilities	39.3	70.8	89.4	100

Gender differences revealed by previous research were seen once again. Modifications in norms were in place in the DRI software for this sample. The following table shows cumulative percentages when equal norms had been used for both sexes.

TABLE 31. (1989, N=1487)
CUMULATIVE PERCENTAGES (EQUAL NORMS FOR BOTH SEXES)

DRI SCALES ADJ SCORES	FEMALE CUMULATIVE % LOW	MEDIUM	(MALE CUMULATIVE %) PROBLEM	HIGH
Validity (Truthfulness)	40 (49)	66 (72)	89 (93)	100
Alcohol Scale	44 (38)	76 (69)	90 (89)	100
Drug Scale	46 (35)	83 (71)	95 (89)	100
Driver Risk	53 (39)	77 (69)	95 (90)	100
Stress Coping Abilities	40 (39)	70 (70)	88 (90)	100

From this table we again see the need for gender related norms. The alternative is to create a completely gender neutral test, which would be very difficult, given the subject matter.

Another DRI (1989, N=1097) study was conducted to further review the DRI's internal consistency while examining correlations between a variety of DRI-related variables. All respondents (N=1097) were convicted DWI offender being screened and processed by the courts.

This 1989 study consisted of 884 males and 213 females (780 Caucasians; 191 Hispanics; 86 American Indians; 37 Blacks; and 3 other ethnicities). Five age categories were established: 16-25 years (N=313); 26-35 years (N=418); 36-45 years (N=224); 46-55 years (N=91); and 56 years and older (N=51). Eight educational categories were also established: Eighth grade or less (N=38); partially completed high school (N=170); GED (N=191); High school graduate (N=411); Partially completed college (N=286); Technical or business school (N=9); college graduate (N=89); and professional or graduate school (N=12).

Cronbach's Alpha and the Standardized Alpha were computed as measures of internal reliability.

TABLE 32. (1989, N=1097)
DRI INTERNAL RELIABILITY

DRI SCALES	CRONBACH'S ALPHA	STANDARDIZED ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.81	.81	P < .001
Alcohol Scale	.90	.91	P < .001
Drugs Scale	.84	.86	P < .001
Driver Risk Scale	.74	.75	P < .001
Stress Coping Abilities	.91	.92	P < .001

Comparing these 1989 findings with those reported earlier we find very similar results. These 1989 findings corroborate those cited earlier and strongly support the reliability and internal consistency of DRI measures (scales).

The following tables demonstrate what happens when you analyze raw scores and then analyze "truth-corrected" scores. The raw score DRI scale correlations are presented first.

TABLE 33. (1989, N=1097)
DRI RAW SCORE SCALE CORRELATIONS

DRI SCALES (RAW SCORES)	BAC LEVEL CORRELATION COEFFICIENT	#PRIOR DWI'S CORRELATION COEFFICIENT	ACCIDENT CORRELATION COEFFICIENT
Validity (Truthfulness)	.0358	.0116	-.1311**
Alcohol Scale	.0755*	.4157**	.1587**
Drugs Scale	.0178	.1135**	.0846*
Driver Risk Scale	.0581	.3794**	.4007**
Stress Coping Abilities	-.0460	.1054**	-.0758

*=P < .05, ** P < .01, No Asterisk = not significant

The following table summarizes the DRI "Truth-Corrected" Scale Score Correlations.

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TABLE 34. (1989, N=1097)
DRI TRUTH CORRECTED SCALE CORRELATIONS

DRI SCALES TRUTH-CORRECTED SCORES	BAC LEVEL CORRELATION COEFFICIENT	# PRIOR DWI'S CORRELATION COEFFICIENT	ACCIDENT CORRELATION COEFFICIENT
Alcohol Scale	.0801*	.4226**	.1438**
Drugs Scale	.0255	.1172**	.0614
Driver Risk Scale	.0651	.3929**	.3864**

*=P < .05, **=P < .01, No asterisk = not significant

DRI "Truth-Corrected" correlations are larger than their Raw Score correlation counterparts, except in the case of Accident Correlation Coefficients. As noted earlier, self-reported accidents had a high negative correlation with Validity (Truthfulness) raw scores. This data indicates that DWI offenders understate the number of accidents they have had when they are reporting this information in a DUI/DWI court-related setting.

As noted earlier the discriminant validity of the DRI is again demonstrated by the fact that only the DRI Alcohol scale correlates significantly with the Blood Alcohol Content (BAC) level at the time of arrest.

In the 1987 research, cited earlier, the number of prior DUI's/DWI's correlated significantly with the DRI Alcohol and Driver Risk scales. In the 1988 research, cited earlier, in one of the three population samples the Drug scale and Stress Coping Abilities scale correlated significantly with number of prior DUI/DWI's. **In the present (1989) analysis, number of prior DUI's/DWI's correlated significantly with the Alcohol scale, Driver Risk scale and the Drugs scale.** At this time it is not clear whether DUI/DWI offenders now represent a trend, reflecting more substance (alcohol and other drugs) abuse than simply alcohol abuse. As noted in 1988 and again in 1989, these findings warrant careful analysis in future research.

Correlations between DRI scales were calculated to establish how these DRI Truth-Corrected scales correlate between themselves.

TABLE 35. (1989, N=1097)
DRI TRUTH CORRECTED SCALE CORRELATIONS

DRI SCALES TRUTH-CORRECTED SCORES	VALIDITY	ALCOHOL	DRUGS	DRIVER RISK
Validity (Truthfulness)	1			
Alcohol Scale	-.0488	1		
Drugs Scale	.0078	.4760**	1	
Driver Risk Scale	-.0571	.4029**	.2503**	1
Stress Coping Ability	.4044**	-.3273**	-.2872**	-.1802**

** = P < .01, no asterisk = not significant

The Validity (Truthfulness) scale does not correlate significantly with any other DRI scales except the Stress Coping Abilities scale. Both of these DRI scales (i.e., Validity and Stress Coping) are perceived as the least threatening DRI scales in court related settings. Both of these scales have been described by DUI/DWI clients as non-threatening. In other words, many DUI/DWI offenders respond to the test items that comprise these scales in a very open, candid and straightforward manner.

Perceived stress and stress coping abilities are related to Alcohol, Drugs and Driver Risk. In other words, high risk drivers and substance (alcohol and other drugs) abusers are not coping effectively with the stress they are experiencing in their lives. Indeed, the higher the alcohol or drug risk, the higher the driver risk. Finally, both alcohol and drugs are categorized as "drugs" or "substances" and their relationship is again demonstrated.

TABLE 36. (1989, N=1097)
CUMULATIVE PERCENTAGE OF OFFENDERS
CLASSIFIED IN EACH RISK CATEGORY

DRI SCALES ADJUSTED SCORES	LOW RISK	MEDIUM RISK	PROBLEM RISK	HIGH RISK
Validity (Truthfulness)	45.9	86.3	90.7	100
Alcohol Scale	41.0	70.9	89.1	100
Drugs Scale	36.7	73.2	89.7	100
Driver Risk Scale	41.3	70.6	90.5	100
Stress Coping Abilities	39.9	70.0	89.5	100

This table demonstrates the accuracy of the "cutting scores" used to establish DRI risk ranges. For example, these risk ranges are summarized as follows: Low Risk (zero to 39th percentile) range, Medium Risk (40 to 69th percentile) range, Problem Risk (70 to 89th percentile) range, and High Risk (90 to 100th percentile) or Severe Problem range. The demonstrated cumulative percentages of DUI/DWI offenders classified in each risk range are very close to theoretical and predicted DRI risk range categories.

This research data demonstrates that the DRI does what it purports to do: The DRI accurately classifies DUI/DWI offenders in representative risk range classification categories.

Gender (male and female) differences were identified in prior research and are again evident in this 1989 analysis. Separate Male and Female scoring procedures were in place for this 1989 analysis. For clarification, the following table shows cumulative percentages when equal norms or scoring procedures are used for both sexes.

TABLE 37. (1989, N=1097)
CUMULATIVE PERCENTILES WITH EQUAL NORMS: FEMALE AND MALE

DRI SCALES ADJUSTED SCORES	LOW RISK	MEDIUM RISK	PROBLEM RISK	HIGH RISK
Validity (Truthfulness)	41 (47)	63 (70)	90 (91)	100
Alcohol Scale	50 (39)	75 (70)	90 (89)	100
Drugs Scale	46 (35)	83 (71)	95 (89)	100
Driver Risk Scale	43 (39)	77 (69)	95 (90)	100
Stress Coping Abilities	40 (39)	70 (70)	88 (90)	100

This table demonstrates the importance of gender (male and female) adjusted measures. As noted earlier, a Validity (Truthfulness) scale is very important to any instrument or test used in DUI/DWI risk assessment. Significant gender differences were also demonstrated to affect DRI Validity (Truthfulness) scale scores. The DRI Validity (Truthfulness) scale, as well as the other two DRI scales that have demonstrated gender differences, now have independent gender norms or scoring keys for males and females. These gender specific scoring procedures are built into the DRI software program to insure accuracy and fairness.

Another DRI (1990, N=6434) study involved 27 agencies in 75 counties in the state of Kentucky. This study helps determine the nature and affects of regional factors in the DUI population sampled.

This (1990) DUI offender population is described as follows: 84% men and 16% women. There were no significant differences between gender with respect to percent distributions of age, ethnicity, education or offender status (first or multiple offender). Ethnic composition includes 92% caucasian, 7% black and 1% other ethnicities. Age is summarized as follows: 16 to 25 years (29%), 26 to 35 years (35%), 36 to 45 years (21%), 46 to 55 years (9%) and over 55 (6%).

This population's (N=6434) educational composition is summarized as follows: 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%).

TABLE 38. (1990, N=6434)
DUI PRIOR CONVICTIONS

PREVIOUS FIVE YEARS

Number of Incidents	DUI's % (#)	Moving Violations % (#)	At-Fault Accidents % (#)	Drug-Related Offenses % (#)
0	74.3(4782)	46.8(3012)	69.6(4479)	84.6 (5441)
1	19.0(1221)	24.2(1554)	19.7(1264)	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)

LIFETIME

Number of Incidents	DUI's % (#)	Moving Violations % (#)	At-Fault Accidents % (#)	Drug-Related Offenses % (#)
0	55.3(3558)	25.0(1608)	51.9(3337)	78.9(5079)
1	25.5(1640)	17.5(1126)	27.1(1747)	10.0(644)
2	9.8(628)	16.6(1069)	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)	10.3(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 5324 DUI offenders. Of these 5324 offenders, 4488 were male and 839 were female. Similarly, 4167 were First Offenders, whereas 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 5324 DUI offenders, 3395 were categorized as low risk with the Driver Risk Inventory (DRI), whereas 1932 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.

The Driver Risk Inventory (DRI) contains 5 empirically based scales: Validity, Alcohol, Driver Risk, Drugs and Stress Coping Ability. Obtained cumulative percent distributions for each DRI scale are summarized by gender.

TABLE 39. (1990, N=874)
CUMULATIVE PERCENT DISTRIBUTIONS FOR MALES

| | DRI RISK RANGES | | | |
DRI SCALES	LOW	MEDIUM	PROBLEM	SEVERE
TRUTHFULNESS	38.3%	68.6%	91.3%	100%
ALCOHOL	37.1%	69.2%	92.0%	100%
DRIVER RISK	41.8%	71.6%	88.3%	100%
DRUGS	42.4%	73.0%	92.1%	100%
STRESS COPING	39.4%	71.2%	90.6%	100%

TABLE 40. (1990, N=874)
CUMULATIVE PERCENT DISTRIBUTIONS FOR FEMALES

| | DRI RISK RANGES | | | |
DRI SCALES	LOW	MEDIUM	PROBLEM	SEVERE
TRUTHFULNESS	40.6%	67.1%	90.7%	100%
ALCOHOL	39.8%	70.1%	91.5%	100%
DRIVER RISK	42.2%	69.9%	93.3%	100%
DRUGS	43.1%	73.1%	92.4%	100%
STRESS COPING	39.9%	70.6%	91.2%	100%

The accuracy of these cumulative percentages for each DRI scales risk range classification is clearly demonstrated when the "expected" risk range classifications are reviewed. Predicted cumulative percentages for each risk range are presented in Table 41.

TABLE 41.
PREDICTED CUMULATIVE PERCENTAGES

DRI RISK RANGE	Risk Range (Percentiles)	Expected Percent	Expected Cumulative Percent
LOW RISK	0--39%	39%	39%
MEDIUM RISK	40--69%	30%	69%
PROBLEM RISK	70--89%	20%	89%
SEVERE PROBLEM	90-100%	11%	100%

The cumulative percent values in the cumulative percent distributions for men and women, cited above, exhibit only minor variations from the "expected cumulative percentages". The largest deviations are in the medium risk ranges on the Drugs scales, and these are only 4% and 4.1% for males and females respectively. These tables demonstrate a high degree of accuracy for DRI scale risk ranges, i.e., Low, Medium, Problem and Severe Problem ranges. This accuracy is expected to increase even more as the DRI expanding data base continues to grow.

Another way to view this data is to present the percent distribution, by gender, of the Kentucky (1990) DUI client base. The following tables represent the percent of clients falling within each risk range for each scale.

TABLE 42. (1990, N=5395)
PERCENT OF MALE CLIENTS IN EACH RISK RANGE

DRI SCALES	DRI RISK RANGES			
	LOW	MEDIUM	PROBLEM	SEVERE
TRUTHFULNESS	33.7%	28.4%	27.7%	10.2%
ALCOHOL SCALE	34.6%	26.2%	26.1%	13.1%
DRIVER RISK	35.6%	28.5%	27.9%	8.0%
DRUGS SCALE	41.4%	33.8%	16.3%	8.5%
STRESS COPING	42.8%	29.2%	20.8%	7.2%

TABLE 43. (1990, N=1039)
PERCENT OF FEMALE CLIENTS IN EACH RISK RANGE

DRI RISK RANGES

DRI SCALES	LOW	MEDIUM	PROBLEM	SEVERE
TRUTHFULNESS	35.3%	33.6%	21.0%	10.1%
ALCOHOL SCALE	37.1%	28.9%	19.3%	14.7%
DRIVER RISK	39.4%	24.7%	26.7%	9.2%
DRUGS SCALE	42.8%	33.3%	16.4%	7.5%
STRESS COPING	41.2%	31.9%	20.4%	6.9%

These tables answer questions such as "What percent of female clients are Problem risks for alcohol abuse?" or "What percent of male clients are Severe Problem risks for drug abuse?" When these tables are compared to the EXPECTED PERCENTS (Low Risk 39%, Medium Risk 30%, Problem Risk 20%, and Severe Problem 11%) that were cited earlier, the accuracy of the DRI scales is again evident. Risk range distributions are very close to the "expected" and "predicted".

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.

DRI question 125 asks "How would you describe your alcohol-related problem?" Question 126 asks "How would you describe your drug-related problem?" The percentage distribution of DUI offender responses to these questions are summarized as follows:

TABLE 44. (1990, N=6434)
RESPONSES TO QUESTION #125
ALCOHOL-RELATED PROBLEM RATINGS

RESPONSES	ALL CLIENTS	MULTIPLE OFFENDERS	HIGH RISK CLIENTS
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%

TABLE 45. (1990, N=6434)
RESPONSES TO QUESTION #126

DRUG-RELATED PROBLEM RATINGS

RESPONSES	ALL CLIENTS	MULTIPLE OFFENDERS	HIGH RISK CLIENTS
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%

These results reaffirm the fact that substance (alcohol and other drugs) abusers tend to deny their problem. The dramatic differences between DUI offenders answers to alcohol versus drug-related questions is noteworthy. These results emphasize the importance of both Validity (Truthfulness) scales and Truth Corrected scores. DUI/DWI offenders tend to underreport the severity of their substance (alcohol and other drugs) abuse problems. Of 4167 DUI first offenders, 1119 either admitted to drug-related problems or reported prior drug-related offenses.

DRI question #127 asks the DUI client to rate their own suicidal or homicidal tendencies. "During the past 6 months I have felt: dangerous to myself, dangerous to others, both (suicidal and homicidal) or none of the above".

TABLE 46. (1990, N=6434)
PERCENT OF DUI OFFENDERS RESPONSES

DANGEROUS TO SELF AND/OR OTHERS

RESPONSES	MALES	FEMALES	FIRST OFFENDERS	MULTIPLE OFFENDERS	LOW RISK	HIGH RISK
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%

DRI question #128 asks the DUI offender to rate their own emotional and/or mental health problems. "During the past 6 months I have had: serious emotional problems, mental health problems, both or none".

TABLE 47. (1990, N=6434)
PERCENT OF DUI OFFENDERS RESPONSES

SERIOUS EMOTIONAL AND/OR MENTAL HEALTH PROBLEMS

MALES	FEMALES	FIRST OFFENDERS	MULTIPLE OFFENDERS	LOW RISK	HIGH RISK
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.

Another study (Virginia, 1991) was conducted to assess demographic differences and regional sampling affects. This (1991, N=1202) DUI client population is summarized as follows:

Gender: Under 16 (Total 4), 16 to 25 (227 male, 147 female), 26 to 35 (311 male, 175 female), 36 to 45 (158 male, 66 female), 46 to 55 (56 male, 24 female) and over 55 (27 male, 7 female). Ethnicity is summarized as follows: 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%).

This sample's (1991, N=1202) education is summarized as follows: 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 (1991) demonstrated gender (male and female) differences in the Validity scale, Alcohol scale, Driver Risk scale, and the Drugs scale. A significant gender difference was not demonstrated in the Stress Coping Abilities scale. As a result of this research separate male and female scoring procedures have been incorporated in the Virginia DRI for these 4 scales.

TABLE 48. (1991, N=1202)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity	.824	$P < .001$
Alcohol	.909	$P < .001$
Drugs	.857	$P < .001$
Driver Risk	.804	$P < .001$
Stress Coping	.902	$P < .001$

Another study (1992) consisted of the 1648 convicted DUI offenders. Gender statistics are summarized as follows: Male (1423, 86.3%), and female (225, 13.7%). Age groups: 16 to 25 years (482, 29.2%); 26 to 35 years (607, 36.8%); 36 to 45 years (342, 20.8%); 46 to 55 years (136, 8.3%); Over 55 (80, 4.9%) and Under 16 (1, 0,1%). Ethnicity is summarized as follows: Caucasian (1535, 93.1%); Black (96, 5.8%); Hispanic (7, 0.4%); Asian (1, 0.1%); American Indian (3, 0.2%); and Other (6, 0.4%). Education Level: 8th grade or less (176, 10.7%); Some High School (405, 24.6%); GED (91, 5.5%); High School graduate (629, 38.2%); Some College (247, 15.0%); Technical/Business School (21, 1.3%); College graduates (64, 3.9%); and Professional Graduate School (15, 0.9%).

T-tests were performed on each scale and the following gender differences were

demonstrated at the .05 level of significance. Significant gender differences were demonstrated for the Validity scale and the Alcohol scale. Gender (male and female) differences were identified in prior research and are again demonstrated in this 1992 analysis. Separate male and female scoring procedures are established for the Validity and Alcohol scales.

Cronbach's Coefficient Alpha is an important indice of reliability and internal consistency. These coefficients were computed on the sample of 1648 DUI offender's DRI scale scores. The following table summarizes the results of this reliability analysis.

TABLE 49. (1992, N=1648)
DRI RELIABILITY ANALYSIS (CRONBACH ALPHA)

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity	.83	$P < .001$
Alcohol	.92	$P < .001$
Drugs	.90	$P < .001$
Driver Risk	.84	$P < .001$
Stress Coping	.93	$P < .001$

Another study (Nebraska, 1982) was conducted to further evaluate the DRI. This study involved 169 DUI offenders (146 males and 23 females). Demographics are summarized below.

Age categories: 16 to 25 years (47, 27.8%); 26 to 35 years (69, 40 %); 36 to 45 years (31, 18.3%); 46 to 55 years (15, 8.9%); and over 55 (7, 4.1%). Ethnicity is summarized as follows: Caucasian (140, 82.8%); Black (4, 2.4%); Hispanic (13, 7.7%); Asian (1 .06%); American Indian (9, 5.3%) and Other (2, 1.2%). Education: Less than 8th grade (4, 2.4 %); Some High School (26, 15.4%); GED (9, 5.3%); High School Graduate (81, 47.9%); Some College (39, 23.1%); College Graduate (7, 4.1%); and Graduate/Professional Degree (3, 1.8%).

Tests (t-tests) for gender differences were performed on all scale scores. No significant gender differences were demonstrated.

TABLE 50. (1992, N=169)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity (Truthfulness)	0.82	P < .001
Alcohol Scale	0.92	P < .001
Drugs Scale	0.91	P < .001
Driver Risk	0.82	P < .001
Stress Coping	0.92	P < .001

Another study (1992) involved 1,374 convicted DUI offenders. This study further evaluates the statistical properties of the DRI. Sample demographics are summarized as follows:

GENDER: Males (1,128, 82.1%) and Females (246, 17.9%). AGE: Under 16 years (4, 0.3%), 16-25 years (481, 35%), 26-35 years (511, 37.2%), 36-45 years (239,17.4%), 46-55 (94, 6.8%) and over 55 (45, 3.3%). ETHNICITY: White (1,160, 84.4%), Black (109, 7.9%), Hispanic (72, 5.2%), Asian (8, 0.6%), American Indian (24, 1.7%), and Other (1, 0.1%). EDUCATION: 8th grade or less (57, 4.1%), Some high school (212, 15.4%), GED (90, 6.6%), High School Graduate (535, 38.9%), Some College (399, 29.0%), Business/Technical school (57, 4.1%) and Graduate/Professional degree (24, 1.7%).

Statistical analysis (Wilcoxon Rank Sum Scores) of this sample (1992, N=1374) demonstrated gender differences on the Validity Scale, Alcohol Scale, Driver Risk Scale and the Drugs Scale. A significant gender difference was not demonstrated on the Stress Coping Ability Scale. As a result of this research, separate male and female scoring procedures have been incorporated in the DRI for the Validity, Alcohol, Driver Risk and Drugs Scales for this sampled population.

TABLE 51 (1992, N = 1374)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity (Truthfulness)	0.82	P < .001
Alcohol Scale	0.92	P < .001
Drugs Scale	0.88	P < .001
Driver Risk	0.80	P < .001
Stress Coping	0.93	P < .001

Another study (Kentucky, 1992) evaluated the statistical properties of the DRI from 1991 and involved 15,051 convicted DUI offenders. Demographics are summarized 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 Validity Scale and the Alcohol Scale. Significant gender differences were not demonstrated on the Drugs Scale, Driver Risk Scale or Stress Coping Abilities Scale. As a result of this research, separate male and female scoring procedures have been incorporated in the DRI for the Validity and Alcohol Scales for this population.

TABLE 52 (1992, N=15,051)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity (Truthfulness)	0.83	P < .01
Alcohol Scale	0.92	P < .01
Drugs Scale	0.90	P < .01
Driver Risk	0.84	P < .01
Stress Coping	0.93	P < .01

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.

The table below presents DRI risk level classification categories. The first column identifies the risk level. The second column presents the percentile range which defines each risk level. The third column presents the percent of DUI/DWI clients **expected** to fall within each risk level, as determined solely by their DRI test scores.

RISK LEVEL	RISK RANGE (PERCENTILES)	EXPECTED PERCENT
Low Risk	0 to 39%	39%
Medium Risk	40 to 69%	30%
Problem Risk	70% to 89%	20%
Severe Problem	90% to 100%	11%

Table 53 presents the percent of DUI offenders, by gender, that were categorized into each risk range for each of the five DRI scales. **Clients were categorized into risk ranges solely on their attained scores.**

TABLE 53. OBTAINED CLIENT CLASSIFICATION (1992)
Percent of Clients in each DRI Risk Range (N=15,047)

RISK LEVEL	* * * * * * * * * * * DRI SCALES FOR MALES * * * * * * * * * * *				
	VALIDITY	ALCOHOL	DRIVER RISK	DRUGS	STRESS COPE
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%

RISK LEVEL	* * * * * * * * * * DRI SCALES FOR FEMALES * * * * * * * * * * *				
	VALIDITY	ALCOHOL	DRIVER RISK	DRUGS	STRESS COPE
Low	38.8%	36.3%	39.1%	44.2%	37.8%
Medium	24.7%	27.1%	28.9%	28.7%	29.0%
Problem	20.0%	25.4%	21.8%	18.4%	20.1%
Severe	16.5%	11.2%	10.2%	8.7%	13.1%

Note how closely these distributions resemble the **expected** distributions presented earlier. Table 53 consists of 12,613 males and 2,434 females that were convicted of DUI offenses. With annual data base research and analysis, we can expect even more accurate risk assessment in the future.

The percent of clients, by offender status are summarized for comparison. First Offenders and Multiple Offenders are compared in terms of the percentage of cases in each risk range.

Table 54 compares the percent of First and Multiple DUI offenders falling in each DRI risk range (i.e., Low, Medium, Problem and Severe Risk) solely on the basis of their attained DRI scores.

TABLE 54. FIRST vs. MULTIPLE OFFENDERS (1992)
Percent of Clients in each DRI Risk Range (N=15,480)

RISK LEVEL	FIRST OFFENDERS	MULTIPLE OFFENDERS
Low	39.3%	39.6%
Medium	25.9%	26.6%
Problem	19.5%	19.9%
Severe	15.3	13.9%

Note how closely these distributions resemble the **expected** distributions, that were cited earlier. Table 54 consists of 12,649 First Offenders and 2,831 Multiple Offenders. A Multiple Offender has prior DUI/DWI convictions, or DUI/DWI convictions prior to his or her present conviction.

As noted earlier, a sequence of questions are included in the DRI to obtain the client's own opinion or perception of his/her problems. Table 55 summarizes client reposes to Questions #121-#128 which are summarized as follows: #121 (Family/Marital Problems), #122 (Financial/Job Problems), #124 (Under a Doctor's Care), #127 (Suicidal Or Homicidal), and #128 (Emotional/Mental Health Problems).

TABLE 55. FIRST AND MULTIPLE OFFENDER
CLIENT RESPONSES TO QUESTION #'s: 121, 122, 124, 127, 128

QUESTION NUMBER	FIRST OFFENDER	MULTIPLE OFFENDER
#121	26.8%	29.1%
#122	47.9%	58.5%
#124	19.0%	14.3%
#127	7.9%	9.1%
#128	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.

Another study (1992) involved 1,937 convicted DWI offenders. This study further evaluates the statistical properties of the DRI. This sample's demographics are summarized as follows:

GENDER: Males (1,545) and Females (329). AGE GROUP: Under 16 years (1), 16-25 years (489), 26-35 years (795), 36-45 years (435), 46-55 years (151) and Over 55 (66). ETHNICITY: White (1,407), Hispanic (328), American Indian (120), Black (65), Asian (1), and Other (16). EDUCATION: 8th grade or less (39), Some high school (274), GED (172), High School Graduate (501), Some College (846), Business/Technical School (68) and Graduate/Professional degree (37).

Statistical analysis (Wilcoxon Rank Sum Scores) of this sample (1992, N=1,937) demonstrated gender differences on the Validity scale, Alcohol Scale, Driver Risk Scale and the Drugs Scale. A significant gender difference was not demonstrated on the Stress Coping Abilities Scale. As a result of this research, separate male and female scoring procedures are incorporated in the DRI for the Validity, Alcohol, Driver Risk and Drugs Scales.

TABLE 56 (1992, N=1,937)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVELS
Validity (Truthfulness)	0.84	P < .001
Alcohol Scale	0.92	P < .001
Drugs Scale	0.87	P < .001
Driver Risk	0.81	P < .001
Stress Coping	0.93	P < .001

Another study, (N=570, 1992) was conducted to evaluate the statistical properties of the DRI-SHORT FORM. This sample consisted of 570 convicted DUI offenders, 501 males and 69 females. Ethnicity: Caucasian (522, 91.6%); Black (43, 7.5%); Hispanic (1, 0.2%); Asian (1, 0.2%); and American Indian (2, 0.4%). Education: Eighth grade or less (78, 13.7%); Some High School (163, 28.6%); GED (14, 2.5%); High School Graduate (217, 38.1%); Some College (70, 12.3%); Technical/Business School (7, 1.2%); College Graduate (14, 2.5%) and Graduate/Professional Degree (7, 1.2%).

Statistical analysis (Wilcoxon Rank-Sum Scores) of this sample (1992, N=570) demonstrated gender differences on the Driver Risk scale (significance = 0.025). These findings are significant at the .05 level. As a result of this research, separate male and female scoring procedures are incorporated in the DRI-SHORT FORM for the Driver Risk scale for this population sample.

TABLE 57. DRI-SHORT FORM (1992, N=570)
CRONBACH ALPHAS, INTERNAL CONSISTENCY

DRI-SHORT FORM SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.801	P<.001
Alcohol Scale	.890	P<.001
Drugs Scale	.821	P<.001
Driver Risk Scale	.791	P<.001

These results support the reliability and internal consistency of DRI-SHORT FORM measures (scales).

Another study (1992, N=1543) was conducted to further examine the statistical properties of the DRI-SHORT FORM. This sample consisted of 1297 males and 246 females convicted of DUI offenses. Age is summarized as follows: 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 consisted of: Caucasian (1333, 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 is summarized as follows: 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 of this sample (N=1543) demonstrated gender differences on the Alcohol Scale and Driver Risk Scale. These findings are significant at the .05 level of significance. As a result of this research, separate male and female scoring procedures are incorporated in the DRI-SHORT FORM for these two scales for the population sampled.

TABLE 58. DRI-SHORT FORM (1992, N=1543)
GENDER ANALYSIS, CONVICTED DUI OFFENDERS

DRI-SHORT FORM SCALE	WILCOXON RANK-SUMS	KRUSKAL-WALLIS TEST	SIGNIFICANCE LEVEL
Alcohol	.001	.001	$P<.001$
Driver Risk	.007	.008	$P<.01$

As noted earlier, Cronbach's Coefficient Alpha is an important indice of reliability and internal consistency. These coefficients were computed on the sample of 1543 DUI offenders DRI-SHORT FORM scale scores. The following table summarizes these results.

TABLE 59. DRI-SHORT FORM (1992, N=1543)
INTERNAL CONSISTENCY, CRONBACH ALPHAS

DRI-SHORT FORM SCALES	CRONBACH ALPHAS	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.80	$P<.001$
Alcohol Scale	.90	$P<.001$
Drugs Scale	.83	$P<.001$
Driver Risk Scale	.79	$P<.001$

A data base analysis (Kentucky, 1992) was conducted to evaluate the statistical properties of the DRI. This sample consisted of 1299 males and 204 females. Total sample size was 1503.

Age composition is summarized as follows: Under 16 years (1, 0.1%); 16 to 25 (412, 27.4%); 26 to 35 (587, 39.1%); 36 to 45 (344, 22.9%); 46 to 55 (108, 7.2%) and Over 55 (51, 3.4%). Ethnicity: Caucasian (1294, 86.1%); Black (200, 13.3%); Hispanic (3, 0.2%); Asian (3, 0.2%); American Indian (1, 0.1%) and Other (2, 0.1%). Education: 8th grade or less (101, 6.7%); Some High School (326, 21.7%); GED (104, 6.9%); High School Graduate (632, 42.0%); Some College (246, 16.4%); Technical/Business School (17, 1.1%); College Graduate (63, 4.2%) and Graduate/Professional Degree (14, 0.9%).

Statistically significant gender differences (P<.05) were demonstrated in the Alcohol and Driver Risk Scales. Statistically significant gender differences were not demonstrated in the Validity (Truthfulness) Scale, Drug Scale and Stress Coping Abilities Scale. Gender analyses are presented in Table 60.

TABLE 60. GENDER ANALYSIS
CONVICTED DUI OFFENDERS (1992, 1503)

DRI SCALE	WILCOXON RANK-SUMS	KRUSKAL-WALLIS	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.060	.060	N.S.
Alcohol Scale	.001	.001	P<.001
Driver Risk Scale	.041	.041	P<.05
Drugs Scale	.646	.646	N.S.
Stress Coping Scale	.924	.924	N.S.

On the basis of these results, gender specific scoring procedures were established for the Alcohol Scale and the Driver Risk Scale for Kentucky DUI offenders. Gender specific scoring procedures are not needed for the Validity (Truthfulness) Scale, Drug Scale and the Stress Coping Abilities Scale.

Cronbach Alpha was used to evaluate the internal consistency of each DRI scale. These results are summarized in Table 61.

TABLE 61. DRI INTERNAL CONSISTENCY
CONVICTED DUI OFFENDERS (1992, N=1503)

DRI SCALE	CRONBACH ALPHA	SIGNIFICANCE LEVEL
Validity (Truthfulness)	.85	P<.001
Alcohol Scale	.92	P<.001
Driver Risk	.84	P<.001
Drug Scale	.88	P<.001
Stress Coping Abilities Scale	.92	P<.001

These findings support the reliability (internal consistency) of the Driver Risk Inventory (DRI). The DRI is a dependable DUI assessment instrument. Similar or comparable results will be obtained upon repetition.

In summary, DRI research reflects the growth and development of the DRI into a state-of-the-art DUI/DWI assessment instrument. The DRI has been researched on the DUI/DWI offender population and has demonstrated reliability, validity and accuracy. The DRI correlates impressively with both experienced DUI/DWI staff judgment and other recognized tests. As concluded by NHTSA (National Highway Traffic Safety Administration, Washington D.C.) after their two year study of DUI/DWI tests (DOT HS 807 475), **"The DRI appears to be by far the most carefully constructed... Reliability is well established and validity is based on the instrument's relationship to other established measures"**. Continuing, **"In settings where it has been adopted as the primary screening instrument for processing convicted drunk drivers, substance abuse counselors have reported that it improves the quality of their decisions while making their task less time-intensive"**. DRI research is ongoing and future studies will be reported in updated documents. Whenever age, gender, ethnicity or education are demonstrated to be significantly different, the scoring methodology for that sampled population is adjusted accordingly. Such procedures are reviewed on an annual basis via ongoing data base research.

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* * CONCLUSION * *

In conclusion, this document is not intended as an exhaustive compilation of DRI research. Yet it does summarize many studies and statistics that support the reliability, validity and accuracy of the DRI. Based on this research, the DRI presents an increasingly accurate picture of DUI/DWI offenders and the driving risk they represent. The DRI provides a sound empirical foundation for responsible decision making.

The DRI is not a personality test, nor is it a clinical diagnostic instrument. The DRI 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 research will continue to explore important parameters for accurate identification of driver risk.

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 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 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 is committed to this research.

Behavior Data Systems, Ltd.
P.O. Box 32938, Phoenix, Arizona 85064

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Truth-corrected scores: Raw scores show 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.

Driver Risk Scale: "...one of the scales provides an assessment for driver risk, a particularly useful feature for evaluating the DWI offender that does not exist in any other instrument reviewed." NHTSA, DOT HS 807 475.

Stress Coping Abilities Scale: This scale correlates significantly with MMPI scales that reflect mental health problems. Stress exacerbates other symptoms.

Save staff time: The DRI *saves staff time* while measuring important "dimensions" of DUI/DWI clients missed by other tests. It can be available within minutes of test completion, on-site where decisions are made.

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DRIVER RISK INVENTORY (DRI) QUESTIONS & ANSWERS

1. How truthful was the client when tested? In the past, many people were turned off by tests because they were too easy fake. The DRI has a built-in Truthfulness (Validity) Scale designed to measure client truthfulness and detect denial. This scale identifies attempts to minimize problems and concerns.

2. How do you get accurate information if the client lies? Correlations between the Truthfulness (Validity) Scale and all other DRI scales permit identification of error variance associated with untruthfulness. This error variance is then added back into scale scores, resulting in more accurate Truth-corrected scores. **Raw scores may only reflect what the client is trying to hide.** Truth-corrected scores are more accurate than raw scores.

3. How is the DRI rated by experts? All major DUI/DWI assessment instruments and tests were evaluated by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) in a two-year study reported in DOT HS 807 475. As reported in Government Technology (Vol. 3, #5, May 1990), NHTSA concluded that the Driver Risk Inventory is the best automated test.

4. It is estimated that 25% of DUI offenders are reading impaired. How can you evaluate them? The DRI-Short Form offers a practical solution to problems associated with reading impaired assessment. The DRI-Short Form can be given on the computer screen, in paper-and-pencil format, or read to a client (or group) in 9 minutes. The DRI-Short Form is designed for use with the reading impaired, and as an alternative test to the Driver Risk Inventory (DRI).

5. Why are the 5 DRI scales important? In addition to establishing client truthfulness and substance (alcohol and other drugs) abuse-related problems, it is important to know how well the client copes with stress and if he/she is a driver risk. In other words, the DRI identifies DUI offender risk and needs. The DRI measures important behaviors missed by other tests.

6. Why is the DRI data base important? The DRI data base permits research and annual testing program summary **at no additional cost**. Copyrighted DRI data base functions are built-in and relate to quality control as well as testing program evaluation. Does your testing program have a built-in data base? At no additional cost?

7. Is the DRI expensive? The DRI is competitively priced, and if ordered in substantial quantities, the cost is even lower! The DRI is an affordable state-of-the-art DUI offender assessment instrument. **Demonstration diskettes (4 tests, test booklet) are available on a cost-free, 30 day trial basis.**

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ABSTRACT FROM THE NHTSA-SPONSORED RESEARCH PROJECT ENTITLED "ASSESSMENT OF CLASSIFICATION INSTRUMENTS DESIGNED TO DETECT ALCOHOL ABUSE" (DOT HS 807 475, December, 1988) Authors: C.L. Popkin, C.H. Kannenberg, J.H. Lacey and P.F. Waller. Sponsoring Agency: **U.S. Department of Transportation, National Highway Traffic Safety Administration, Washington, D.C., 20590.**

The United States Government does not endorse products or manufacturers. No instrument could be recommended without reservation (DOT HS 807 475, December, 1988).

This report (DOT HS 807 475, December 1988) identifies and evaluates instruments currently in use to assess substance abuse problems in driving while impaired (DWI) offenders. "Assessment instruments currently in use were assembled on the basis of a survey of state programs and contacts with professionals active in the field" pg.21.

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 (**IAI**), 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 Like Circumstances Evaluation/Automated Drinking Evaluation (**SALCE/ADE**).

Ratings abstracted from page 68 of DOT HS 807 475, December 1988.

"3.4 Evaluation of Assessment Instruments (Page 68)

The ratings are grouped into the following catagories:

GOOD:	**DRI** (Driver Risk Inventory)
	MAC (in MMPI)
AVERAGE:	AUI, ASI, CAGE, MACH, MAST, MORTIMER-FILKINS, SALCE/ADE
POOR:	CASAS, IAI, MOD-CRIT, New Hopkins 20 Questions"

"The research team reviewed all of the information available and evaluated the instruments by placing them into one of four catagories--poor, average, moderately good, and excellent...None of the instruments were judged to be excellent...However, two instruments rated to be moderately good and a few others, rated as average....." pg. x.

THE FOLLOWING QUOTATIONS PERTAINING TO THE DRIVER RISK INVENTORY OR DRI HAVE BEEN ABSTRACTED FROM DOT HS 807 475, December 1988.

"This instrument (DRI) appears to be by far the most carefully constructed from a psychometric standpoint" pg. 37.

"It was developed specifically for screening convicted drunk drivers, presumably for purposes of disposition decisions." pg. 38.

Reliability is well established and validity is based on the instruments relationship to other established measures." pg. 38.

"One of the 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." pg. 38.

"In settings where it has been adopted as the primary screening instrument for processing convicted drunk drivers, substance abuse counselors have reported that it improves the quality of their decisions while making their task less time-intensive." pg. 38.

"Of the instruments reviewed, this test is the most carefully constructed." pg. 38.

REFERENCE: ASSESSMENT OF CLASSIFICATION INSTRUMENTS DESIGNED TO DETECT ALCOHOL ABUSE (DOT HS 807 475, December 1988). Authors: C.L. Popkins, C.H. Kannenberg, J.H. Lacey, and P.F. Waller. Sponsoring Agency: U.S. Department of Transportation, National Highway Traffic Safety Administration, Washington, D.C. This document is available through the National Technical Information Service, Springfield, VA 22161.

GOVERNMENT TECHNOLOGY

Courts Automate Tests for Substance Dependency

By Gary J. Scrimgeour, Ph.D.
Special to Government Technology

The computer revolution has reached the courts in an unexpected area: the psychological testing of offenders for problems of chemical dependency. In those courts handling drinking-driver cases — over two million cases nationwide each year — new computer-scored tests are revolutionizing sentencing.

Two computer-scored tests or "inventories" are now on the market. Though meeting with early resistance on the grounds that they "dehumanize" the diagnostic process, they are quickly proving themselves in the field. They are already used in such jurisdictions as Houston, Phoenix and Las Vegas, and in many smaller jurisdictions throughout the country. Within a decade their use will be widespread. They provide a better basis for identifying and sentencing offenders than anything the misdemeanor courts have used before.

Courts started testing offenders for alcohol dependency two decades ago. At first, they used interviews to decide whether someone had a problem. They also used two paper-and-pencil tests. The MAST (Michigan Alcoholism Screening Test) and the Michigan Drinking Driver History Questionnaire (known as Mortimer-Filkins or M-F) dominated the drinking-driver field during the eighties. At the same time, computerization came to psychology. By 1985 most psychometric tests used by psychologists to diagnose their patients had been computerized. In the late eighties, two entrepreneurs with experience in psychometrics separately saw that computerization should be used for drinking-driver cases.

The results today are two competing screening tests. One is the Substance Abuse and Life Circumstance Evaluation (SALCE) also from Michigan (though without connection to MAST or M-F). Second is a family of inventories created by a Phoenix psychologist and centered on the Driver Risk Inventory (DRI).

The University of North Carolina Highway Safety Research Center recently completed a major study comparing all existing tests for alcohol/drug dependency used for drinking-drivers. Their conclusions: Driver Risk Inventory was the best, SALCE and M-F acceptable, MAST unacceptable.

All the computer-scored tests work in approximately the same way. The offender completes a questionnaire of about 100 questions. The completed questionnaire goes to a clerk, who also collects data about the prior record and the current offense. The clerk enters the answers and the data on the computer following instructions given by the program on a diskette. A single command then scores the test by comparing its answers to the database. "Scoring" means placement of this individual on a percentile ranking com-

> *Their conclusions: Driver Risk Inventory was the best, SALCE and M-F acceptable, MAST unacceptable.*

pared with all previous offenders.

The printout shows the offender's percentile ranking in a diagram and numerically. A written narrative explains the significance of the ranking and makes skeletal sentencing recommendations.

Developers of all the computer-scored tests emphasize that the tests only screen. That is, they compare this individual's answers with those of others, then place them in categories. The tests, they say, should be used with a brief interview. They do not diagnose alcoholism or drug dependency — instead, they emphasize "risk levels."

The DRI, for instance, provides five separate scales: risk of alcohol problem, of drug problem, of general mental instability, of driving problem and of truthfulness probability. This is more than any previous test has offered. Each scale separately places people at various levels of risk: high, medium high, medium low, low. SALCE then adds the scales together for an overall ranking as to risk. The DRI, more cautiously, keeps its apples and oranges separate.

Can an offender "fake out the test?" This is unlikely. First, the tests emphasize factual data from records, especially the blood alcohol level and the prior driving record. Second, the truthfulness scales pick up internal contradictions and flag attempts to garble the test. The same scale

flags illiteracy or marginal illiteracy. It is possible to fool the test, but it's much harder than fooling a judge or even a trained interviewer.

The tests are much fairer to offenders than unsupported interviews. They measure everyone according to the same standard. They don't get tired, or ill, or emotional. They're not taken in. Their scoring is sophisticated and rapid (a matter of seconds). The printouts bring any marginal or doubtful areas to an interviewer's attention and keep a record for anyone else's scrutiny. The DRI even includes a 10-question probation interview that instantly flags problems areas in the offender's personal life.

Should a court use these tests? Absolutely. Especially if the court lacks the personnel to handle the caseload. The tests are faster, more accurate and fairer than humans. They are very much cheaper. The manufacturers charge $12 or less per test, a sum usually paid by the offender.

The tests offer any court access to the best national database. The DRI updates the database several times a year and can individualize to allow for a community's variations in population. Spanish-language versions are available. No court need find the task of screening offenders time-consuming or costly. Courts can shift human resources to the more important tasks of probation monitoring.

In short, these screening devices are a classic example of how computers can give isolated or resource-poor courts superior access to national-quality expertise. For better-manned courts, the tests save time, money and manpower. They provide more information and more reliable information. In sum, they do everyone's job better. ■

Gary J. Scrimgeour is a member of the faculty at the National Judicial College in Reno, Nev.

WHAT USERS AND EXPERTS ARE SAYING

"The University of North Carolina Highway Safety Research Center recently completed a major two-year study comparing all existing tests for alcohol/drug dependency used for drinking drivers. Their conclusion: Driver Risk Inventory was the best."

GOVERNMENT TECHNOLOGY, VOL. 3, NO. 5, MAY 1990

"Of the instruments reviewed, this test (DRI) appears to be by far the most carefully constructed."

U.S. DEPT. OF TRANSPORTATION, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA)

"One of the scales (in the DRI) is designed to detect irresponsible driving and provides an assessment for driving risk, a particularly useful feature for evaluating the DWI offender that does not exist in any other instrument we reviewed."

NHTSA, DOT HS 807 475

"Reliability is well-established and validity is based on the instrument's (DRI) relationship to other established measures."

NHTSA, DOT HS 807 475

"The Driver Risk Inventory (DRI) is the standard DUI first and multiple offender assessment instrument used in the State of Nebraska."

STATE OF NEBRASKA, ADULT PROBATION

"The DRI exceeds all expectations of what an instrument of this nature should provide."

HUNTSVILLE MUNICIPAL COURT, ALABAMA

"The DRI is the state-of-the-art DWI screening instrument ... We are very pleased with the overall results."

PHOENIX MUNICIPAL COURT, ARIZONA

"It is my conclusion that the DRI is one of the most psychometrically sound and useful evaluation instruments for substance abuse screening, assessment and evaluation available."

S. DRYDEK, PH.D., PSYCHOLOGIST

"We carefully researched what was available in the DUI field and concluded the DRI to be a far superior product ... I am extremely pleased with the DRI and would recommend it to anyone in the DUI field."

SLOAN CLINIC, MASSACHUSETTS

"In settings where it has been adopted as the primary screening instrument for processing convicted drunk drivers, substance abuse counselors have reported that it improves the quality of their decisions while making their task less time-intensive."

NHTSA, DOT HS 807 475

"We have been extremely satisfied with the results of the Driver Risk Inventory. The ease of instructions, administration and scoring are simple tasks and the results written in clear, concise terms with specific recommendations are highly valued."

DISTRICT VI, OKLAHOMA PROBATION AND PAROLE

"Prior to selecting the DRI for use in our program, we conducted an exhaustive review of all available tests. We are very pleased that we selected the DRI, and it continues to be an.important resource in our program."

CONWAY GROUPS, LTD., ARIZONA

"If you're going to be selecting an instrument to be used to screen and assess DUI offenders, you'd want the current state-of-the-art, and that's the Driver Risk Inventory."

JULIA LEE, PH.D., CALIFORNIA

BEHAVIOR DATA SYSTEMS

P.O. Box 32938 • Phoenix, Arizona 85064 • (800) 231-2401 • FAX (602) 266-8227

DRIVER RISK INVENTORY (DRI)

The Driver Risk Inventory (DRI) is a 140-item self-administered DUI/DWI offender assessment instrument. It is a brief, easy to administer, comprehensive test. The DRI may be administered directly on the computer or in test booklet format and takes approximately 25 minutes to complete. DRI reports (results) are available within minutes of test completion.

HOW THE SYSTEM WORKS

DRI diskettes contain 51 (we only bill you for 50) tests and all of the software needed to run on your IBM PC compatible computer. Scoring, data interpretation and printing of reports is done by the computer. The DRI is self-contained. No installation or special training is required

DRI HIGHLIGHTS

- Designed for DUI/DWI offender assessment
- Standardized on the DUI/DWI population
- Researched on over 80,000 DUI offenders
- Demonstrated reliability, validity & accuracy
- Sound empirical basis for decision making
- Strong accountability of recommendations
- Detects denial and identifies faking
- State-of-the-art DUI assessment instrument
- Test booklets available in English & Spanish

DRI DATA BASE

The Driver Risk Inventory contains a copyrighted, data base. This data base provides both **ongoing research and testing program summary** capabilities that were not possible before. Ongoing research ensures quality control. Summaries provide program self-evaluation.

FIVE DRI SCALES

The DRI contains 5 separate scales (or measures) researched and standardized on the DUI/DWI offender population. These five scales are:

1. **VALIDITY (Truthfulness) SCALE:** Measures truthfulness, detects denial and identifies faking.

2. **ALCOHOL SCALE:** measures alcohol (beer, wine or other liquor) abuse and alcohol-related problems.

3. **DRUG SCALE:** measures drug (marijuana, LSD, cocaine, crack, heroin, etc.) abuse and drug-related problems.

4. **DRIVER RISK:** measures driver risk independent of substance use or abuse.

5. **STRESS COPING ABILITIES:** measures ability to cope effectively with stress, pressure and tension.

TRUTH-CORRECTED SCORES

Correlations between the Validity Scale and all other DRI Scales permit identification of error variance associated with untruthfulness. This error variance is then applied to each scale score, resulting in a **Truth-Corrected Score.** Raw scores may only reflect what a 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.**

ACCURACY

DRI demonstrated reliability, validity and accuracy provides a sound basis for decision making. The Validity Scale detects faking and Truth-Corrected scores are more accurate than raw scores. Prior DUI's, BAC and court-related history are considered in determining client scores. The DRI also measures important behaviors missed by other tests.
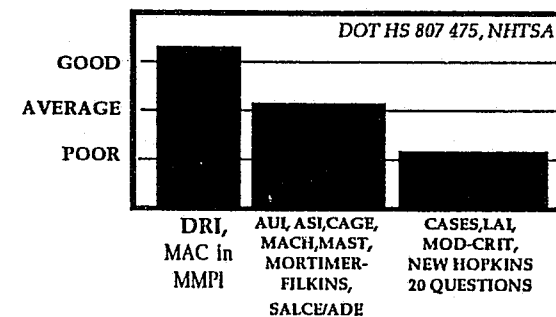
The DRI's proven research continues to deliver the highest quality in DUI offender assessment, at remarkably competitive prices. Volume discounts are also available. We're so sure you'll like the DRI, that we offer a money back guarantee.

Test booklets, training manuals, support services, ongoing research and annual summary reports are included free.

Demonstration diskettes are available on a cost-free 30 day trial basis.

DRI-SHORT FORM

25% or more of DUI/DWI offenders are reading impaired. The SHORT FORM consists of 65 items that can be read to an individual or group in 10 minutes. It contains four scales: TRUTHFULNESS, ALCOHOL, DRUGS and DRIVER RISK. The DRI SHORT-FORM is designed for use with the reading impaired and in high volume testing agencies.

For more information call (800) 231-2401 or write:
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