

# **DUI/DWI Offender Test (DDOT)**

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## **DUI/DWI OFFENDER TEST (DDOT) INTRODUCTION**

Now that some states have passed medical marijuana statutes (laws) and others are decriminalizing marijuana use, **Driving Under the Influence - Cannabis** is becoming more common. Consequently, marijuana use screening has become an important part of DUI/DWI offender assessment. The DDOT was designed to provide relevant driver risk-related information including information on the behavioral patterns and traits relevant to understanding problem and high-risk drivers.

The DUI/DWI Offender Test (DDOT) is specifically designed for DUI/DWI offender screening. The DDOT provides quantitative information using empirically based measures (scales) which independently generate risk (percentile) scores. Scale development was based upon 20 years of research and evolved from the Driver Risk Inventory-2 (DRI-2).

The DDOT is a brief, easily administered and interpreted test that is specifically designed for court related assessments. The DDOT is composed of 117 true/false and multiple-choice items that comprise 5 scales or measures that evaluate constructs and behaviors associated with driver risk. The DDOT requires 25 to 30 minutes for completion and can be administered individually or in groups. The language of the DDOT is direct, non-offensive and uncomplicated making the DDOT appropriate for people with sixth grade or higher reading abilities.

### **DDOT Scales**

- 1. Truthfulness Scale**
- 2. Alcohol Scale**
- 3. Driver Risk Scale**
- 4. Drug Scale**
- 5. Marijuana Scale**
- 6. Stress Management Scale**
- 7. Substance Use Scale**

The DDOT represents the latest developments in psychometric techniques and computerized technology. The DDOT can be administered on a computer (PC compatible) or by using paper-pencil test booklets. Regardless of how the DDOT is administered, all tests are scored and interpreted using a computer which generates the DDOT reports. DDOT reports are available within three minutes of test completion. Automated scoring and interpretive procedures help ensure objectivity and accuracy. The DDOT Windows version also has an optional human voice audio presentation that presents the test with accompanying auditory presentation of the text seen on the computer screen. Additionally, the DDOT is available on Professional Online Testing Solution's online testing platform.

The DDOT is to be used in conjunction with a review of available records and initial interview. No decision or diagnosis should be based solely on DDOT results. Assessment is not to be taken lightly, as the resulting decisions drastically affect peoples' lives.

## **UNIQUE FEATURES**

This section discusses the unique features of the DUI/DWI Offender Test (DDOT) including Truth Correction, Risk Ranges, the DDOT database, and HIPPA compliance.

### **Truth Correction**

A sophisticated psychometric technique permitted by computerized technology involves "truth-corrected" scores which are calculated individually for each DDOT scale. Since it would be naive to assume everybody responds truthfully while completing any self-report test, the Truthfulness Scale was developed. The Truthfulness Scale establishes how honest or truthful a person is while completing the DDOT. The Truthfulness Scale applies a truth-correction factor so that each scale score is referred to as a Truth-Corrected scale score. Each DDOT scale is scored independently of the other scales. DDOT scale scoring equations combine client pattern of responding, Truthfulness Scale and prior history. Truth-Corrected scale scores are converted to the percentile scores that are reported in the client DDOT report.

Correlation's between the Truthfulness Scale and all other scales permit identification of error variance associated with untruthfulness. This error variance can then be added back into scale scores, resulting in more accurate "Truth-Corrected" scores. Unidentified denial or untruthfulness produces inaccurate and distorted results. Raw scores may only reflect what the client wants you to know. Truth-Corrected scores reveal what the client is trying to hide. Truth-Corrected scores are more accurate than raw scores.

### **Risk Range Percentile Scores**

For each DDOT scale respondents are classified into four risk ranges: Low Risk (zero to 39<sup>th</sup> percentile), Medium Risk (40<sup>th</sup> to 69<sup>th</sup> percentile), Problem Risk (70<sup>th</sup> to 89<sup>th</sup> percentile), and Severe Problem (90<sup>th</sup> to 100<sup>th</sup> percentile). Risk ranges represent degree of severity. Risk ranges were established by converting raw scores to percentile scores by using cumulative percentage distributions (Behavior Data Systems, 2012). This is similar to the way in which students are assigned grades or scores for grading purposes in school. The 70<sup>th</sup> percentile is often used for passing grades and this same percentile initially began as a working criterion. Similarly, the 90<sup>th</sup> percentile is a benchmark for identifying severe problems. Early instrument development included the use of content experts to confirm the proposed risk ranges. Data analyses, in combination with field reports from experienced evaluators have confirmed that these percentile categories provide accurate identification of problem behavior (Behavior Data Systems, 2012).

In addition to establishing risk thresholds, the risk ranges serve an important role when interpreting Truthfulness Scale scores. A truthfulness concern is identified when a Truthfulness Scale score is at or above the Problem Risk range (70<sup>th</sup> percentile). These respondents are

typically cautious, guarded or may be defensive in their answers. Scores in the Problem Risk range should be interpreted cautiously. Severe problem scores on the Truthfulness Scale (90<sup>th</sup> percentile and above) invalidates all scale scores. Classifying offenders according to pre-defined risk ranges provides an efficient and reliable solution for determining risk (Behavior Data Systems, 2012).

### **DDOT Database**

Every time a DDOT is scored the data is automatically stored on the disc/flash drive for later inclusion in the DDOT database. When the preset number of tests are administered the disc is returned for replacement, and the test data contained on these used discs is transferred, using confidential (no names) procedures, to the DDOT database for later analysis. This database is statistically analyzed annually, at which time DDOT test items are adjusted to reflect demographic changes or trends that might have occurred. This unique and proprietary database also enables the formulation of annual summary reports that are descriptive of the populations that are tested. Summary reports provide important information which may inform budgeting, resource allocation, recruitment, training, and program development.

### **Confidentiality (Delete Client Names)**

Many agencies and programs are rightfully concerned about protecting their clients' confidentiality. The proprietary Delete Client Names option is provided to allow deletion of client names from test discs prior to their being returned for inclusion in the DDOT database. This is optional and once the names have been deleted they are gone and cannot be retrieved. Deleting client names does not delete demographic information or test data. It only deletes the client names when the option is used. The option is available at any time and can be used whether the disc is full or not. Once the client names are deleted there can be no further editing of the client names which ensures client confidentiality.

## **SCALE DESCRIPTIONS**

DDOT scales were developed from large item pools. Initial item selection was a rational process based upon clearly understood definitions of each scale. Content validity for the test was established using subject matter experts from the field of psychology and corrections. Initial items and scales were analyzed for final test selection and only those with the best statistical properties were retained. **Final test and item selection was based on each item's statistical properties.** It is important that users of the DDOT familiarize themselves with the definition of each scale. For that purpose a description of each DDOT scale follows.

**Truthfulness Scale:** The Truthfulness scale uses 22 true/false items to measure how "truthful" the client was while completing the DDOT. 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 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 behaviors which minimize or even conceal self-reported information. The Truthfulness Scale also establishes that the client understood the test items that he or she was responding to.

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

**Drug Scale:** The Drug scale is an independent measure of the client's drug abuse-related problems. Illicit (or illegal) drug abuse and its effects are important factors to be considered when evaluating DUI/DWI offenders. Without this type of a drug scale, many drug abusers would remain undetected. Thus, the DDOT 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.

**Marijuana Scale:** Marijuana can be an intoxicant, depressant, hallucinogen, stimulant, or all of the above. The principal psychoactive ingredient in marijuana (THC) may linger for days or even weeks. Studies have shown that THC intoxication can return--for no apparent reason--even when a person has not recently smoked marijuana (University of California, Berkeley, Wellness Letter, May 1987). Dr. Adrian Williams of the Insurance Institute for Highway Safety estimates that as many as three-fourths of those arrested for driving under the influence of alcohol have been using marijuana as well.

**Driver Risk Scale:** The Driver Risk scale is an independent measure of the respondent being a risk, independent of that person's involvement with alcohol or drugs. Mortimer, et. al. (1971)<sup>1</sup> concluded that alcoholics were significantly more involved in inappropriate driving behavior and moving violations. Selzer (1971)<sup>2</sup> concluded that for maximal screening effectiveness, test results and arrest records be used jointly. Identification of driver risk independent of chemical dependency also is helpful in detecting the abstaining, yet irresponsible or distracted driver.

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

**Stress Management Scale:** The Stress Quotient Scale (renamed the Stress Coping Abilities Scale) is a measure of the respondent's ability to cope with stress. How effectively one copes with stress

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

**Substance Use Scale:** Classifies offenders according to the Diagnostic and Statistical Manual, 5<sup>th</sup> Edition (DSM-5) as having a Substance Use Disorder. This scale includes assessment of both alcohol and drug symptomatology. Offenders are classified as Mild, Moderate or Severe based on their responses to several DDOT items.

## EMPIRICAL RESEARCH

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

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

### Stress Quotient

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

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

The Stress Quotient (SQ) scale is a numerical value representing a person's ability to handle or cope with stress relative to their amount of experienced stress. CS (Coping Skill) refers to a person's ability to cope with stress. S (Stress) refers to experienced stress. k (Constant) represents a constant value in the SQ equation to establish SQ score ranges. The SQ includes measures of both stress and coping skills in the derivation of the Stress Quotient (SQ) score. The better an individual's coping skills, compared to the amount of experienced stress, the higher the SQ score.

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

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

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

**Validation Study 3:** In this study (1981) the relationship between the SQ Scale and the Holmes Rahe Social Readjustment Rating Scale (SRRS) was investigated. The SRRS, which is comprised of a self-rating of stressful life events, has been shown to be a valid measure of stress. Three correlation analyses were done. SRRS scores were correlated with SQ scores and separately with two components of the SQ scale: Coping Skill (CS) scores and Stress (S) scores. It was hypothesized that the SQ and SRRS correlation would be negative, since subjects with lower SQ scores would be more likely to either encounter less stressful life events or experience less stress in their lives. It was also predicted that subjects with a higher CS would be less likely to encounter stressful life events, hence a negative correlation was hypothesized. A positive correlation was predicted between S and SRRS, since subjects experiencing more frequent stressful life events would reflect more experienced stress. The participants in this study consisted of 30 outpatient psychotherapy patients. There were 14 males and 16 females. The average age was 35. The SQ and the SRRS were administered in counterbalanced order. The results showed there was a significant positive correlation (product-moment correlation coefficient) between SQ and SRRS ( $r = .4006, p < .01$ ). The correlation results between CS and SRRS was not significant ( $r = .1355$ ,

n.s.). There was a significant positive correlation between S and SRRS ( $r = .6183, p < .001$ ). The correlations were in predicted directions. The significant correlations between SQ and SRRS as well as S and SRRS support the construct validity of the SQ or Stress Coping Abilities Scale.

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

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

**Validation Study 5:** Psychotherapy outpatient clients were used in this validation study (1982) that evaluated the relationship between selected Wiggin's MMPI (Minnesota Multiphasic Personality Inventory) supplementary content scales (ES & MAS) as criterion measures and the SQ scale. ES measures ego strength and MAS measures manifest anxiety. It was predicted that the ES and SC correlation would be positive, since people with high ego strength would be more likely to possess good coping skills. Similarly, it was predicted that MAS and S correlations would be positive, since people experiencing high levels of manifest anxiety would also likely experience high levels of stress. The subjects were 51 psychotherapy outpatients ranging in age from 22 to 56 years with an average age of 34. There were 23 males and 28 females. The MMPI and the SQ were administered in counterbalanced order. The correlation (product-moment correlation coefficient) results indicated that ES and CS were positively significantly correlated ( $r = .29, p < .001$ ). MAS and S comparisons resulted in an  $r$  of .54, significant at the  $p < .001$  level. All results were significant and in predicted directions.

In a related study (1982) utilizing the same population data ( $N=51$ ) the relationship between the Psychasthenia (Pt) scale in the MMPI and the S component of the SQ scale was evaluated. The Pt scale in the MMPI reflects neurotic anxiety, whereas the S component of the SQ scale measures stress. Positive Pt and S correlations were predicted. The correlation (product-moment correlation coefficient) results indicated that the Pt scale and the S component of the SQ scale were

significantly correlated ( $r = .58, p < .001$ ). Results were significant and in the predicted direction. The significant correlation's between MMPI scales (ES, MAS, Pt) and the SQ scale components (CS, S) support the construct validity of the SQ or Stress Coping Abilities Scale.

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

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

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

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

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

In the same study (1986, inpatients), product-moment correlations were calculated between the Stress Quotient (SQ) and selected MMPI scales. The SQ correlated significantly (.001 level) with

the following MMPI scales: Psychopathic Deviate (Pd), Psychasthenia (Pt), Anxiety (A), Manifest Anxiety (MAS), Ego Strength (ES), Social Responsibility (RE), Social Alienation (PD4A), Social Alienation (SC1A), Social Maladjustment (SOC), Authority Conflict (AUT), Manifest Hostility (HOS), Suspiciousness/Mistrust (TSC-II), Resentment/Aggression (TSC-V) and Tension/Worry (TSC-VII). **All SQ correlations with selected MMPI scales were significant (at the .001 level of significance) and in predicted directions.** These results support the SQ scale or Stress Coping Abilities Scale as a valid measure of stress coping abilities.

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

### **DDOT RESEARCH FINDINGS**

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

**Reliability Study 10:** The reliability of the DDOT (2013) Truthfulness Scale, Alcohol Scale, Driver Risk Scale, Stress Management Scale, was established using data from 4, 756 Oklahoma test takers who were charged with DUI/DWI. Demographics were: 75% males, 25% females; 68% Caucasian, 7% African-American, 7% Hispanic, 14% Native American, 2% reported Other; Single 51%, 24% Married, 22% divorced/separated and 2% reported Widowed.

The most common procedure for reporting internal consistency of an assessment is Cronbach's alpha. The professionally accepted reliability standard for this type of instrument is .70-.80 (Murphy & Davidshofer, 2001). Table 1 summarizes reliability coefficients.

**Table 1: Reliability Analysis DDOT (N = 4, 756, 2013)**

| Scales            | Cronbach's Alpha |
|-------------------|------------------|
| Truthfulness      | .84              |
| Alcohol Risk      | .89              |
| Driver Risk       | .74              |
| Drug Risk         | .88              |
| Stress Management | .91              |

Scores exceed professionally accepted standards and provide empirical support of the DDOTS score reliability.

**Reliability Study 11:** Score reliability of the DDOT (2014) Truthfulness Scale, Alcohol Scale, Drug Scale, Driver Risk Scale, and Stress Management Scale was established using data from 3, 719 Florida test takers charged with or arrest for DUI or reckless driving. Demographics were: 72% male, 28% female; 65% were Caucasian, 11% African American, 20% were Hispanic, and 4% reported Other; 61% were single, 20% were married, 16% were divorced/separated and 1% reported they were widowed.

The most common procedure for reporting internal consistency of an assessment is Cronbach's alpha. The professionally accepted reliability standard for this type of instrument is .70-.80 (Murphy & Davidshofer, 2001). Table 2 summarizes the results of the analysis and revealed high reliability coefficients.

**Table 2: Reliability Analysis DDOT (N = 3, 719, 2014)**

| Scales            | Cronbach's Alpha |
|-------------------|------------------|
| Truthfulness      | .90              |
| Alcohol Risk      | .92              |
| Driver Risk       | .76              |
| Drug Risk         | .91              |
| Stress Management | .90              |

Results of this analysis were impressive and add additional empirical support of the DDOT's score reliability. These results were very impressive given that they were submitted by all individual, in Florida charged with, arrested for, or convicted of a DUI during a 6-month time period.

**Reliability Study 12:** This study was conducted using test data submitted by DUI/DWI offenders from across the United States. There were 812 test takers.

The most common procedure for reporting internal consistency of an assessment is Cronbach's alpha. The professionally accepted reliability standard for this type of instrument is .70-.80 (Murphy & Davidshofer, 2001). Table 3 summarizes the results of the analysis and revealed high reliability coefficients.

Table 3: Reliability Analysis DDOT (N = 812, 2014)

| Scales            | Cronbach's Alpha |
|-------------------|------------------|
| Truthfulness      | .89              |
| Alcohol Risk      | .92              |
| Driver Risk       | .80              |
| Drug Risk         | .90              |
| Stress Management | .95              |

This sample had the highest reliability coefficient for Driver Risk and the impressive reliability coefficients for the remaining scales underscore the reliability of the scale scores.

As more test administration data is collected on the DDOT Marijuana Scale, reliability and validity studies will be conducted to establish empirical support of the DDOT, including the Marijuana Scale.

**Reliability Study 13:** The reliability of the DDOT (2019) Truthfulness Scale, Alcohol Scale, Driver Risk Scale, Stress Management Scale, were established using data from 1,137 test takers administered by agencies using the DDOT by Behavior Data Systems. Demographics were: 73.6% males, 26.4% females; 73.6% Caucasian, 10.6% African American, 5.6% Hispanic, 2.0% Asian, 1.1% Native American, 4.8% reported other; 63.9% single, 16.3% married, 10.9% divorced, 3.3% separated, 1.1% widowed.

The most common procedure for reported internal consistency of an assessment is Cronbach’s alpha. The professionally accepted reliability standard for this type of instrument is .70-.80 (Murphy & Davidshofer, 2001). Table 4 summarizes the results of the analysis and revealed high reliability coefficients.

Table 4: Reliability Analysis DDOT (N=1,137, 2019)

| Scales       | Cronbach’s Alpha |
|--------------|------------------|
| Truthfulness | .89              |
| Alcohol Risk | .92              |
| Driver Risk  | .80              |
| Drug Risk    | .91              |
| Marijuana    | .91              |

This sample had high reliability coefficients for all scales, underscoring the reliability of the scale scores.

#### 14. DDOT Validity Analysis: First-time and Repeat Offender Comparison

##### Method

Participants in this study (N=1,137) consisted of tests administered by agencies using the DDOT by Behavior Data Systems between 2015 and 2019). Demographic characteristics: 837 (73.6%) of the offenders were male and 300 (26.4%) were female. Age: 20 & younger (13.6%); 21-30 (42.3%); 31-40 (20.1%); 41-50 (13.0%); 51-60 (7.2%); and 61 & older (3.8%). Ethnicity: Caucasian (73.6%); African American (10.6%); Hispanic (5.6%); Asian (2.0%); Native American (1.1%); and Other (1.1%). Education: 8<sup>th</sup> grade or less (72.7%); Some HS (2.8%); Graduated HS (15.0%); Trade or technical school (2.7%); Some College (2.6%); Graduated College (<1%); Advanced Degree (<1%). Marital Status: Single (63.9%); Married (16.3%); Divorced (10.9%); Separated (3.3%); and Widowed (1.1%).

A discriminant validity analysis compared first-time offenders’ and repeat offenders’ DDOT scale scores. Offenders classified as first-time offenders are those having no more than one DUI arrest,

whereas multiple offenders are those that have been arrested for domestic violence two or more times. Because DDOT scales measure problem severity, it was predicted that repeat offenders would obtain higher (more severe) scale scores than first-time offenders.

| <b>DRI-II/DRI-II Short Form Scale</b> | <b>First-time Offenders' Avg. Scores</b> | <b>Repeat Offenders' Avg. Scores</b> | <b>T-value</b> | <b>Level of Significance</b> |
|---------------------------------------|--|--------------------------------------|----------------|------------------------------|
| Truthfulness Scale                    | 8.82                                     | 8.85                                 | $t=-0.50$      | $p<.960$                     |
| Alcohol Scale                         | 13.72                                    | 25.62                                | $t=-9.38$      | $p<.001$                     |
| Driver Risk Scale                     | 12.65                                    | 17.93                                | $t=-7.85$      | $p<.001$                     |
| Drugs Scale                           | 5.81                                     | 13.81                                | $t=-6.54$      | $p<.001$                     |
| Marijuana Scale                       | 140.42                                   | 133.36                               | $t=9.36$       | $p<.001$                     |

As shown in the table 5, repeat offenders' scores on nearly all DDOT scales indicated more severe problems, with the exception of the Truthfulness Scale. There was no statistically significant difference between first-time and repeat offenders scale scored on the Truthfulness Scale. For all other scales, repeat offenders average scores were higher (more severe) than those of first offenders, representing heightened problem severity. Repeat offenders' more severe problem are manifested as higher scale scores. There was a statistically significant difference on the Alcohol, Driver Risk, Drug, and Marijuana Scales. On average, repeat offenders scored higher than first-time offenders on the Alcohol, Driver Risk, Drug, and Marijuana Scales.

These results corroborate the discriminant validity of the DDOT. DDOT scale effectively differentiate between first-time offenders and repeat offenders that are expected to have more severe problems.

## **SUMMARY**

This document is not intended to be an exhaustive compilation of DUI/DWI Offender Test (DDOT) research; however, it does summarize many research studies supporting the reliability, validity, and accuracy of the DDOT. Moreover, ongoing DDOT database research ensures an increasingly accurate picture of DDOT drivers and the risk they represent. It is reasonable to conclude the DDOT provides a sound empirical basis for driver risk assessment and subsequent decision making.