Using the Level of Service Inventory–Revised to Improve Assessment and Treatment in Drug Court

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Abstract
More than 2,000 drug courts in the United States provide supervision and substance-abuse treatment to thousands of offenders. Yet the treatment continuum from assessment to aftercare is underexplored. The effectiveness of the Level of Service Inventory–Revised (LSI-R) as a risk assessment tool is well established. However, fewer studies have considered its use in guiding treatment strategies. In using the LSI-R, the drug court program relied on the structured interview protocol (not the risk classification scores) to identify criminogenic needs that then helped determine placement in a high- or low-needs treatment track. To evaluate the effectiveness of these treatment placement decisions, this research used the LSI-R scores to examine individual and group differences \( (N = 182) \). Significant and substantive differences at the individual and group levels were found thus providing empirical support for using the LSI-R as a link between assessment and treatment. Implications for developing standards and practice protocols for drug courts are discussed.

Keywords
drug courts, assessment, criminogenic needs, Level Service Inventory-Revised, substance abuse treatment.

Introduction
The criminal justice system is the largest single source of referrals to community-based substance abuse treatment, accounting for nearly 700,000 of the 1.8 million referrals in 2007 (Trunzo & Henderson, 2009). This push on the already strained community-based
treatment, services system has accelerated the need for evidence-based practices relevant to an addicted, criminally involved population. Historically, the efficacy of offender treatment has been hamstrung by a lack of scientifically based standards and practice protocols. Austin (2006) and others have argued that treatment in correctional settings did not work because it was not done well (see Friedmann, Taxman, & Henderson, 2007). One reason treatment was ineffective was the lack of appropriate risk/needs assessments to guide supervision and service delivery (Andrews, Bonta, & Hoge, 1990a; Austin, 2006; Taxman, 2006). As actuarial assessments were developed and refined, they became tools for security classification (the risk) but continue to be underutilized as a treatment planning mechanism (the needs; Byrne, 2006; Knight, Garner, Simpson, Morey, & Flynn, 2006). Assessment is the first step in treatment (National Institute on Drug Abuse, 2009) and should occur along a continuum, with direct links to a plan that targets recovery and factors associated with criminal behavior (Listwan, Shaffer, & Latessa, 2002; Taxman, Cropsey, Young, & Wexler, 2007).

This article is intended to advance the dialogue regarding actuarial measures as something other than risk management tools (or at least as a complement) in the assessment and treatment process (see Smith, Cullen, & Latessa, 2009). This article focuses on the use of the Level of Service Inventory—Revised (LSI-R) in assessing individuals’ criminogenic needs in a drug court program. Previous research offers little guidance on how the LSI-R is or should be used in treatment settings. Given the state of knowledge, setting guideline or cutoff scores for who is more likely to succeed in a drug court is arbitrary and invalid. Therefore, the drug court discussed here used the LSI-R to focus attention on areas of criminogenic need (dynamic factors) during the assessment process. The drug court team, led by the clinical staff, made treatment decisions based on information from a theoretically sound criminogenic risk/needs assessment instrument (and other information, see below). The question that logically follows and that this research sought to answer is, are these placement and treatment decisions supported by the objective global and subcomponent LSI-R scores? If there are substantive and significant differences between the two groups, as shown by the LSI-R scores, we could draw conclusions about the LSI-R’s promise as a treatment tool for use in drug court settings. The second objective was to determine whether the LSI-R systematically distinguishes between participants’ level of criminogenic needs in ways that are substantively significant and relevant to the treatment process.

**Drug Courts**

Drug courts use the moral suasion of the court in combination with substance abuse treatment and other ancillary services to move people into recovery and away from criminal behavior. Drug court programs produce reductions in recidivism rates both in- and post-program (Government Accountability Office, 2005; Roman, Townsend, & Bhati, 2003; Wilson, Mitchell, & MacKenzie, 2006) and produce sustained retention in treatment, especially when compared with community-based programs (Belenko, 2001; Cissner & Rempel, 2005). These positive outcomes have been found in numerous jurisdictions. Furthermore, the research community has cautiously concluded that drug courts do work
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(Banks & Gottfredson, 2003; Bouffard & Taxman, 2004; Goldkamp, White, & Robinson, 2001; Gottfredson & Exum, 2002; Marlowe & Kirby, 1999; Taxman & Bouffard, 2005). However, the processes and mechanisms used to produce these positive effects are not well known. A specific knowledge gap surrounds the delivery of treatment services in terms of assessment, dosage, length of stay, and types and units of services delivered (Banks & Gottfredson, 2003; Bouffard & Taxman, 2004; Lutze & van Wormer, 2007; Marlowe, DeMatteo, & Festinger, 2003; Simpson, 2004; Wilson et al., 2006).

Assessment

A risk/needs assessment should incorporate an actuarial instrument, clinical interview, and collateral information to best determine the level of supervision and an appropriate modality of treatment. Effective treatment programs for offender populations deliver services that address dynamic factors known to influence criminal behavior. This is known as the risk-needs-responsivity (RNR) principle and has been explicated elsewhere (Andrews & Bonta, 2006; Listwan, Cullen, & Latessa, 2006; Taxman, Thanner, & Weisburd, 2006). RNR principles dictate the treatment and custody milieu: The higher one’s risk for reoffending, the higher the treatment intensity needed. Placing high-risk offenders in lower intensity services or the converse, low-risk offenders in higher intensity services, will have iatrogenic effects (Andrews, Bonta, et al., 1990; Marlowe, 2003; Marlowe, Festinger, Lee, Dugosh, & Benasutti, 2006). In their discussion of effective interventions, Matthews, Hubbard, and Latessa (2001) estimated that high-intensity services are those that account for 40% to 70% of an offender’s time over a 3- to 9-month period. Programs that target high-risk individuals are up to 5 times more effective in reducing recidivism when compared with those that target low-risk individuals (Andrews, Zinger, et al., 1990).

Criminogenic needs predict negative outcomes and if treated, reduce the risk of recidivism. These needs include dynamic factors such as antisocial attitudes, antisocial peer associations, a lack of problem solving and self-control skills, and also the “usual suspects” such as unemployment and limited educational attainment (Latessa & Lowenkamp, 2005). A needs assessment is similar to a medical diagnostic test—it tells us what to treat. Research has found that programs that treat a cluster of criminogenic needs, versus one or two, are more likely to achieve the desired results (Latessa & Lowenkamp, 2005). For example, tackling unemployment in a group of offenders is important but limited without also addressing impulsivity, failure to plan ahead, and a general lack of effort (i.e., effort defined as doing what you do not want to do and sometimes not doing what you want to do; Samenow, 2004).

Identifying an offender’s criminogenic needs in assessment and focusing on these dynamic factors in treatment have reduced future recidivism and improved social functioning (Dowden & Andrews, 1999; Vieira, Skilling, & Peterson-Badali, 2009). The RNR model is not new to corrections but is seldom fully implemented in programmatic interventions (Friedmann et al., 2007; Matthews, et al., 2001; Van Voorhis, 1997). Matthews et al. (2001) evaluated 86 treatment programs and found only 16.3% matched client needs and treatment services based on risk level or responsivity factors. The study presented here examined the utility of the LSI-R to inform the placement of drug offenders with varying levels of need into one of two drug court program tracks.
The LSI-R

The LSI-R is argued to be the most theoretically based offender instrument available and is a broad risk/needs assessment. More than 45 studies have examined the predictive validity of the LSI-R with recidivism as the outcome of interest (variously defined, see Vose, Cullen, & Smith, 2008). The LSI-R has been used to assess general recidivism for offenders (Gendreau, Goggin, & Smith, 2002), to assess violent offenders’ success post release (Girard & Wormith, 2004; Manchak, Skeem, Douglas, & Siranosian, 2009), and has been validated on a jail population (Bonta & Motiuk, 1990; Holsinger, Lowenkamp, & Latessa, 2003) and on drug-involved offenders released from prison (Kelly & Welsh, 2008).

The LSI-R is comprehensive, assesses criminogenic needs, and combines static (do not change or change in only one direction) and dynamic factors in risk-needs scales. A total of 54 questions span 10 domains, including criminal history, employment/education, finance, accommodations, leisure, family/marital, companions, alcohol/drugs, emotional/personal, and attitudes/orientation. Identifying and targeting criminogenic needs (through dynamic needs assessment) is necessary if an objective is to formulate how criminogenic needs will be addressed in treatment and case management plans. The LSI-R captures the most significant factors or paths that lead to criminal conduct: criminal history, antisocial personality, antisocial attitudes, and social support for crime (Andrews & Bonta, 2006). Importantly, the LSI-R can be used as a repeated measure to show a client’s progress. The LSI-R and other sound assessment instruments can make a significant contribution to drug court programming when they capture dynamic factors that can be targeted for change and are used to develop a treatment plan.

Many studies have demonstrated the effectiveness of the LSI-R as a risk-assessment tool. However, fewer studies have considered whether the tool can be used to guide treatment strategies. To empirically assess whether the LSI-R can be effectively used in determining treatment strategies in drug courts, this study addressed two questions: (a) Are there substantive differences between drug court participants in different tracks during their treatment process and (b) Is the LSI-R able to systematically distinguish between participants’ level of need in ways that are meaningful to treatment? Addressing these questions will help to determine how to most effectively shape treatment programs for offenders enrolled in drug courts.

Data and Method

Drug Court Setting

The drug court is located in Georgia’s third largest county, DeKalb, and is an urban, suburban community within the greater metropolitan Atlanta area (approximately 731,200 residents; Atlanta Regional Commission, 2009). DeKalb is the most densely populated county in the state with an expanding multiethnic population (two thirds of
the population are non-White; African Americans comprise 54% of population) and approximately 20% of the population lives below the poverty line (U.S. Census, 2008). There is broad local consensus that crack cocaine, despite the rise of methamphetamine use, continues to drive crime in DeKalb County.

The drug court program discussed here, started in 2002, was developed to reflect the treatment and criminogenic needs of a high-risk/needs target population. The program utilizes a post-plea design with offenders pleading guilty at entry and receiving a suspended sentence on successful completion of the program, whereby the court may dismiss (null pros) convictions. The program components include evidence-based practices in the following areas: screening, assessment, and baseline measures process (e.g., LSI-R, Texas Christian University [TCU] Drug Screen II, biopsychosocial inventory, and other validated measures); individual treatment plans; cognitive behavioral curriculum (including the National Institute of Correction’s “Thinking for A Change” [T4C]; Bush, Glick, & Taymans, 1997; and “Moral Reconciliation Therapy” [MRT]; Little & Robinson, 1988); a relapse prevention curriculum; repeated client measures designed to capture changes in criminal thinking and addictive behavior patterns (e.g., Criminal Sentiments Scale–Modified, TCU Criminal Justice Client Evaluation of Self and Treatment); and utilizing the court as a therapeutic tool, primarily through judicial monitoring and interactions that specifically hold participants accountable to treatment objectives.

The program proposed to enhance services through the development of a second track using evidence-based, lower intensity programming to address the unmet needs of a lower risk but criminally involved and substance-abusing population; a pilot program began in 2007. The ability to differentiate between low-need and high-need participants is a primary concern for this program. A year later, the second track was funded through a Substance Abuse and Mental Health Services (SAMHSA) grant targeting the expansion of substance abuse treatment capacity for adult drug courts.

Referrals originate not only from any criminal justice source (judicial, prosecutor, defense attorney, and pretrial services) but also from community and/or family members. The primary criteria are legal eligibility. For both tracks, drug court team representatives from pretrial services, the public defender office, and the district attorney office conduct an eligibility screening. All eligible referrals undergo a criminal history check; for Track 2, documentation regarding employment and residence is confirmed (see below). Eligible candidates are then cleared by the district attorney’s office and referred to a licensed treatment staff member for assessment. At any given time, the program averages 125 participants in both tracks. Information specific to each program track is provided below.

**Track 1 (high-needs/high-intensity services).** The legal eligibility requirements are no convictions or pending charges involving guns, violence, drug sales, or residential burglary; no outstanding warrant in another jurisdiction; and not less than 2 years left on probation. Nearly all participants are homeless at program entry (95%). On enrollment, all participants live in an approved recovery residence and receive a full housing subsidy. Many participants receive a partial housing subsidy for the duration of program participation due to financial need. The recovery residences work with the team,
particularly the case managers, and have their own rules that drug court participants must follow. Track 1 approaches an inpatient level of care given the recovery residence and intensive treatment services each participant receives.

Track 1 is a five-phase 18-month treatment and supervision program with a 6-month aftercare component. Phase 1 (4 months) requires that participants attend 24 hr/week of treatment, develop an individualized treatment plan with their counselor, submit to random drug screenings 3 to 4 times a week, attend 90 narcotics anonymous/alcoholic anonymous meetings in first 90 days and obtain a sponsor (four meetings/week thereafter), begin the T4C curriculum, submit a weekly calendar of activities, meet weekly with the case manager, attend one family counseling session a month, and attend court every week. The obligations change and/or increase (e.g., fewer hours in treatment and an employment requirement) as clients move through the program to increase the level of personal responsibility and independence. By Phase 5, participants are working with the MRT curriculum, attending organized socialization and community outreach events, and attending court once a month. Beginning in Phase 2, participants pay a nominal monthly program fee that gradually increases to a weekly payment that is dependent on the phase and the client’s ability to pay.

Track 2 (low-moderate needs/lower intensity services). The legal eligibility requirements are the same for Track 1 plus no more than three felony convictions during the last 10 years and individuals must provide evidence of consistent employment and stable residence for a minimum of 6 months prior to arrest. The intention here is to address the unmet needs of a criminally involved, substance-abusing population that still has protective factors in place, namely, employability and housing. If an individual is unemployed at enrollment he or she must secure employment in the first 30 days of the program (exceptions are made for educational program enrollment or full custody of children with primary caretaking responsibilities). It is a 9-month active treatment program with 1 year aftercare and supervision. Phase 1 (4 months) requires that participants attend 9 hr of treatment weekly, participate in a modified (and certified) T4C and relapse prevention curricula, attend three 12-step meetings, attend one individual treatment session monthly, submit to three random drug screenings a week, and attend court weekly. Participants also begin MRT in Phase 3. All participants pay a weekly fee of US$35.

Track 1 and Track 2 program information. The drug court works with each participant to develop an individualized treatment plan within 10 days of enrollment, and it is regularly updated for the duration of programming. Criminogenic factors, as indicated by the LSI-R, are carried over to the individual treatment plan, along with key treatment goals, such as work around healthy boundaries, relapse prevention, socialization, employment, health, and family.

The program has taken an additional step toward integrating treatment with the authority of the court by linking participants’ compliance with their individual treatment objectives to phase progression. Participants work with counselors every 30 days to update treatment plans and jointly rate progress on a monthly treatment report card. Measurable treatment objectives are automatically carried over to court reports so that
they remain a clear focus for the program. The treatment objectives are provided via the data management system to the judge and interdisciplinary team who meet weekly to staff cases, identify sanctions and monitor each participant’s progress. The judge addresses a treatment or case management issue with each client during court. In this sense, the courtroom becomes a therapeutic tool to support treatment strategies.

It is worth noting that the treatment team is contracted through a not-for-profit and works exclusively with the drug court. The clinical director carries a small caseload in Track 1, which also includes three counselors; Track 2 includes a lead counselor plus two additional counselors for a total of six counselors supervised by the clinical director. Each track has a dedicated case manager. The legal teams are distinct yet familiar with the workings of each other. Each has a dedicated, presiding judge and traditional criminal justice members (prosecutor, defense attorneys, sheriff’s deputies, etc.). Other members of the judiciary preside over status hearings on a rotating, once-a-month schedule. The director of the drug court oversees both program tracks.

For both tracks, clinical eligibility is determined after a person has been found legally eligible. The clinical criteria are determined by information from the LSI-R and the TCU Drug Screen II. Participants must have a substance dependence or abuse problem (as indicated by a score of three or higher on the TCU Drug Screen II) and must acknowledge said problem. There is no minimum or maximum cutoff LSI-R score. The results of the LSI-R are reviewed and presented to the full team by the clinical director (Track 1) or the lead counselor (Track 2). Matching treatment needs with program services is the essence of the RNR principle, as outlined by Andrews and Bonta (2006). Participants in both tracks review the pertinent drug court contract with their defense lawyer and agree to the program requirements prior to enrollment. Individuals enter a plea during a drug court session and will have their current charges dismissed and/or current probation sentence terminated on successful completion of the program.

Sample

The sample includes all those assessed for the Track 1 ($n = 115$) and Track 2 ($n = 67$) of the drug court program between October 2007 and October 2009 (see Table 1). For the high-needs group (Track 1), the sample was 84.5% African American and 74% male. Two thirds were above 40 years old, 92% were not married, and half had a high school degree or equivalent. In terms of criminal history, 75% of the high-needs candidates had 10 or more arrests, 1 to 4 felony convictions, and 1 to 8 misdemeanor convictions. An indicator of criminality over the life course was the mean years since first arrest. For Track 1, more than 8 of 10 candidates faced their first arrest at least 12 years prior to assessment. For the low-moderate-needs group (Track 2), the sample was 67% African American and 74% male. More than half were below 40 years old, 64% were not married, and 72% had graduated high school. In terms of criminal history, half had between 2 to 6 arrests and two thirds had between 1 to 3 felony convictions and 1 to 4 misdemeanor convictions. For Track 2, nearly 6 of 10 candidates faced their first arrest at least 8 years
prior to assessment. Based on the demographic and criminal history data, the tracks do appear to be split in the way the program intended. However, further analyses are needed to test if the differences are statistically significant before drawing any conclusions.

This research is part of a larger evaluation of the drug court program. Each person assessed consents to sharing their information with the drug court team. Furthermore, each person is asked to consent that their confidential information may be used for research purposes and is informed that this decision has no bearing on their eligibility, enrollment, or status in the program. This research has received University Institutional Review Board approval. The data presented here are collected by the program during the assessment and enrollment process, and participants were not compensated for agreeing to participate. For external evaluation purposes and to reduce bias, each individual is given a research number independent of any individual or program identifiers.

Table 1. High and Low-Moderate-Needs Drug Court Clients by Demographics, Drug Use, and Criminal History (N = 182)

<table>
<thead>
<tr>
<th></th>
<th>High needs (Track 1)</th>
<th>Low-moderate needs (Track 2)</th>
<th>Chi-square or t</th>
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</thead>
<tbody>
<tr>
<td>Total assessed, n (%)</td>
<td>115</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>87 (84.5) (n = 107)</td>
<td>40 (66.7) (n = 61)</td>
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<tr>
<td>Age, M (SD)</td>
<td>41.84 (8.28) (n = 106)</td>
<td>36.77 (11.08) (n = 63)</td>
<td>t(167) = 3.65***</td>
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<tr>
<td>&lt;30</td>
<td>10 (9.7)</td>
<td>19 (28.8)</td>
<td></td>
</tr>
<tr>
<td>30s</td>
<td>25 (24.3)</td>
<td>18 (27.3)</td>
<td></td>
</tr>
<tr>
<td>40s</td>
<td>53 (51.5)</td>
<td>19 (28.8)</td>
<td></td>
</tr>
<tr>
<td>50s</td>
<td>15 (14.6)</td>
<td>9 (13.6)</td>
<td></td>
</tr>
<tr>
<td>60s</td>
<td>0</td>
<td>1 (1.5)</td>
<td></td>
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<tr>
<td>Male, M (SD)</td>
<td>85 (73.9) (n = 115)</td>
<td>50 (73.5) (n = 67)</td>
<td>ns</td>
</tr>
<tr>
<td>High school graduate/GED, M (SD)</td>
<td>45 (49.5) (n = 91)</td>
<td>41 (71.9) (n = 57)</td>
<td></td>
</tr>
<tr>
<td>Married, M (SD)</td>
<td>8 (7.9) (n = 101)</td>
<td>21 (36.2) (n = 58)</td>
<td></td>
</tr>
<tr>
<td>Drug Screen II score, M (SD)</td>
<td>6.30 (1.57) (n = 115)</td>
<td>6.12 (2.11) (n = 67)</td>
<td>ns</td>
</tr>
<tr>
<td>Drug of choice, M (SD)</td>
<td>82 (71.3) (n = 115)</td>
<td>23 (34.3) (n = 67)</td>
<td></td>
</tr>
<tr>
<td>Crack cocaine/cocaine</td>
<td>14 (12.2)</td>
<td>8 (11.9)</td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>5 (4.3)</td>
<td>26 (38.8)</td>
<td></td>
</tr>
<tr>
<td>Marijuana</td>
<td>14 (12.2)</td>
<td>10 (14.9)</td>
<td></td>
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<tr>
<td>Othera</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous arrests, M (SD)***</td>
<td>20 (13.39)</td>
<td>8 (7.7)</td>
<td>t(129) = 5.69***</td>
</tr>
<tr>
<td>Felony convictions, M (SD)</td>
<td>3.97 (3.4)</td>
<td>3.32 (2.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Misdemeanor convictions, M (SD)</td>
<td>5.43 (4.16)</td>
<td>3.18 (3.63)</td>
<td>ns</td>
</tr>
</tbody>
</table>

Note: GED = general educational development. Percentages may not add to 100 due to rounding.
a. Other drugs of choice include heroin, street methadone (nonprescription), methamphetamines, other amphetamines, opiates, tranquilizers, hallucinogens, and inhalants.

* p < .05. ** p < .01. *** p < .001.
Assessment Instruments

In adopting an evidence-based practices model, drug court programs need an assessment tool with depth that differentiates between and identifies need levels for each client. The theoretical foundation of the LSI-R for offender populations, its ability to capture dynamic and static risk factors, and its focus on factors that robustly contribute to criminal behavior (e.g., antisocial associates) made it an appropriate choice for the program’s primary assessment instrument.

The LSI-R was piloted for 4 months and formally adopted into the assessment protocol in October 2007. Clinical assessment occurs after the legal team approves eligibility. Assessments take place at the jail or the treatment center and are conducted by the clinical director or the lead counselor. The LSI-R is administered electronically (vs. a paper-and-pencil format); the software and per-usage (individual) tests are purchased by the drug court from Multihealth Systems. Assessment reports are generated automatically. The program gives the administrator (in this case the clinical director or lead counselor) the option to override the classification and scoring if she disagrees with the results. As a matter of policy, the drug court program does not use the override feature, and it was not used in any of these assessments. The drug court program has independently developed a database that is used to track every participant across the range of services (treatment, case management, court hearings, treatment plans, fees paid, sanctions levied, and the like). The LSI-R score, attending subcomponent scores, TCU Drug Screen II score, and individual demographic and criminal history data were retrieved from either the LSI-R assessment report and computer or case files when necessary and available.

Analytic Plan

The data were analyzed to determine whether participants in the high-needs track differed from those in the lower needs track of the drug court program by performing tests on multiple measures. The first set of analyses examined individual characteristics hypothesized to influence risk factors related to demographics (race/ethnicity, age, gender, education level, and marital status), substance-abuse characteristics (measured by the TCU Drug Screen II score and drug of choice), and criminal history factors (previous arrests, felony, and misdemeanor convictions). The relationship between the LSI-R score and these independent variables was also examined. The statistical significance of between-group differences was tested with independent-samples t test for means and $\chi^2$ test for percentages. A difference of means test ($t$ test) was used to determine significant differences for the global LSI-R score (possible range = 0-54) as well as each of the 10 subscales (Criminal History, Education/Employment, Financial, Family/Marital, Accommodations, Leisure/Recreation, Companions, Alcohol/Drugs, Emotional/Personality, and Attitudes/Orientations). Confidence intervals for the population mean were calculated for the LSI-R global score and the 10 subcomponent scores. Age was recoded from years to five categories representing decades (under 20 years of age, 30s, 40s, 50s, and 60s). As shown in Table 2 below, LSI-R global scores were recoded into 5 risk categories.
Results

**Individual-level variables.** The premise guiding the drug court program is that there are important needs differences across the target populations. In comparing individuals in the high and low-moderate program tracks, it was hypothesized that those with fewer needs would have stronger protective factors. To test this hypothesis, key demographic variables were compared using a chi-square or \( t \) test (see Table 1). There were significant differences between the two groups in marital status and high school completion. Participants in the low-moderate needs group were significantly more likely to be married, \( \chi^2 = 19.77, p < .001 \), and to have completed high school or earned a General Educational Development, \( \chi^2 = 7.28, p < .01 \); the strength of the association for marital status was strong and notable for education (\( \phi = 0.35 \) and 0.22, respectively). It was also hypothesized that those in the low-moderate needs group would be younger than the high-needs group with fewer previous arrests. Those in the low-moderate needs group tended to be younger (56% were below 40 years of age) compared with the high-needs group (66% were above 40 years of age). The mean age for Track 2 was 36.77

<table>
<thead>
<tr>
<th></th>
<th>High needs (Track 1)</th>
<th>Low-moderate needs (Track 2)</th>
<th>( t )</th>
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</thead>
<tbody>
<tr>
<td>Total assessed n (%)</td>
<td>115</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>LSI-R risk level M (SD)</td>
<td>29.65 (6.1)</td>
<td>18.48 (6.72)</td>
<td>11.47***</td>
</tr>
<tr>
<td>Low (0-13)</td>
<td>3 (2.6)</td>
<td>19 (28.4)</td>
<td></td>
</tr>
<tr>
<td>Low-moderate (14-23)</td>
<td>11 (9.6)</td>
<td>33 (49.3)</td>
<td></td>
</tr>
<tr>
<td>Moderate (24-33)</td>
<td>71 (61.7)</td>
<td>15 (22.4)</td>
<td></td>
</tr>
<tr>
<td>High (34-40)</td>
<td>28 (24.3)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Very high (&gt;40)</td>
<td>2 (1.7)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Enrolled after assessment?</td>
<td>97 (91.5)</td>
<td>51 (76)</td>
<td>ns</td>
</tr>
<tr>
<td>Current program status</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>In-program</td>
<td>69 (60.0)</td>
<td>48 (77.4)</td>
<td></td>
</tr>
<tr>
<td>Graduated</td>
<td>11 (9.5)</td>
<td>-a</td>
<td></td>
</tr>
<tr>
<td>Terminated</td>
<td>17 (14.8)</td>
<td>3 (4.8)</td>
<td></td>
</tr>
<tr>
<td>Never enrolled</td>
<td>17 (14.8)</td>
<td>16 (23.8)</td>
<td></td>
</tr>
<tr>
<td>Pending</td>
<td>1 (1.0)</td>
<td>0</td>
<td></td>
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</tbody>
</table>

Note: LSI-R = Level of Service Inventory–Revised. Percentages may not add to 100 due to rounding.

a. The low-moderate-needs group program has not completed a full cycle, thus, there were no graduates to date.

### Table 2. LSI-R Risk Category and Program Status Comparisons for High and Low-Moderate-Needs Drug Court Clients (\( N = 182 \))
(SD = 11.08) and 41.84 (SD = 8.28) for Track 1. This difference was statistically significant, \( t(167) = 3.65, p < .01 \). Gender differences were not statistically significant across groups.

**Substance abuse variables.** The TCU Drug Screen II is a measure of drug-use severity. Scores range from 0 to 9, with scores of 3 or higher corresponding with the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) criteria for drug dependence (TCU, 2008). As expected, drug use severity is greater in the high-needs track \( (M = 6.30, SD = 1.57) \) than the low-moderate needs track \( (M = 6.12, SD = 2.11) \). However, these differences were not significant by needs group, \( t(180) = 0.672, p < .50 \). Finally, significant differences were found between drug of choice and needs group, \( \chi^2 = 39.79, p < .001 \), Cramer’s \( V = 0.47 \). Crack cocaine was the most frequently reported drug of choice for individuals in the high-needs track (71.3%) compared with 34.3% in the low-moderate-needs track, where marijuana was the most frequently reported drug of choice (38.8%).

**Criminal history variables.** The mean number of previous arrests was statistically significant between the two groups. Those in the low-moderate-needs group averaged 8 previous arrests, and those in the high-needs group averaged 20 previous arrests, \( t(129) = 5.69, p < .001 \). There was a significant and notable association between race/ethnicity and needs group. Fewer participants were African American in the low-moderate-needs group (67%) than the high-needs group (85%), \( \chi^2 = 7.83, p < .01, \phi = 0.22 \).

Although this research does not test the predictive validity of the LSI-R, examining the relationship between treatment-relevant variables and the measure of one’s risk/needs level is germane to advancing our knowledge of the LSI-R as a program placement and treatment planning tool. The next set of analyses examined whether individual characteristics predicted LSI-R scores using logistic regression (data not shown). Only those independent variables that were significant in the bivariate model were included in the regression model. Of these variables, three were significant predictors of LSI-R score. Intuitively, those with longer criminal histories (measured by number of previous arrests) were more likely to have higher LSI-R scores, \( b = .241; p < .001 \), as expected. Those who were not high school graduates, \( b = −2.74; p < .05 \), and who were not married, \( b = −5.23, p < .01 \), also had significantly higher LSI-R scores. These findings are in line with a premise of this drug court model: Lower risk/needs participants will have stronger protective factors (and hence, lower LSI-R scores). Race, age, gender, and drug of choice were not significant predictors of LSI-R score.

**LSI-R global and subcomponent scores.** The distribution of LSI-R risk/needs scores across the two groups, percentage ever enrolled, and current program status are presented in Table 2. Nearly 8 of every 10 participants (78.7%) in the low-moderate program track had LSI-R scores less than 24. Following the LSI-R’s published guidelines, low-risk clients are those whose LSI-R score is 13 or less and low-moderate-risk clients are those whose score is between 14 to 23. In comparison, those in the high-needs program track had significantly higher LSI-R scores: 61.7% scored in the moderate range (24-33) with another 26% scoring high or very high (see Table 2). An independent-samples \( t \) test was conducted to compare the LSI-R global scores for the two groups. There was a robust and significant
difference in scores for the high-needs group ($M = 29.65, SD = 6.10$) and the low-moderate-needs group ($M = 18.48, SD = 6.72$), $t(180) = 11.47, p < .001$ (shown in Table 2).

There were no significant differences found between the two groups when looking at whether a person who was assessed (i.e., administered the LSI-R and TCU Drug Screen II) enrolled in the program. Regarding current program status, more than three quarters (77.4%) of those assessed for the low-moderate-needs program track were still enrolled at the end of the study period, and 69% of those assessed for the high-needs program track were still enrolled or had graduated. These differences were not significant. A total of 10% had graduated and 15% were terminated from the high-needs program track during the study period (see Table 2). The low-moderate-needs group did not complete a full program cycle within the study period, therefore, there were no graduates. The lower needs program had a small number of terminations (3 or 4.8%).

The final analysis compared the LSI-R global scores and the subcomponent scores across the two groups (see Table 3). As mentioned above, the differences in mean LSI-R scores were robust and significant. Confidence intervals (critical value = 95%) were computed to estimate the population means. Based on the data, we are 95% confident that the population mean of the LSI-R global score and each subcomponent score fall within the respective intervals provided in Table 3. Turning to the subcomponent scores, the differences in means were also robust and significant and unlikely to have occurred by chance as demonstrated by $t$ tests. Of the 10, 8 mean subcomponent scores were significantly different at the $p < .001$ level. The remaining subcomponent categories, leisure/recreation, $t(157) = 3.01, p < .01$, and attitudes/orientation, $t (157) = 2.01, p < .05$, were also significant albeit not as robust.

**Discussion**

This research examined the use of the LSI-R in assessing individuals’ criminogenic needs in a drug court program rather than as a predictor of future criminal behavior (risk). This research has demonstrated the benefit of using the LSI-R despite not having a way to meaningfully interpret the global and subcomponent scores for drug court participants. Placement and treatment decisions were made based on the information generated from the LSI-R, not the scores. The LSI-R focused the assessment process on dynamic needs thus effectively guiding treatment strategies. The substantive and significant differences between the two groups, as shown by the LSI-R scores, speak to its promise as a treatment tool for use in drug court settings.

This research tested a key premise of the drug court program. Reliable assessment practices should lead to consistent treatment decisions that match clients with appropriate services and supervision, as the RNR principle prescribes. In other words, individual treatment placement decisions based on the LSI-R structured interview protocol and clinical expertise would be supported when systematically analyzed. The program’s decisions were supported by the objective global and subcomponent LSI-R scores. To execute the RNR principle, a sound assessment that can differentiate between clients must occur. This is an essential first step in developing effective and measurable
Table 3. Comparison of LSI-R Scores for High and Low-Moderate Needs Drug Court Participants (N = 182)

<table>
<thead>
<tr>
<th></th>
<th>High-needs group</th>
<th>Low-moderate-needs group</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>95% CI, [LL, UL]</td>
</tr>
<tr>
<td>LSI-R total score n = 115, n = 67</td>
<td>29.65</td>
<td>6.1</td>
<td>28.52-30.78</td>
</tr>
<tr>
<td>LSI-R subcomponent scores n = 106, n = 53</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Criminal History (10 items)</td>
<td>4.98</td>
<td>1.63</td>
<td>4.67-5.29</td>
</tr>
<tr>
<td>2. Education/Employment (10 items)</td>
<td>5.05</td>
<td>2.36</td>
<td>4.59-5.50</td>
</tr>
<tr>
<td>3. Financial (2 items)</td>
<td>1.40</td>
<td>0.60</td>
<td>1.29-1.52</td>
</tr>
<tr>
<td>4. Family/Marital (4 items)</td>
<td>2.11</td>
<td>1.17</td>
<td>1.88-2.34</td>
</tr>
<tr>
<td>5. Accommodations (3 items)</td>
<td>1.69</td>
<td>1.05</td>
<td>1.49-1.89</td>
</tr>
<tr>
<td>6. Leisure/Recreation (2 items)</td>
<td>1.43</td>
<td>0.68</td>
<td>1.30-1.56</td>
</tr>
<tr>
<td>7. Companions (5 items)</td>
<td>3.65</td>
<td>1.23</td>
<td>3.41-3.89</td>
</tr>
<tr>
<td>8. Alcohol/Drugs (9 items)</td>
<td>7.09</td>
<td>1.84</td>
<td>6.74-7.45</td>
</tr>
<tr>
<td>9. Emotional/Personality (5 items)</td>
<td>1.92</td>
<td>0.90</td>
<td>1.74-2.09</td>
</tr>
<tr>
<td>10. Attitudes/Orientations (4 items)</td>
<td>1.28</td>
<td>0.37</td>
<td>1.21-1.35</td>
</tr>
</tbody>
</table>

Note. CI = confidence interval; LL = lower limit; UL = upper limit; LSI-R = Level of Service Inventory-Revised.
* p < .05. ** p < .01. *** p < .001.
treatment plans that are responsive to the needs of individual participants. The findings detailed here provide sufficient evidence to conclude that clients in the two tracks are different from one another on important criminogenic and protective factors.

**Linking assessment to treatment.** The drug court’s objectives in using the LSI-R were to first determine that the program provides appropriate supervision and treatment services for the level of criminogenic needs presented by each potential client. A distal objective is to use repeated measures of the LSI-R as one tool to measure individual and program success. The program has independently developed a database that links treatment and legal supervision for each client from assessment to aftercare to case closure. Within 10 days of enrollment, a biopsychosocial interview is conducted further addressing substance-abuse history; psychopathy and related risk factors; criminal, family and mental health history; and other psychosocial areas affected by substance abuse. The results of the LSI-R and the biopsychosocial interview form the foundation of the initial treatment plan. For example, the most obvious treatment objective involves abstaining from mind-altering substances. Another treatment goal would be developing prosocial thinking, behavior, and living through completion of the T4C curriculum. This goal relates to criminogenic factors on the following LSI-R domains: companions, leisure/recreation, and/or attitudes/orientation.

The accommodation domain is frequently identified as a criminogenic need for drug court participants, thus another treatment goal would be to obtain stable independent housing. This is an example where case management would step in as it is not a clinical treatment issue per se. “The promise of [fourth generation] assessments is that linkages among assessment and programming, and of each with reassessments, and ultimate outcome will be very rewarding in theory and practice” (Andrews, Bonta, & Wormith, 2006, p.23). Future research will systematically examine how and how well the drug court program uses the LSI-R in treatment and case management planning.

**Implications**

Research to date has focused on the predictive value of the LSI-R for risk of recidivism. This drug court program uses the LSI-R primarily as a needs assessment and treatment tool. As expected, the LSI-R detected significant differences between groups of individuals. Several individual-level findings are worth noting. First, this high-needs group differs from many of the samples in drug court research. The high-needs group was more likely to be African American, above 40 years old, use crack cocaine, and have lower levels of formal education. The low-moderate-needs group was more likely to be younger, report marijuana as their drug of choice (followed closely by crack cocaine), and have shorter criminal careers. Effectively treating members of each group requires different strategies based on these characteristics (e.g., age and race) as well as an understanding of when similar strategies are applicable (e.g., addressing criminal thinking patterns).

Importantly, both groups have serious substance-abuse problems. There is some discussion in the drug court literature of creating less-intensive programs with varying judicial status hearings and programming, with drug testing, for low-risk offenders
To the extent low-risk offenders do not meet minimum thresholds for substance-abuse problems, drug court is not the appropriate response. However, these findings indicate that low-moderate-risk offenders do have serious substance-abuse problems that are not markedly different than their high-risk counterparts. As a matter of program policy, creating program tracks based on differences in intensity of treatment services and supervision should not be equated (necessarily) with less serious drug problems. For these drug court participants, programming in relapse prevention and regular drug screening are important regardless of whether a person is high or low risk. The drug court program here was established to address a population that needs a fairly extensive level of supervision and services, all things considered. Admittedly, low-moderate risk in this program could mean too high of a risk in another drug court. This raises an issue for future research around the operationalization of high/moderate/low-risk/needs and targeted effective services in drug court research. These findings indicate that the population in need of treatment services who are also under the supervision of the criminal justice system necessitates a sophisticated and varied response.

Yet we do not know enough about what treatment providers are doing with offenders mandated to services (Bouffard & Taxman, 2004). A positive step toward correcting the one-size-fits-all treatment and supervision approach would be incorporating objective criterion into the assessment and treatment process. Practitioners may resist actuarial measures due to the misperception that doing so means abandoning clinical judgment (Andrews & Bonta, 2006; Latessa, Cullen, & Gendreau, 2002). However, evidence-based practices call for treatment providers to use objective, actuarial measures to inform their clinical judgment (Andrews et al., 2006). To the extent that clinicians and drug court programs generally are wary of using the LSI-R because it may lead to established cutoff scores and diminish the role of clinical expertise, these findings mitigate such concerns. Generally, the distribution of the scores is in the expected direction (e.g., those with higher scores are in higher intensity services) thus supporting the LSI-R’s utility without implementing it as a determinant tool. The research presented here is an incremental but significant step toward an understanding of how actuarial measures can be used for treatment purposes and in conjunction with clinical expertise.

Furthermore, this research is particularly relevant to our knowledge of how treatment works in drug courts for three reasons. First, assessment is the first step in treatment and is a weak area for many drug courts (Listwan et al., 2002; Taxman, 2006). In addition, using standardized assessment instruments is integral to developing standards and practice protocols (Taxman et al., 2006). Scientifically based assessments are important but lose meaning and purpose without direct application of the results and information. The drug court discussed here is using the LSI-R to determine the fit between an individual and the program, the appropriate level of supervision and treatment services, and to develop a treatment plan. Treatment plans specifically link domains of the LSI-R to measurable treatment objectives. This research has found that implementing an assessment process using the LSI-R could help programs develop objective, measurable treatment goals appropriate for the individual’s level of risk and needs because of its ability to differentiate between the two tracks as shown here.
Second, moving toward standardized evidence-based practices has the potential to address several criticisms of drug court practice and research. Several areas of need have been identified in developing a research agenda for the second generation of drug courts (Marlowe, Heck, Huddleston, & Casebolt, 2006). Drug courts have been criticized for allowing people with patterns of drug abuse (vs. dependence) or no onset of a serious drug problem at all to enter their programs (DeMatteo, Marlowe, Festinger, & Arabia, 2009; Farabee et al., 1999). To the degree this occurs, drug court programs are not likely reaching their target populations, are mixing lower and higher risk individuals, are failing to implement an appropriate assessment instrument, and are not effectively using tax dollars. Although the LSI-R is not an addiction diagnostic tool, used in conjunction with the TCU Drug Screen II and a clinical interview, drug courts will have the evidence needed to determine the fit between an individual and the program. Another long-standing criticism is the difficulty in comparing programs across jurisdictions. Using scientific evidence provided by proper use of actuarial instruments, including, but not limited to, the LSI-R, in conjunction with clinical expertise to make informed decisions will assuage criticisms about program practices. Third and related to the research agenda for drug courts, we are still unsure of how, for whom, and under what conditions treatment works for drug court clients (Bouffard & Taxman, 2004; Goldkamp et al., 2001). The majority of participants were still active in the program at the end of the study. Program retention is a key component to successful long-term outcomes. However, a longitudinal study looking at postprogram outcomes is necessary to assess program effectiveness across these two groups. Using an evidence-based assessment instrument to develop a measurable treatment plan will advance our knowledge about the target of treatment services and how treatment, supervision, and ancillary services work for drug court participants.

Finally, it is worth noting that the LSI-R is used as a repeated measure in this drug court program. Decreases in criminogenic risk/needs scores are one measure of program effectiveness (Andrews & Bonta, 2006). The LSI-R is readministered as a person enters the last phase of treatment. The primary objective at the individual level is to identify those areas that continue to be treatment relevant. For example, a woman in the drug court program had an LSI-R score of 36 on enrollment. As she entered the last phase her score was 17. The highest need area as indicated by the repeat LSI-R was in the family/marital domain. This individual continued to struggle with her relationship with her children. These problems were a significant trigger in terms of her addiction and addictive behaviors. The final phases of her treatment plan (including aftercare) focused very specifically on these problems. This participant has graduated from the program and after 6 months had not been rearrested. The LSI-R scores from this and 19 other cases (range = 19-36) show a decrease of at least 50% for each individual, though additional cases and research are needed before drawing firm conclusions. However, it is another example of how this court-based drug treatment program is using the LSI-R and the principle of RNR to inform its practice. Outcome data are important and essential, but data collection is a long process for programs that provide intensive services to a relatively small number of high-needs individuals over a lengthy period of time. In the meantime, treatment happens every day.
in drug court programs. The scientific community needs to provide guidance on how to provide services rooted in evidence-based practices. This research provides an example of using an objective, theoretically based instrument to inform treatment practice and adds to our understanding of what goes on inside the black box of a drug court program.

**Study Limitations**

There are several limitations to this research. Researchers have called attention to the significant differences between trained/untrained professionals (Flores, Lowenkamp, Holsinger, & Latessa, 2006; O’Keefe, Klebe, & Hromas, 1998). A test for reliability between the clinical director and lead counselor, who complete most of the assessments, was not conducted. (In addition, the executive director who has a clinical background conducts less than 5% of assessments.) However, during the LSI-R pilot, the researcher, executive director, and clinical director met several times to discuss implementation of the LSI-R, clarified differences in understanding, and shared suggestions for uniform implementation. The clinical and executive directors trained the lead counselor for Track 2. In addition, the number of participants who enroll after assessment is high. Although an argument can be made that this is not exactly “creaming” (i.e., selecting the best cases for the program usually defined as those who will do well), given the needs level of the target populations, it does raise the question about the process cases’ move through from arrest to determining program eligibility to assessment. Important differences at the individual level, particularly with regard to factors, such as race, age, and education, were found. Additional research is needed to understand how these factors may be protective or increase risk during the treatment process in a drug court population. Finally, this research focused on one experienced drug court program. It is possible that the team’s skill in interpreting and applying information from the LSI-R is site specific and using the instrument in this way in another court program would not yield similar results. Replication of these findings is needed.

**Conclusion**

This study has found that beyond assessing risk the LSI-R has benefits and a utility for treating individuals who are criminally involved and addicted. The LSI-R is a reliable measure for assessing the criminogenic needs level of potential participants and participants show substantive differences in treatment- and supervision-relevant areas. The limits of clinical judgment alone have been well documented (Taxman et al., 2007). Here the programmatic assumption that a blend of science and practice vis-à-vis actuarial instruments and clinical expertise can be used to determine individual differences and make informed treatment decisions has been supported with empirical evidence. Assessing an individual’s criminogenic needs to determine the fit with drug court services will strengthen the link between risk need and responsivity. This should then lead to improved effectiveness, efficiency, and outcomes at both the programmatic and individual levels.
Author's Notes

The viewpoints expressed herein are solely those of the author and do not reflect the opinions of Substance Abuse and Mental Health Services. A portion of this research was presented at the American Society of Criminology meeting, Philadelphia, Pennsylvania, November 2009.

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