Abstract

Recently Robert Mann and his colleagues, using a Canadian sample, performed a factor analysis on the RIA Self Inventory (RIASI), a screening instrument developed for use with DUI offenders. Results showed differential relationships of the eight identified factors with various outcomes. The current study was designed to confirm the factor structure of the RIASI in a sample from the United States and then to assess whether specific profiles could be identified that would help in development of intervention strategies. Subjects were referred to the Research Institute on Addictions (RIA) for clinical evaluation. As part of that process, the DUI offenders were extended an offer to participate in this research project. Of the 765 individuals referred to the RIA from various courts in the Western New York area, 549 agreed to participate in the study, with 520 having valid data. The assessment included alcohol and other drug use and problems, abstinence self-efficacy, psychiatric distress, hostility, family history, readiness to change, and the RIASI. An 18-month follow-up was also conducted, with driver records obtained. Confirmatory factor analysis on the RIASI showed a relatively good fit: Root Mean Square Error of Approximation (RMSEA) = .018; Comparative Fit Index (CFI) = .95; Tucker-Lewis Index (TLI) = .95. Indications for the latent class analyses based on the subdimensions of the RIASI indicated the most optimum solution was for 4 classes. There were significant associations of the profiles with alcohol problems, drug problems, alcohol expectancies, abstinence self-efficacy, psychiatric distress, hostility, and treatment entry (all p’s < .05) but not for recidivism. The results indicate that the RIASI has reliable underlying dimensions that can be used to identify subgroups of offenders. Differences in the subgroups can lead to more effective intervention development and use.

Background

The rate of fatal crashes involving alcohol in the United States has somewhat stabilized around 32% (NHTSA, 2010). Arrests for DUI have also been relatively stable with approximately 1.4 million arrests per year. Furthermore, the percentage of those individuals arrested who are repeat offenders has also been relatively stable at around 33% (BJS, 2012). The stability of the fatal crash rates involving alcohol and the arrests rates and percentage of repeat offenders, suggests a need for alternative or additions to the sanctions currently being used.

Nochajski and Stasiewicz (2006) point out that there has been a push towards more reliance on rehabilitation services, with rehabilitation covering psycho-education and standard abstinence based treatment, as well as brief and harm reduction interventions. In their meta-analysis of interventions for DUI offenders, Wells-Parker et al. (1995) found that treatment and education programs had only a modest impact (7-9% reduction in recidivism rates). The authors also found that combinations of psycho-education and treatment with more broadly defined goals than just abstinence as having the largest impacts on recidivism.
Treatment matching has also been suggested. The idea is to basically identify needs and match the person with the appropriate treatment. One critical issue is to be able to identify needs in a way that is feasible for treatment organizations.

As an initial step in that process, Mann and his colleagues (2009), using a Canadian sample, identified sub-dimensions in the RIA Self-Inventory (RIASI) that showed differential relationships to subsequent drinking and drug use outcomes. This suggests that scores in the sub-dimensions may have some potential to be used for identifying treatment needs.

Aims

The current study set out to assess whether the factor structure for the RIASI identified by Mann et al. (2009) could be replicated in a sample of DUI offenders from the United States. Additionally, we were interested in determining if specific profiles could be identified as a function of the sub-dimensions in the RIASI. If such classes can be identified, there would be some potential for matching interventions based on the profiles.

Methods

Subjects

Participants were referred by various courts in the Western New York area to the RIA for clinical assessments as part of their sanctions. Of the 765 individuals referred to the RIA from various courts in the Western New York area, 549 agreed to participate in the study (72%). However, due to issues with a research assistant 29 cases were dropped. Of the remaining 520 individuals, 443 (85%) completed the 18-month follow-up interview.

Procedures

Upon arrival at the RIA, potential participants were provided an explanation of the study and given the choice of completing their evaluation as part of the research project or choosing another provider. If the person agreed to participate they signed the consent and release forms allowing us to provide information back to the courts. In addition they agreed to provide access to their Department of Motor Vehicle records to allow for assessment of recidivism. This study was approved by the institutional review board of the University at Buffalo.

Measures

The assessment included alcohol and other drug use and problems, abstinence self-efficacy, alcohol expectancies, psychiatric distress, hostility, and the RIASI. An eighteen-month follow-up using the same measures was also conducted, with driver records obtained, allowing for assessment of recidivism.

The Research Institute on Addictions Self Inventory (RIASI; Nochajski, 2006 unpublished manual) consists of 52 items that assess a variety of proximal and distal characteristics that are highly correlated with alcohol problems, or drug problems, or DUI recidivism. Identified subscales from this measure were used to identify profiles/classes of DUI offenders.

Substance Use Problem Severity was assessed using the Alcohol Dependence Scale (ADS; Skinner & Allen, 1982; Skinner & Horn, 1984), the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993), and the Drinker Inventory of
Consequences (DRINC; Miller, Tonigan, and Longabaugh, 1995). The total scores from the three aforementioned scales were standardized and then summed together to create an index of overall problem severity. The reliability coefficient for this index was .86.

Drug Problems were assessed using the Drug Abuse Screening Test (DAST; Skinner, 1982). This is a brief measure for drug involvement that includes 20 items. The reliability coefficient for this scale was .82.

The Timeline Follow-back (TLFB; Sobell & Sobell, 1992; 1996) was used to collect drinking and drinking-driving information, as well as drug use information, for the 30-day period prior to each interview. Measures derived from the alcohol TLFB included: Number of days drinking, total number of drinks, number of days drinking-driving, number of days drinking 5 or more drinks, and maximum number of drinks in one day. These five measures were log-transformed and then summed together to create an index of alcohol use. For these five measures the alpha coefficient was .88.

The drug measure consisted of the number of days using drugs, number of days drugged-driving, number of days using multiple drugs, and number of days driving after using multiple drugs. These measures were log-transformed due to skewness. The log transformed variables were then summed together. The alpha coefficient for these four items was .62.

Participants were asked to rate statements on how alcohol affects them, using the Alcohol Effects Questionnaire (as modified by Rohsenow, 1983). For the current study the total scale score was used, with a reliability coefficient of .97.

The Abstinence Self-Efficacy Scale (AASE; DiClemente, Carbonari, Montgomery, & Hughes, 1994) was used to assess confidence levels for remaining abstinent across 20 situations. The alpha coefficient for these 20 items was .95.

The Symptom Checklist-90 Revised (SCL-90-R: Derogatis, 1994) was used to assess psychiatric distress, with an alpha coefficient .95.

The State-Trait Anger Expression Inventory (STAXI; Spielberger and Reheiser, 2004) was used to assess hostility/anger of the participant. Three measures from this inventory were used: state anger; trait anger; and the anger index. The Alpha coefficients ranged from .718 to .918.

**Data Analyses**

Initial analyses focused on confirming the factor structure of the RIASI that Mann and colleagues identified in a sample of Canadian DWI offenders. MPlus was used for this purpose. Chi-Square, Root Mean Square Error of Approximation; Comparative Fit Index; and the Tucker-Lewis Index were used to assess fit of the model. Mplus was then used to determine if the dimensions of the RIASI could be used to identify classes of DWI offenders. Latent Growth Mixed Modeling was used for this purpose. The next set of analyses were then focused on determining if the classes were differentially related to 18- month outcomes (alcohol problems, alcohol use, drug problems, drug use, alcohol expectancies, alcohol abstinence self-efficacy, psychiatric distress, hostility, treatment entry, and recidivism.

**Results**

The sample was mostly male (77%), White (91%), had greater than a high school education (65%), and were never married (61%), with a mean age of 33. In addition, 33% were repeat offenders, 31% refused the breath test, and the mean BAC for those who provided a breath test was 0.162. Finally, 29% met criteria for an alcohol diagnosis and only 10% met criteria for a drug diagnosis.
The results for the confirmatory factor analysis on the RIASI showed a relatively
good fit after allowing some residuals to correlate. These were within the identified
subdimensions. While the Chi-Square was significant, $\chi^2 = 1155.77$, df = 988, other fit indices
were in the acceptable area: Root Mean Square Error of Approximation (RMSEA) = .018;
Comparative Fit Index (CFI) = .95; and Tucker-Lewis Index (TLI) = .95. The factors were
then used to identify classes of DWI offenders. The most optimum number of classes from
the analyses was 4. These are shown in Figure 1. As can be seen the 4 profiles show
distinguishable patterns across the eight identified dimensions of the RIASI, social
desirability, negative affect, sensation seeking, alcohol consumption, alcohol problems, hi-
risk behaviour, and family history for alcohol problems. Class 1 shows low to moderate risk
across all dimensions. Class 2 is high on social desirability, high-risk and family history with
moderately high mean item probabilities on all other dimensions. Class 3 shows a high mean
item probability on social desirability with lower mean item probabilities for all other
dimensions. This appeared to be the lowest risk group. Class 4 showed higher mean item
probabilities for social desirability, sensation seeking, and alcohol consumption. Classes 2
and four appear to be more problematic.

![RIASI Dimensions By Class](image)

Figure 1. RIASI Dimensions By Class

After a Bonferoni adjustment, the profiles indicated in Figure 1 showed significant
associations with alcohol problems, drug problems, alcohol expectancies, abstinence self-
efficacy, psychiatric distress, hostility, and treatment entry (see Table 1). Class 1 did not
show highest means for any of the outcomes; however, it was close on drug use and hostility.
In contrast, class 2 showed highest means for alcohol problems, hostility, and psychiatric
distress, with the highest percentage entering treatment. Class three was lowest on all
measures. Class 4 showed the highest means for drug use and drug problems, as well as
alcohol use and alcohol expectancies.

**Discussion and Conclusions**

The results for the confirmatory factor analysis suggest some stability in the RIASI
underlying dimensions. The fit for the United States sample indicates that the underlying
meaning of the various components of the RIASI can be replicated. Perhaps more importantly they suggest potential for identifying areas that may need to be addressed by any intervention being assigned to the offender.

The results for the profile analysis are a little more complex. They suggest it is possible to identify profiles based on the sub-dimensions of the RIASI. However, there is a strong need to replicate these findings. Nonetheless, the results do show that useful information concerning intervention use and development. From a treatment matching approach, the profiles may identify specific areas that need to be addressed with any intervention used with a certain profile.

Table 1. 18-Month Outcomes as a Function of Class

<table>
<thead>
<tr>
<th>Variable</th>
<th>Class 1 n = 19</th>
<th>Class 2 n = 48</th>
<th>Class 3 n = 289</th>
<th>Class 4 n = 87</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Problems</td>
<td>.109 (.348)</td>
<td>.366 (.686)</td>
<td>.178 (.492)</td>
<td><strong>.524 (.770)</strong></td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Drug Use</td>
<td>.466 (1.26)</td>
<td>.375 (1.19)</td>
<td>.123 (0.57)</td>
<td><strong>.486 (1.09)</strong></td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Alcohol Problems</td>
<td>-.375 (1.56)</td>
<td><strong>1.14 (3.53)</strong></td>
<td>-.437 (2.48)</td>
<td>.902 (2.77)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>-.067 (2.42)</td>
<td>.157 (3.53)</td>
<td>-.245 (2.08)</td>
<td><strong>.735 (2.98)</strong></td>
<td>p = .014</td>
</tr>
<tr>
<td>AEQ</td>
<td>86.79 (27.78)</td>
<td>92.74 (36.99)</td>
<td>78.52 (26.54)</td>
<td><strong>94.76 (29.95)</strong></td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Alc Abst Self-efficacy</td>
<td>79.79 (15.32)</td>
<td>74.91 (15.92)</td>
<td><strong>82.84 (12.74)</strong></td>
<td>75.56 (14.11)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Hostility</td>
<td><strong>1.69 (2.96)</strong></td>
<td><strong>1.77 (3.70)</strong></td>
<td>-.721 (2.44)</td>
<td>1.07 (3.09)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Psychiatric Distress</td>
<td>24.16 (24.31)</td>
<td><strong>37.53 (34.98)</strong></td>
<td>14.28 (20.83)</td>
<td>27.19 (25.67)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Treatment entry</td>
<td>36.8%</td>
<td><strong>58.3%</strong></td>
<td>12.1%</td>
<td>39.1%</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Recidivism</td>
<td>26.3%</td>
<td><strong>33.9%</strong></td>
<td>28.0%</td>
<td><strong>33.7%</strong></td>
<td>NS</td>
</tr>
</tbody>
</table>

References


Relationship of Latent Profiles from the RIA Self Inventory with Various Outcomes


