A Person-Centered Approach to Investigate Relations Among Substance User Profiles and Impulsivity

Molin Shi & Andrew K. Littlefield

Department of Psychological Sciences, Texas Tech University

INTRODUCTION

- Substance use is the highest among people in the early twenties, highlighting the importance of studying substance use behaviors among college students.
- Problematic drinking (e.g., binge drinking) among college students continues to be highly prevalent. For example, in 2015, 37.9% of full-time college students aged 18-22 reported binge drinking, and an estimated 20% college students reportedly met alcohol use disorder criteria (SAMHSA, 2015).
- Cannabis use has become increasingly common among college students, with an estimated 26.2% of past-month use (Porumboiu, Edgerton, & MOST, 2017).
- Although lacking clear data on electronic cigarette (e-cigarettes) use among college students, national cross-sectional survey data suggests that 21.6% of young adults aged 18 to 24 reported lifetime use of e-cigarettes (Glouse et al., 2016).
- Impulsivity-like facets, positive urgency (PO), negative urgency (NU), lack of premeditation (PM), lack of planning (PL), sensation seeking (SS) are robust predictors of various substance use.
- Despite studies on college students’ substance (including alcohol) use and impulsivity-like facets, few have utilized a person-centered approach to examine the potential relations between latent poly-substance use profiles or typologies, impulsivity-like facets, and problematic outcomes such as problematic drinking.

CURRENT STUDY AIDS

- Identify latent poly-substance use profiles, using a person-centered approach, based on patterns of various past-month substance use indices and examine relations between class membership, impulsivity-like facets, and problematic drinking.

METHOD

PARTICIPANTS
- 702 college students from a southwestern university
- 71.8% female, 28.2% male
- Age: M = 19.30, SD = 1.74, range: 18 to 25

MEASURES

- Demographics
- Alcohol Use Disorder Identification Test (AUDIT; Barker et al., 2001)
- Short UPPS-P Impulsivity Behavior Scale (Cyder, Liebenthal, Coffey, & Kuykendall, 2014)
- Substance Use Questions
  - Past-month freq. of alcohol, binge drinking, cannabis, cigarette, and e-cigarette use
  - Past-month amount of cigarette and alcohol use

ANALYTIC PROCEDURE

- Latent class analysis (LCA) in Mplus version 7.11 (Muthén & Muthén, 1998-2013)
- Data management and analyses conducted in SAS® 9.3 (SAS Institute, Cary NC, USA)
- Predictive relations between predictors (i.e., latent classes) and impulsivity-like facets
- Predictive relations between predictors (i.e., latent classes) and problematic drinking

RESULTS

CLASS SOLUTION

- A three-class solution was deemed the best-fitting and most parsimonious solution after examining model fit indices (see Table 1)

| Class 1: | Predominantly drinkers (PD; n = 198, 40.3% of the sample) |
| Class 2: | Non-users (NO; n = 209, 29.77%) |
| Class 3: | Low endorsement of all substance use indices |

| Class 4: | Poly-substance users (PSU; n = 205, 29.20%) |
| Class 5: | Moderate to high endorsement of all substance use indices |

VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio

AIC = Akaike’s information criterion; BIC = Bayesian information criterion

Note. N = 702. AIC = Akaike’s information criterion; BIC = Bayesian information criterion; adjusted BIC is BIC adjusted for sample size; entropy ranges from 0 to 1, with values closer to 1 indicating better fit; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio.

Figure 1. Endorsement of selected substance use indices by latent profiles.

Table 1. Model fit statistics of two- to seven-class models.

<table>
<thead>
<tr>
<th>Number of Classes</th>
<th>2-class</th>
<th>3-class</th>
<th>4-class</th>
<th>5-class</th>
<th>6-class</th>
<th>7-class</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIC</td>
<td>9423.193</td>
<td>8726.036</td>
<td>8580.171</td>
<td>8510.108</td>
<td>8499.613</td>
<td>8489.447</td>
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<tr>
<td>BIC</td>
<td>9547.120</td>
<td>9035.703</td>
<td>8994.579</td>
<td>9029.256</td>
<td>9113.502</td>
<td>9218.077</td>
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<tr>
<td>Adjusted BIC</td>
<td>9404.235</td>
<td>8819.789</td>
<td>8705.635</td>
<td>8676.282</td>
<td>8678.498</td>
<td>8710.043</td>
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<tr>
<td>Entropy</td>
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<td>.911</td>
<td>.916</td>
<td>.920</td>
<td>.873</td>
<td>.870</td>
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<tr>
<td>VLMR</td>
<td>---</td>
<td>.4626.096</td>
<td>.4295.918</td>
<td>.4199.086</td>
<td>.4143.180</td>
<td>.4109.609</td>
</tr>
</tbody>
</table>

Note. N = 702. AIC = Akaike’s information criterion; BIC = Bayesian information criterion; adjusted BIC is BIC adjusted for sample size; entropy ranges from 0 to 1, with values closer to 1 indicating better fit; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio.

DISCUSSION

- The present study utilized person-centered approach (i.e., LCA) to examine the relations between substance use profiles, impulsivity-like facets, and problematic drinking among a sample of college students. The results indicated that different types of substance users varied in levels of impulsivity-like facets and severity of problematic drinking.
- Individuals who use several substances in the past-month may be targets of clinical intervention, given the higher levels of moderate and severe levels of problematic drinking and facets of impulsivity.
- Predominantly drinkers and non-users were not consistently or significantly different on severity of problematic drinking and impulsivity-like facets (e.g., lack of premeditation, positive or negatively urgency).
- Although the present study was cross-sectional and utilized self-report measures, the results highlight the utility of person-centered approach to identify groups of substance users that may be more at risk for problematic drinking.
- Future studies should consider:
  - Collecting multi-wave, multi-method data to control for baseline substance use;
  - Replicating the substance user profiles and delineating differences between profiles;
  - Integrating both person- and variable-centered approaches (e.g., factor mixture models) to study variables of interest;
  - Examining whether there are specific demographic variables that may differentially impact results.

SELECTED REFERENCES