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Short Communication

A latent profile analysis of drinking patterns among nonstudent emerging adults

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HIGHLIGHTS

- Identified sub-groups of nonstudent drinkers based on daily drinking patterns.
- Two groups were identified with each group exhibiting a cyclic pattern of drinking.
- "Heavy drinkers" class reported greater volume, frequency, and drinking behaviors, as compared to "moderate drinkers".
- "Heavy drinkers" class endorsed stronger social motives and perceived their peers to drink more.

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ABSTRACT

Research indicates that nonstudent emerging adults, as compared to their college-attending peers, are at higher risk for experiencing alcohol-related problems, including alcohol use disorders. The present study sought to extend the limited research on nonstudent drinking by (1) identifying sub-groups of nonstudent drinkers based on their drinking patterns and (2) determining the extent to which social-cognitive between-person factors related to drinking (i.e., social expectancies, perceived drinking norms, social drinking motivations) distinguish these sub-groups. Participants were 195 (65.1% men) nonstudent emerging adult heavy episodic drinkers recruited from the community. Mean age was 21.88 ($SD = 2.08$) years and 45.4% were unemployed. Latent profile analysis identified two classes based on drinking across 30 days. The "moderate drinkers" group ($n = 143$; 73.3%) reported consuming 10–11 drinks weekly and drinking two to three times per week, on average. The "heavy drinkers" class ($n = 52$; 26.7%) reported consuming 42–43 drinks weekly and drinking six to seven days per week. Both groups exhibited a cyclic pattern of drinking whereby weekday drinking was lower, with increases on the weekend; the heavy drinkers class had stronger weekend increases starting earlier. Heavy drinkers reported greater volume, frequency, and problematic drinking behaviors, as compared to the moderate drinkers. The heavy drinkers class also endorsed stronger social motives and perceived their peers to drink more. The present study offered unique insights into nonstudent emerging adult drinking patterns by identifying sub-populations of drinkers based on their past 30-day use. Knowledge gained from this study could aide in tailoring existing alcohol interventions to nonstudents to reduce alcohol-related harms.

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1. Introduction

Peak rates of drinking and risk for alcohol-related problems are observed among emerging adults (i.e., ages 18 to 25; Hingson, Zha, & Weitzman, 2009; Substance Abuse and Mental Health Services Administration, 2014). Most of the drinking literature among this age group has been conducted largely with college student-based samples. Inclusion of emerging adults who are noncollege-attenders is needed as they may be a more vulnerable population of drinkers. Compared to college students, nonstudents are less likely to mature out of heavy drinking (Muthén & Muthén, 2000; White, Labouvie, & Papadaratsakis, 2005) and are at a higher risk for alcohol-related problems (Barnett et al., 2003; Muthén & Muthén, 2000; White et al., 2005). The current study sought to extend previous research on nonstudents by examining variations in past 30-day alcohol consumption and to identify potential sub-groups of nonstudent drinkers.

Prior work on drinking patterns is limited, with most primarily focused on first-year college students (e.g., Beets et al., 2009; Del Boca, Darkes, Greenbaum, & Goldman, 2004; Maggs, Rankin William, & Lee, 2011; Tremblay, Colley, Saunders, Healy, & Owen, 2010). There have been a handful of studies on daily drinking patterns among nonstudents. Findings have shown that a greater portion of daily drinking

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variation is attributable to the intra-individual (within) versus inter-individual (between) level (Lau-Barraco, Braitman, Stamates, & Linden-Carmichael, in press). Nonstudent drinking tends to peak during holidays (Goldman, Greenbaum, Darkes, Brandon, & Del Boca, 2011; Kushnir & Cunningham, 2014) and on weekends (Kushnir & Cunningham, 2014), with weekday to weekend drinking increases being uniquely associated with social alcohol outcome expectancies (Lau-Barraco, Braitman, Linden-Carmichael, & Stamates, 2016). Furthermore, in an effort to understand drinking patterns in nonstudent emerging adults, Cleveland, Mallett, White, Turrisi, and Favero (2013) used latent class analysis to identify classes of alcohol users. Drinking was measured in the study using aggregate indicators, such as typical alcohol consumption and frequency. To our knowledge, research has yet to identify sub-groups of nonstudent drinkers by examining drinking patterns based on retrospective reports of drinking for the previous 30 days. Given the variable nature of alcohol use, the current approach would provide a more fine-grain, nuanced perspective of drinking in this vulnerable population.

Drinking patterns of nonstudent sub-groups may differentially relate to key social-cognitive variables. Specifically, theory (Maisto, Carey, & Bradizza, 1999) and empirical evidence assert that cognitively-based social factors, such as social expectancies, perceived drinking norms, and social drinking motives, are each uniquely related to alcohol use outcomes. For example, social expectancies (i.e., beliefs about drinking's social effects) have distinguished latent classes of drinking trajectories (Greenbaum, Del Boca, Darkes, Wang, & Goldman, 2005) and accounted for increases in drinking on weekends (Lau-Barraco, Braitman, Linden-Carmichael, & Stamates, 2016). Perceived drinking norms (i.e., descriptive norms) also are influential in college student (e.g., see Borsari & Carey, 2003 for a review) and nonstudent (Lau-Barraco & Collins, 2011) drinking. The more one perceives others to drink, the greater their own drinking. Social motives (i.e., reasons for drinking; Cooper, 1994) are most commonly reported among college students (Arbeau, Kuiken, & Wild, 2011; LaBrie, Hummer, & Pedersen, 2007) and are predictive of drinking (see Kuntsche, Knibbe, Gmel, & Engels, 2005 for a review; Maggs et al., 2011). Research has yet to examine the association of these factors to latent classes of nonstudents based on their day-to-day drinking habits.

The present study contributes to the limited research on nonstudent drinking. We aimed to (1) identify sub-groups of nonstudent drinkers based on day-to-day drinking patterns, and (2) determine the extent to which social-cognitive between-person factors related to drinking (i.e., social expectancies, perceived drinking norms, social drinking motivations) distinguish sub-groups.

2. Method

2.1. Participants and procedure

Participants were 195 (65.1% men; mean age = 21.88 [*SD* = 2.08]) individuals recruited from the community of a mid-size southeastern city in the U.S. via online advertisements and local newspaper listings for two separate studies (i.e., two phases of a larger study to develop a brief alcohol intervention). They were largely single/never married (64.1%), unemployed (45.4%), and African-American (52.9%). Study eligibility included being between ages 18–25 years, having no prior or current college attendance, consuming fewer than 40 drinks per week, engaging in at least two heavy drinking episodes (4+/5+ drinks for women/men) in the past month, and having no history of alcohol treatment. Eligible participants provided informed consent and completed a self-report questionnaire in-person. Participants were compensated $40 to $60, depending on the phase of the study. The study was approved by the university's Institutional Review Board and followed the American Psychological Association (2010) guidelines.

2.2. Measures

Self-reported drinking for each day during the past 30 days was assessed using the Timeline Follow-back (TLFB; Sobell & Sobell, 1992). Alcohol-related problems were measured using the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005). Alcohol use severity was assessed using the Alcohol Use Disorder Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1992). Alcohol expectancies were evaluated using the sociability subscale of Comprehensive Effects of Alcohol questionnaire (CEOA; Fromme, Stroot, & Kaplan, 1993). Social drinking motives were assessed using the social subscale from the Drinking Motives Questionnaire (DMQ-R; Cooper, 1994). Descriptive norms were measured using the Descriptive Norms Rating Form (DNRF; Baer, Stacy, & Larimer, 1991).

2.3. Statistical analyses

Latent profile analysis (LPA) was conducted using Mplus version 6.1 (Muthén & Muthén, 1998-2010). LPA was used to identify sub-populations based on drinking across 30 days (Aim 1). The number of standard drinks consumed on each day of the 30-day TLFB data served as the set of indicators. The square root of these values was used in the LPA to transform the skewed raw metric into a set of normally distributed variables. To match patterns across participants, the data for each participant was shifted so that day 1 always started on a Sunday, resulting in 36 daily indicators with each participant contributing 30 days of data and having "missing" data for the other days. The best-fitting number of classes was determined by information criteria (AIC, BIC, aBIC), entropy values, the Lo-Mendell-Rubin likelihood ratio test, proportional class size, and interpretability of the identified classes. After finalizing the number of latent classes, class differences were explored for social-cognitive factors, alcohol-related problems, and general drinking levels using Wald tests based on posterior probability-based multiple imputations.

3. Results

The information criteria indicated that model fit improved as number of classes increased, whereas entropy indicated that the model with 2 classes had the highest certainty for classification (see Table 1). Nylund, Asparouhov, and Muthén (2007) concluded after extensive simulations that no one indicator is consistently accurate across all models, and that examining multiple indices is necessary to see the complete picture. Given that LMR likelihood ratio probabilities also indicate that higher numbers of classes do not significantly improve model fit, this supports the 2-class model. Finally, the proportion of participants in the smallest class indicates that 2 classes may represent the most meaningful proportions of the population.

Demographic characteristics varied across latent classes (see Table 2). Class 2 (described below) had a higher proportion of males, and single participants who never married and are not living with a partner.

Table 1
Model fit based on number of classes.

Classes	AIC	BIC	Adjusted BIC	Relative entropy	LMR LRT *p*	Proportion of smallest group
1	18,385.221	18,620.877	18,392.792	–	–	–
2	16,518.688	16,875.445	16,530.149	0.980	0.0220	0.268
3	15,991.573	16,469.431	16,006.925	0.976	0.2321	0.097
4	15,733.011	16,331.970	15,752.253	0.968	0.7614	0.086

Note. AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, LMR LRT = Lo-Mendell-Rubin likelihood ratio test. Entropy and LMR LRT are not available for models with only one class. Proportion of smallest group comes from estimated posterior probabilities rather than most likely class membership. Note that models with more than 4 classes were not estimated due to large number of parameters that would need to be estimated in comparison to the size of the sample.

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