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How Trajectories of Reasons for Alcohol Use Relate to Trajectories of Binge Drinking: National Panel Data Spanning Late Adolescence to Early Adulthood

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Abstract

Developmental changes in both alcohol use behaviors and self-reported reasons for alcohol use were investigated. Participants were surveyed every two years from ages 18 to 30 as part of the Monitoring the Future national study (analytic weighted sample size *N*=9,308; 53% women, 40% college attenders). Latent growth models were used to examine correlations among trajectories of binge drinking and trajectories of self-reported reasons for alcohol use across young adulthood. Results revealed developmental changes in reasons for use and correlations between the patterns of within-person change in frequency of binge drinking and within-person change in reasons for use. In particular, an increase in binge drinking between ages 18 and 22 was most positively correlated with slopes of using alcohol to get high and because of boredom. Continued binge drinking between ages 22 and 30 was most strongly correlated with using alcohol to get away from problems. Almost no moderation by gender, race, college attendance, employment, or marital status was found. Binge drinking and reasons for alcohol use traveled together, illustrating the ongoing and dynamic connections between changes in binge drinking and changes in reasons for use across late adolescence and early adulthood.

Keywords

Alcohol; Binge Drinking; Motivations; Reasons; Latent Growth Modeling

At a meta-theoretical level, developmental psychology has traditionally been concerned with the psychological substrates that underlie manifest behavior (Reese & Overton, 1970; Werner, 1957). It is routinely acknowledged that development occurs at multiple levels within the individual (e.g., Lerner, 2006; Sameroff, 2000; Zucker, 2006). Conceptually, distinctions among, and interrelations between, the development of manifest behaviors and of underlying purposes and functions of those behaviors are often noted (Cicchetti & Rogosch, 2002; Masten, 2001). Empirically, there has been little work to connect development at the different levels, no doubt due in large part to methodological and statistical complexities. As a result, the empirical record to support meta-theoretical statements regarding the nature of cross-level development is slim, in particular concerning

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the development of addictions across the life course (Schulenberg & Zarrett, 2006). Our emphasis is on the concordance of developmental change in binge drinking and in reasons for alcohol use from adolescence through early adulthood, when alcohol abuse is most prevalent (Zucker, 2006).

At the population level, alcohol use tends to increase throughout adolescence and early adulthood and then decline, especially for binge drinking (Johnston et al., 2009; Schulenberg & Maggs, 2002). This normative developmental trajectory has received considerable attention (e.g., Chassin et al., 2009; Maggs & Schulenberg, 2005). Although this attention has helped bring sharper focus to the understanding of the etiology of alcohol use, a developmental perspective also requires a consideration of changes in the underlying purpose, meaning, or function of the manifest behaviors (e.g., Schulenberg & Zarrett, 2006). Specifically, the ways that underlying motivations for alcohol use (i.e., self-reported reasons for use) change and "travel together" with drinking behaviors over time have not been previously documented. In this paper, we use parallel growth modeling to examine developmental change in self-reported reasons for alcohol use across young adulthood and associations with co-occurring changes in binge drinking behavior.

There is good reason to believe that alcohol use and motivations for drinking would change together developmentally. The theories of reasoned action (Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 2001), for example, assert that a primary variable for behavioral prediction is the belief that a behavior will lead to a given set of consequences, weighted by the value attached to them. Motivational models posit that alcohol use meets certain needs for individuals by serving various functions (Cooper, 1994; Cox & Klinger, 19880); these functions are reflected in motivations, or reasons for drinking. Reasons for drinking are related to, but distinct from, expectancies. Alcohol expectancies are the beliefs people have about whether consuming alcohol leads to a variety of outcomes or consequences (e.g., Baer, 2002; Brown et al., 1980; Leigh, 1989). However, expectancies may or may not be motivating. For example, one individual who believes alcohol leads to disinhibition may drink in order to "let loose," while a second individual may choose to avoid drinking based on the same expectancy. Reasons for drinking are believed to mediate the effects of expectancies and other individual differences as the most proximal predictor of behavior (Cooper et al., 1995; Cox & Klinger, 1988). Crosssectionally, people who drink for social reasons tend to use alcohol moderately, people who drink for enhancement reasons (i.e., pleasure, thrill) tend to engage in heavier drinking, and people who drink to cope tend to be more likely to manifest drinking problems and addictions (e.g., Cooper et al., 1992; Kuntsche et al., 2006).

Developmental Changes in Reasons for Use

There is a paucity of research on how reasons for alcohol use change within individuals over time. By not focusing on developmental changes in reasons for drinking, it is implicitly assumed that reasons for use do not change in important ways within individuals, or that any such changes in reasons for use are inconsequential for understanding behavior change. Reasons for alcohol use may show typical developmental changes over time, and these developmental changes in reasons for use may be key factors in understanding the normative increases and decreases in alcohol use behaviors.

Available research pertaining to the changes in reasons for alcohol use across adolescence and young adulthood has focused primarily on the expectancies individuals have about the positive and negative effects of drinking alcohol. These studies have found, for example, that positive expectancies tend to increase during adolescence (e.g., Aas et al., 1998; Schell et al., 2005), the importance of anticipated negative consequences decreases with age, and

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college students identify more positive anticipated consequences of alcohol use than younger adolescents (Dunn & Goldman, 1998). In a longitudinal study across four years of college, Sher, Wood, Wood, and Raskin (1996) found that expectancies about the positive effects of alcohol were generally stable across the first two years and then decreased across the latter two years of college. Reasons for alcohol use (including social/recreational, coping with negative affect, and compulsive use reasons) tend to decrease across young adulthood, with the exceptions of drinking to relax, because it tastes good, and to sleep (with similar patterns for reasons for marijuana use; Patrick et al., 2010). In the current study, this work is extended to focus on co-occurring changes in alcohol use behavior and changes in reasons for drinking across the transition to adulthood.

Differences by Demographic Groups

There are known differences in alcohol use patterns by demographic characteristics, including gender, race, college attendance, employment, and marriage. Men drink more in frequency and quantity than women (Johnston et al., 2009; Wilsnack & Wilsnack, 2002). However, these gender differences are found for level only; men and women tend to have the same shape of alcohol use trajectories (e.g., Maggs & Schulenberg, 2005; Schulenberg & Maggs, 2002). For race, Whites and Hispanics tend to have higher rates of alcohol disorders than Blacks and Asians (Smith et al., 2006). Shape of normative alcohol use trajectories does differ by college attendance. In particular, college students use less alcohol than nonattenders when in high school, but then increase more than nonattenders during the college years (Johnston et al., 2009; Schulenberg & Maggs, 2002). Both employment and marriage are associated with decreased substance use as individuals adopt these adult social roles (Bachman et al., 2002; Leonard & Homish, 2005).

There is less evidence identifying potential demographic differences in reasons for use. In general, men are more likely to report more reasons for alcohol use than women, but women are more likely to report using alcohol to get away from their problems and out of anger and frustration (Patrick et al., 2010; Terry-McElrath et al., 2009). The ways in which reasons for drinking may differ among other groups have not been empirically demonstrated. In addition, no previous work has assessed the strength of correlation between developmentally changing reasons for use and developmentally changing alcohol use behavior.

Research Questions

The current study examines associations between changes in reasons for alcohol use and changes in binge drinking across young adulthood. Specific research questions were: (1) What are the developmental trajectories in reasons for alcohol use across young adulthood (i.e., latent slopes)? (2) To what extent are within-individual changes in reasons for use related to within-individual increases and decreases in binge drinking between ages 18 and 30 (i.e., correlations between latent slopes)? and (3) Do these associations between developmental changes in reasons for use and developmental changes in binge drinking (i.e., correlations between latent slopes) vary by major demographic groups (i.e., gender, race, college attendance, employment, and marriage)?

Method

Monitoring the Future (MTF) is an ongoing national longitudinal study of substance use epidemiology and etiology among adolescents and young adults (Johnston et al., 2009). Questionnaires have been used to survey nationally representative samples of about 16,000 high school seniors each year since 1975. Approximately 2,400 individuals are randomly selected each year for biennial follow-up, beginning one year after high school for one random half of each cohort and two years after high school for the other half (such that

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Wave 2 covers ages 19 and 20, etc.). Drug users were oversampled for follow-up, and the sample was weighted to approximate the original population. Seven waves of national panel data were used in the present study: participants were surveyed as high school seniors (modal age 18) and participated in up to six biennial follow-up surveys (Waves 2–7, at modal ages of 19/20, 21/22, 23/24, 25/26, 27/28, 29/30). We include data from 32 senior-year cohorts spanning 1976 to 2007. Detailed descriptions are available elsewhere (Bachman et al., 2002, 2006).

Participants

Multiple questionnaire forms randomly assigned within classrooms at the first assessment were used to increase survey coverage without increasing respondent burden. Reasons for alcohol use were included on one of the six forms. The weighted sample size included individuals who: received the given questionnaire form; were selected for follow-up; and provided valid information on gender, binge drinking, and reasons for alcohol use on at least one survey. At each wave, respondents must have reported using alcohol in the past year to receive the reasons questions. The analytic weighted sample size was *N*=9,308 people; 53% women, 47% men; 76% White, 10% Black, 14% other. Parent education served as a proxy for socioeconomic status: 64% of participants had at least one parent with a college education.

Attrition analyses indicated that those who remained in the study at age 30 were more likely to be White, women, and less frequent binge drinkers and marijuana users at age 18 compared to eligible participants who did not remain in the study. However, in the growth models, all individuals who provided any data regarding reasons for alcohol use at any point from age 18 to age 30 were included, thus minimizing bias associated with differential attrition.

Measures

Binge Drinking—Participants were asked, “Think back on the last two weeks. How many times (if any) have you had five or more drinks in a row?” Responses were on a scale of 0=*None*, 1=*Once*, 2=*Twice*, 3=*3 to 5 times*, 4=*6 to 9 times*, and 5=*10 or more times*.

Reasons for Use—At each wave, participants who indicated using alcohol in the past 12 months were asked, “What have been the most important reasons for your drinking alcoholic beverages? (Mark all that apply.)” There were 14 possible reasons for alcohol use, scored dichotomously (see Johnston & O’Malley, 1986; Patrick et al., 2010; Terry-McElrath et al., 2009 for additional information). We focused on five reasons with the highest endorsement: *to relax, to have a good time with my friends, to get high, to get away from my problems, and because of boredom.*[1]

Demographic Grouping Variables—Gender was coded as female=0 and male=1. Race was coded as Black=1, White=2, and other=3. Participants were identified as college attenders (coded 1; 40% of sample) if they were enrolled in full-time education at a four-year school at age 19/20 (nonattenders=0). At age 26, participants were identified as employed (full-time/part-time=1; 87%) or not employed (laid off or waiting to start a job, no paid employment, full-time homemaker [no outside job]=0); and they were identified as

[1]At ages 18, 20, and 22, drinking to relax, to get high, to have a good time, to get away, and because of boredom were the most prevalent reasons, with the exception of drinking because it tastes good. Taste was not included as a reason in these analyses because it is typically not included in motivational models of alcohol use. Across the last four waves (ages 24, 26, 28, and 30), drinking because of boredom became slightly less prevalent than drinking because of anger, given that drinking because of boredom had a sharper developmental decline. However, we have elected to retain our focus on boredom rather than anger because of the conceptual similarity between drinking to get away and drinking because of anger.

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married (engaged or married=1; 49%) or unmarried (separated/divorced, widowed, single=0).

Plan of Analysis

To examine the three research questions focusing on correlated changes in reasons for use and binge drinking, parallel latent growth modeling (LGM) strategies were used. Methods for assessing the associations between changes in multiple processes over time are becoming more prominent and allow researchers to investigate new and interesting questions about co-occurring change (Cheong et al., 2003; Sayer & Willett, 1998; Simons-Morton & Chen, 2005. Parallel LGM provides one way of examining how reasons and drinking behavior might travel together by focusing on the correlations between the slopes. Advances in methodology and software now allow modeling of latent curves with categorical data (here, by specifying the CATEGORICAL option in Mplus). A primary advantage is that, by default in Mplus, the model is estimated using all available data regardless of whether the data were complete across all waves for a given individual (Muthén & Muthén, 1998–2007). In these analyses, there were incomplete data for three reasons: (a) some respondents were lost to attrition; (b) some were too young to have participated in later waves (e.g., respondents in the 2002 MTF cohort were only old enough to report up to three waves of data): and (c)at each wave, those who reported no alcohol use could not report reasons for use. We include all available data, which results in less sample bias.[2]

We conducted piecewise LGMs across the seven waves of data to identify slopes of binge drinking and of reasons for alcohol use across two time periods: ages 18–22 (Piece 1) and 22–30 (Piece 2). This age distinction was based on evidence of normative age trends indicating that binge drinking clearly increases to about age 22 and then decreases across young adulthood (see Figure 1). In these piecewise models, there were three latent variables for each of the two constructs (i.e., reason for use and binge drinking): a latent intercept, one linear slope spanning the first three waves of data (ages 18–22), and a second linear slope spanning the last five waves of data (ages 22–30). Correlations between latent growth factors (i.e., intercept of reason and intercept of binge, Slope 1 of reason and Slope 1 of binge, Slope 2 of reason and Slope 2 of binge) were estimated in Mplus with ESTIMATOR=MLR (the maximum likelihood estimator with full information maximum likelihood [FIML]) with robust standard errors, using a numerical integration algorithm. Reasons were specified as categorical variables in Mplus, requiring the use of numerical integration to estimate the models.[3] Due to analytic demands associated with numerical integration, each of the five reasons was considered in a separate model with binge drinking.

The latent variables encompass the mean trajectory and individual variation about the mean trajectory. Therefore, a significant positive correlation between two slopes indicates that individuals increasing at a greater rate than average on one are also increasing at a greater rate than average on the other. The piecewise approach is especially important because it allows us to consider whether there is more or less correlation, or “traveling together” of reasons for use and binge drinking, during the normative increase in binge drinking (i.e., ages 18–22) and the normative decrease in binge drinking (i.e., ages 22–30).

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[2]We have investigated the potential differences in our results due to incomplete data. In models including only consistent users who reported data on reasons at all 7 waves (weighted *N*=1693; 55.5% female), there were no differences in substantive interpretations of results.

[3]Numerical integration is required for weighted least squares models of categorical variables in Mplus. However, numerical integration is computationally demanding, and becomes increasingly so with more complex models and larger sample sizes (Muthén & Muthén, 1998–2007). In addition, Mplus models using numerical integration are given no indices of absolute model fit (L. Muthén, personal communication, March 6, 2009). Therefore, additional models were estimated using weighted least squares estimation without numerical integration. In the same models presented in the tables, weighted least squares models had adequate model fit (for all models RMSEA < .04 and CFI > .85) and results were substantively the same.

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The third research question concerned differences by sociodemographic characteristics. To address these questions, five LGMs were conducted. Differences in the strength of the associations between the reasons latent variables and the binge drinking latent variables as a function of gender, race, college attendance, employment, and marriage were examined. Unstandardized coefficients and standard errors were used to calculate *t* values to examine whether group differences reached significance. Due to the large sample size, effects are only interpreted if they reached the statistical significance level of $p < .001$.

Results

Descriptive Analyses of Changes in Reasons for Use

Figure 2 shows the observed frequencies of endorsement of each of the five reasons from ages 18 to 30. Drinking to relax increases from 41% at age 18 to 69% at age 30. Drinking to have a good time with friends peaks at age 20 with 80% of individuals reporting this reason, and then trails off to 63% at age 30. Drinking to get high hovers around 47% in the early post–high school years and then falls to 32% by age 30. Drinking because of boredom decreases from 23% at age 18 to 6% by age 30. Drinking to get away from problems decreases across the timeframe, from 20% at age 18 to 10% at age 30.

Piecewise Latent Growth Models: Changes in Reasons for Use and Binge Drinking

Next, LGMs were used to estimate the developmental changes in reasons for use and their associations with developmental changes in binge drinking (see Table 1). At age 18 (the intercept), participants reported binge drinking slightly more than one time in the last two weeks (1=*once* on a scale of 0 to 5). The means of the latent variable slopes show that binge drinking tended to increase from ages 18 to 22 (significant positive value of Slope 1) and decrease from ages 22 to 30 (significant negative value of Slope 2).

To address Research Question 1, patterns of change in reasons for drinking are shown by mean values in latent slopes in Table 1. From ages 18 to 22 (Slope 1), during the normative increase in binge drinking behavior, drinking to relax and drinking to have a good time also tended to increase. Significant decreases in drinking to get high, because of boredom, and to get away from problems were found. From ages 22 to 30 (Slope 2), all slopes were negative except for drinking to relax, which showed a normative developmental increase during this period.

To address Research Question 2, correlations between the slopes in binge drinking behavior and slopes in reasons for drinking were estimated. These correlations indicated, for example, the extent to which individuals who reported greater than average increases in binge drinking from ages 18 to 22 also evidenced greater than average increases in a given reason for drinking from ages 18 to 22. A positive correlation demonstrates that, within persons, the two variables are traveling together. As Table 1 shows, all correlations between latent slopes in binge drinking and the latent slopes in reasons were significant and positive, ranging from .29 to .69. In particular, from ages 18 to 22, during the normative increase in binge drinking, greater than average increases in binge drinking were most related to greater than average increases in drinking to get high and because of boredom; likewise, lower than average increases in binge drinking were most related to lower than average increases in drinking to get high and because of boredom. (All correlations for Slope 1 in Table 1 are significantly different from each other at $p < .001$ based on Fisher's *r*- to *z*- transformation.) Across ages 22 to 30, during the normative decrease in binge drinking behavior, greater than average decreases in binge drinking were most related to greater than average decreases in drinking to get away from problems; likewise, lower than average decreases in binge drinking were most related to lower than average decreases in drinking to get away from

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problems. In other words, persistence in this reason related to persistence in binge drinking despite a normative age-related decrease. (All correlations for Slope 2 in Table 1 are significantly different from each other at $p < .001$ based on Fisher's *r*- to *z*- transformation, except for Relax with Get High [$z=2.29$, $p=.02$] and with Good Time [$z=1.72$, $p=.09$].)

Differences by Gender, Race, College Attendance, Employment, and Marital Status

The third research question focused on the extent to which the associations between binge drinking intercepts/slopes and reasons intercepts/slopes varied by major sociodemographic subgroups. Only a single difference was found at $p < .001$. In a multigroup comparison by gender, we found that the correlation between the intercept of binge drinking and the intercept of drinking to get high was stronger for women ($r=.87$, SE=.04) than for men ($r=.71$, SE=.03; $t=3.4$, $p < .001$). There were no other significant differences by gender. In addition, there were no significant differences by race (Black, White, and Other), college attendance at modal age 20, or employment or marital status at modal age 26. Therefore, the ways in which reasons for drinking and alcohol use travel together over time are largely the same across these major sociodemographic subgroups.

Discussion

Using parallel growth modeling strategies, this national longitudinal study demonstrates that the underlying reasons for alcohol use are changing developmentally during this critical period in the lifespan when alcohol abuse increases, peaks, and decreases. Given that reasons for use are known to contribute to alcohol use (Cooper, 1994; Cooper et al., 1992; Cox & Klinger, 1988; Kuntsche et al., 2006; Patrick & Maggs, 2010), our findings provide needed confirmation that reasons for alcohol use may provide the changing psychological substrate for changes in binge drinking during late adolescence and early adulthood. Such cross-level documentation of co-occurring developmental change is rare in the empirical record, despite the common conceptualization that development is multilevel.

By focusing on binge drinking and the underlying reasons for alcohol use, the findings provide a richer understanding of developmental change in alcohol use during the transition to adulthood. Very little research has addressed age-related changes in motivations for substance use, despite their pivotal role in behavioral prediction as articulated by theories such as reasoned action (Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 2001). Looking across the patterns of age-related change in reasons for use, an important developmental story emerged as some reasons became more prevalent and other reasons became less prevalent as individuals matured. These different patterns in age-related change can help explain the normative trends in drinking behaviors. Drinking to relax is the only reason (of the most prevalent MTF reasons included here; see Patrick et al., 2010 for information on developmental changes of less prevalent reasons) that continued to increase across young adulthood, which may help explain some of the maturing out of binge drinking that occurs across this period. All of the other reasons decreased in prevalence after age 22. These reasons included using alcohol to get high, which would be anticipated to be associated with heavier levels of use.

The most significant contribution of this study is the documentation that self-reported reasons, or motivations, for alcohol use travel together with binge drinking across young adulthood. Of particular importance, this traveling together varies by age. Some reasons are more strongly associated with the normative increase in binge drinking during the first few years out of high school (ages 18–22) while other reasons are more strongly associated with the normative decrease in binge drinking during the mid- to late 20s (ages 22–30). Out of high school, drinking in order to get high and to help alleviate boredom appeared to be the most strongly correlated with increases in binge drinking, followed closely by drinking to

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get away from problems. Drinking to relax and to have a good time showed weaker (but significant) associations with changes in binge drinking during the early post–high school years. After age 22, drinking to get away from problems emerged as the reason most closely linked to changes in binge drinking behavior, suggesting that individuals who continued to use alcohol to escape were less likely to decrease their binge drinking during young adulthood. Very likely, these changes in reasons for drinking that underlie the co-occurring changes in binge drinking correspond to normative changes in developmental tasks and transitions involving education, work, partnering, and social interactions (e.g., Bachman et al., 2002; Schulenberg & Maggs, 2002).

An important purpose of this study was to examine potential sociodemographic moderators of the traveling together of alcohol use and reasons. With regard to gender, the strength of the association between the intercepts of using alcohol to get high and of binge drinking was significantly stronger for women than for men. This suggests that binge drinking may be more tightly interwoven with this particular underlying reason for women. However, all other correlations among the intercepts and among the slopes were found to be invariant across gender; and in fact, all other correlations between changes in reasons for use and changes in binge drinking were also found to be invariant across race, college attendance, employment, and marital status. This indicates that the associations between changes in reasons for use and changes in binge drinking behavior are largely the same across a variety of demographic groups. This is impressive given that level differences in alcohol use are found among these groups. Limited previous research on reasons for use has also demonstrated differences by gender, such that men have higher levels of drinking to relax, to get high, and to have a good time and women have higher levels of drinking to get away from problems at age 18 (see also Patrick et al., 2010; Terry-McElrath et al., 2009). However, the ways in which alcohol use travels together and changes over time in conjunction with these reasons for use are robust to these group differences. In other words, the mechanisms may be more universal than traditional examinations of level differences.

Strengths, Limitations, and Future Directions

The national longitudinal data set capturing the normative developmental peak in binge drinking provided a comprehensive first look at how reasons for use change over time and may be associated with changing alcohol behaviors. However, in this large national study, reasons for use were assessed with a dichotomous format. Also, as is standard in the field, binge drinking was assessed with a single two-week timeframe, which likely increases reliability but may work against generalizability. Richer measurement should be used in future studies assessing these developmental changes. A fuller picture would also be provided by: a) considering cross-lagged relationships to distinguish whether reasons for use prospectively predict changes in binge drinking, or vice versa; and b) considering how social context and role transition mechanisms contribute to changes in both reasons for use and binge drinking.

Implications and Conclusions

It is essential to seek further understanding of how underlying proximal predictors of alcohol use (i.e., reasons, attitudes, expectancies) change and influence drinking over time in order to understand the post–high school increases in binge drinking and to identify behavioral risk and particular need for intervention. A review by Brown and colleagues (2008), for example, stated that optimal interventions focused on decreasing alcohol problems among adolescents must match developmentally-appropriate motivations. High school students who report that they use alcohol to get high or out of boredom may be especially at risk for a faster increase in binge drinking, as compared to students who are using alcohol to have a good time with their friends. Identifying which reasons are associated with increased

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behavioral risk is vital for targeting alcohol prevention programs and for developing interventions that are salient and developmentally appropriate for adolescent and young adult drinkers (see also Coffman, Patrick, Palen, Rhoades, & Ventura, 2007). Understanding the ways in which reasons for use and alcohol behaviors normatively change across young adulthood, and how these changes are associated in parallel process, is important for describing development and for intervening to promote health and reduce negative consequences associated with excessive alcohol use among late adolescents and young adults.

One pillar of current developmental science meta-theory is that development is multilevel within the individual as well as within the changing context (Cicchetti & Rogosch, 2002; Lerner, 2006); yet, the empirical evidence for co-occurring developmental change across different levels is slim (Schulenberg & Zarrett, 2006). This is especially true in the study of addictions across the lifespan, highlighting the unique contribution of this parallel latent growth modeling study. Statistical advances, along with the greater availability of long-term multiwave data, set the stage for more such studies that can establish how developmental changes at multiple levels—for example, at the manifest behavior level and the underlying function level within individuals, or at the contextual transition level and the manifest behavior level—co-occur, providing richer description and more complex explanation of developmental change.

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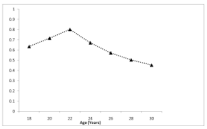

Figure 1.
Mean Frequency of Binge Drinking in the Past Two Weeks by Age
Note. Responses were on a scale of 0=*None*, 1=*Once*, 2=*Twice*, 3=*3 to 5 times*, 4=*6 to 9 times*, and 5=*10 or more times*.

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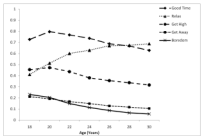

Figure 2.
Mean Percentage Endorsement of Alcohol Use Reasons by Age

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Table 1

Means and Correlations of Latent Reasons and Binge Variables from the Piecewise Latent Growth Models

	Latent Variable Means			Correlations with Binge Latent Variables		
	Intercept	**Slope 1 (18–22)**	**Slope 2 (22–30)**	**Intercept**	**Slope 1 (18–22)**	**Slope 2 (22–30)**
Binge Drinking†	1.364(.031)***	0.351(.033)***	−0.649(.046)***	--	--	--
Reasons forDrinking						
Relax	0.000(.000)	1.183(.058)***	0.529(.037)***	0.390(.018)***	0.399(.060)***	0.309(.055)***
Get High	0.000(.000)	−0.104(.028)***	−0.702(.033)***	0.614(.015)***	0.643(.042)***	0.339(.043)***
Good Time	0.000(.000)	0.447(.035)***	−0.575(.043)***	0.561(.021)***	0.292(.063)***	0.286(.053)***
Bored	0.000(.000)	−0.759(.040)***	−1.294(.047)***	0.411(.019)***	0.688(.059)***	0.393(.055)***
Get Away	0.000(.000)	−0.489(.041)***	−0.794(.045)***	0.303(.019)***	0.569(.059)***	0.449(.055)***

Note.

†Average results across the five models. Each row represents summary results from a separate model. Standardized estimates and standard errors are shown.

***$p < .001$.