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Transitions Catalyst Model: Testing within- and between-Person Associations between Social Relationships and Alcohol Use, Motives, and Consequences among Young Adults

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ABSTRACT

Background: The Transitions Catalyst Model suggests increased drinking during young adulthood is due to the notion that alcohol facilitates friendships and romantic/sexual relationships during a developmental period when these relationships are highly valued. However, little research has tested the utility of this model. We examined (1) whether young adults reported greater drinking and related consequences on months when friendships were more important to them or when they were dating casually, and (2) the extent to which social drinking motives explain these associations on a given month. **Methods:** Data were drawn from 752 young adults (ages 18–23 at screening) living in the Seattle, WA area (56.4% female). For 24 consecutive months, surveys assessed past month alcohol use and consequences, social drinking motives, friendship importance, and dating/relationship status. Bayesian multilevel models were conducted, adjusting for time-fixed and time-varying covariates. **Results:** Analyses included 11,591 monthly observations. Between-persons, greater average friendship importance was associated with greater drinking. On months when participants reported greater friendship importance than their own average, they reported greater drinking and alcohol consequences. Those who reported more months of casual dating reported greater drinking and consequences on average. Relative to casual dating months, participants reported less drinking during months they were single or in a relationship and fewer consequences during months in a relationship. Associations were partially accounted for by social motives. **Discussion:** Findings support the Transitions Catalyst Model. Effective strategies for reducing drinking and associated risks among young adults include brief interventions focused on how social drinking motives and relationships relate to drinking decisions.

KEYWORDS

Young adulthood;
social roles;
alcohol;
motivations;
dating

Introduction

Young adulthood is characterized by important developmental transitions in multiple domains, such as graduating from high school, beginning college and/or work, and moving out of the parental home (Bachman et al., 2013; Furstenberg, 2010). In the midst of these transitions, achieving intimacy and developing and maintaining friendships and romantic relationships are primary tasks of young adulthood (Erikson, 1968). Friendships become increasingly important for young adults and the frequency of interactions with friends and acquaintances increase during adolescence and young adulthood, plateau between the mid-20s and early 30s, and decrease thereafter (Wrzus et al., 2013). Notably, adolescents are already actively engaging in romantic relationships; for example, in 2017, over half of 12th graders in the U.S. reported they had dated and 14% reported frequent dating, defined as going on dates more than once a week (Child

Trends, 2019). Moreover, romantic relationships increase in frequency and importance from adolescence to young adulthood (Raley et al., 2007).

With frequent social role transitions coupled with new freedoms and responsibilities, it is perhaps not surprising that alcohol use is common during young adulthood (Bachman et al., 2013; Cadigan et al., 2019; Schulenberg et al., 2020). According to 2019 data from Monitoring the Future, 82% of young adults aged 19–30 drank alcohol in the past year and 62% were drunk, with 68% and 36% reporting alcohol use and being drunk in the past 30 days, respectively (Schulenberg et al., 2020). Negative consequences of alcohol use among young adults are well documented and include academic and cognitive consequences, motor vehicle accidents, blackouts, unintentional injuries, and fatalities (Hingson et al., 2017; Patrick et al., 2020; White & Hingson, 2013). Increasing the field's understanding

of why young adults drink and identifying risk factors for heavy use are public health priorities. A developmental contextual approach can be applied to examine how normative tasks and transitions are related to alcohol use among young adults (Schulenberg & Maggs, 2002; Schulenberg et al., 2018). The Transitions Catalyst Model suggests some amount of risk behavior is normative among young adults and can even be perceived to aid in the negotiation of certain developmental and social tasks and transitions (Hatzenbuehler et al., 2008; Patrick et al., 2018; Schulenberg & Maggs, 2002; Williams et al., 2018). This model posits that increased alcohol use during young adulthood could occur because young adults believe that alcohol can help facilitate new friendships, romantic relationships, and social bonding during a period in the life course when these relationships are highly desired.

Friendships and alcohol use in young adulthood

Prior research suggests drinking is often a catalyst for developing intimacy and building and maintaining friendships among young adults (Bachman et al., 2013; MacLean, 2016) and alcohol consumption may impact social bonding by enhancing the release of endorphins (Gianoulakis, 2004). Significant research documents the importance of social cognitions and social influences on young adult alcohol use, including perceived social norms (e.g. Lewis & Neighbors, 2006; Yurasek et al., 2015), social modeling (e.g. Borsari & Carey, 2006), and social contexts of drinking (e.g. Clapp et al., 2006). However, few studies have examined how friendship importance or social goals may be related to alcohol use among young adults. Among college-bound high school seniors, students who endorsed the goal of “making friends” as more important and as less difficult/stressful planned to drink more frequently and in greater quantities during their first year of college (Rhoades & Maggs, 2006). While important, most studies in this area have examined between-person associations which may be explained by selection effects or other third variables.

The young adult years are characterized by frequent and dramatic changes in many domains of life including social relationships (Bachman et al., 2014). Alcohol use is notably erratic in this period as well (Bachman et al., 2013). Whether alcohol use increases during times when young adults place higher value on friendships and relationships is a key question for etiology and prevention aiming to understand and predict risk. However, little is known about this question. Patrick and colleagues (2017) used time-varying effects modeling with longitudinal data across young adulthood to document that high-intensity drinking (i.e. consuming 10+ drinks in a row) was strongly associated with drinking to have a good time with friends in early young adulthood but no longer linked by age 26. While this general age-related decline in the relationship between social reasons and high-intensity drinking is broadly consistent with the Transitions Catalyst Model, little is known about whether young adults’ alcohol use rises and falls in tandem with naturally-occurring changes in social relationships and their importance over shorter time frames such as months or days.

Romantic relationships and alcohol use in young adulthood

The Transitions Catalyst Model also suggests that young adults view drinking as a potential facilitator and enhancer of romantic and sexual relationships (Schulenberg & Maggs, 2002). Associations between alcohol use and romantic relationships have been documented with casual dating and starting/stopping relationships linked to increased use (Fleming et al., 2018; Salvatore et al., 2014), and involvement in a committed romantic relationship and getting married linked to decreased alcohol consumption (Bachman et al., 2014; Staff et al., 2010). Much of this research combines all young adults who are not in committed romantic relationships into a broad category of “single” (Fleming et al., 2010). However, this categorization misses many important nuances of the types of dating relationships experienced by young adults. A growing body of work examines alcohol use among young adults who are casually dating (Patrick et al., 2015; Rauer et al., 2013). However, little is known about young adults interested in dating but not currently dating as they are usually grouped with young adults who are single. If drinking is viewed as a potential catalyst for developing romantic relationships, then young adults who are interested in dating may frequently engage in social activities where alcohol use is common in an effort to find dating partners, whereas young adults not interested in dating may be less inclined to engage in these activities.

In a study of individuals aged 18–20, transitioning from being in a romantic relationship to single was associated with increased drinking; casual dating was not examined (Fleming et al., 2010). Salvatore and colleagues (2014) examined whether relationship status was related to alcohol use among first-year college students. Students who were casually dating drank more than students in committed relationships and those who were not dating. This study did not differentiate between students who were or were not interested in dating. In separate analyses using a subset of data examined in the present study, Fleming and colleagues (2018) identified six distinct relationship patterns across 12 months. Notably, young adults drank more during (1) months of dating among the single-and-dating group, (2) months following a breakup among the ended-a-relationship group, and (3) months of starting a new relationship and months of breaking up among the ended-and-started-a-relationship group. Although most young adults’ friendships and dating statuses can change frequently, most research has examined cross-sectional data or longitudinal data with relatively infrequent assessments (e.g. annual assessments). Much less is understood about dynamic associations between relationship/dating statuses, drinking motives, and alcohol use.

Socially-motivated alcohol use in young adulthood

Motivational models of alcohol use assume drinking serves a variety of functions and that motivations to drink are based on expectations that alcohol will serve specific

functions (Cooper, 1994; Kuntsche et al., 2005). Findings from a review of motivational models of substance use suggest people are sometimes motivated to drink to obtain valued social rewards (Cooper et al., 2016), such as to have a good time with friends and to facilitate social situations (Kuntsche et al., 2005). Further, the majority of young adults report social motives for drinking and previous research suggests social drinking motives are associated with greater likelihood of high-risk drinking during young adulthood (Lee et al., 2007; Patrick et al., 2017; White et al., 2016). Patrick and Schulenberg (2011) examined associations between binge drinking and reasons for alcohol use across young adulthood using data from Monitoring the Future. Social drinking reasons were assessed by asking young adults whether they drank to have a good time with friends (yes or no). Social reasons for drinking were most likely to be endorsed in young adulthood with 80% of drinkers reporting this reason at age 20, falling to 63% of drinkers by age 30. In a separate study using data examined in the present study, Patrick et al. (2018) examined alcohol use and drinking motives during months when social role transitions were experienced (e.g. starting and ending a relationship). On average, social motives were endorsed more strongly during months when a relationship began. Bridging developmental and addiction literatures together, these results suggest social motives may explain the covariation between interpersonal relationships and alcohol use.

The present study

The present study was designed to examine the Transitions Catalyst Model by focusing on interpersonal relationships and alcohol use among young adults. Monthly surveys collected from a sample of young adults over 24 consecutive months allowed us to examine within- and between-person differences in how friendship importance and dating/relationship status were related to alcohol use, consequence, and social motives across months, capturing dynamic associations among these variables. First, we examined whether months with greater friendship importance and casual dating were associated with greater social motives. Supplementary analyses examined the specificity of the Transitions Catalyst Model with selected other drinking motives (i.e. conformity and coping motives). Next, we examined whether young adults were more likely to drink any alcohol, drink more alcohol, and experience alcohol-related consequences (1a) during months when they reported higher levels of friendship importance and (1b) during months when they were dating casually and/or interested in dating compared to months when they were single and not interested in dating or in a stable relationship. We then tested (2) the extent to which social motives explained these associations. We hypothesized that friendship importance and relationship status (i.e. casual dating compared to being single and not interested in dating or being in a relationship) would be associated with having greater social motives than average. We expected that, after accounting for between-person differences in drinking, friendship importance, and dating/

relationship status, alcohol use and related consequences would be higher in months when friendship was rated as more important (relative to individuals' own average rating) and in months when participants were casually dating or interested in dating (relative to months they were single and not interested in dating or months in a relationship). We expected that within-person fluctuations/variability in social drinking motives would, at least in part, account for associations between drinking outcomes and both friendship importance and dating/relationship status, suggesting that young adults drink to facilitate friendships and dating relationships during months when those interpersonal relationships are more important.

Method

Participants and procedures

Data were collected from a community sample of young adults participating in a longitudinal study on social role transitions and alcohol use. Eligibility criteria at screening included being ages 18 to 23, consuming alcohol at least once in the past year, living in the greater Seattle area, coming once into the research office, and completing a baseline assessment (see Patrick et al., 2018 for additional details). A total of 779 young adults met eligibility criteria, completed the baseline survey, and were invited to complete online monthly surveys for the next 24 consecutive months. High retention was achieved with monthly completion rates ranging from 78.4% to 97.7%. Study procedures were approved by the Institutional Review Board at the University of Washington. Present analyses included 752 participants who completed at least one monthly survey with data on variables of interest, including alcohol use and related consequences, social motives, friendship importance, and relationship status with only 9.4% of missing data across 24 months. Average age of the analytic sample was 20.6 years (SD = 1.7) at baseline with 56.4% of the sample reporting being female (birthsex), 59.4% White, 18.2% Asian, and 22.3% Other or multiple races (see Table 1 for Descriptive Statistics).

Measures

Demographic characteristics

At baseline, participants reported their age, biological sex at birth, race (White, Asian, or Other race), and Hispanic ethnicity (Hispanic or non-Hispanic). Each month participants reported education status (e.g. 4-year or 2-year college student, non-college student).

Friendship importance

Each month participants were asked: "Overall, in the past month how important to you were your friends and friendships?" Response options ranged from 1 (Not important) to 5 (Very important).

Table 1. Descriptive statistics.

Characteristic	Mean (SD) or % N=752
Male sex	43.6%
Baseline age, years	20.6 (1.7)
Race	
White	59.4%
Asian	18.2%
Other	22.3%
Hispanic ethnicity	8.4%
Four-year college student	45.9%
Frequency of past month drinking ^a	
Once a month or less	15.5%
2 times a month	10.8%
3 times a month	16.4%
Once a week	19.7%
2 times a week	19.2%
3 times a week or more	18.4%
Past month typical number of drinks per week ^a	6.0 (7.9)
Past month number of alcohol-related consequences ^a	2.6 (3.7)
Social motives for alcohol use ^a	2.4 (1.0)
Conformity motives ^a	1.9 (0.5)
Coping motives ^a	1.5 (0.6)
Friendship importance ^a	4.1 (0.7)
Relationship status ^a	
Casually dating	17.3%
Single, not interested in dating	30.1%
In a serious relationship	52.5%

Note. Alcohol-related consequences ranged from 0 to 24; Social motives, mean of five items rated from 1 (Almost never/Never) to 5 (Almost always/Always); Conformity motives, mean of five items rated from 1 to 5; Coping motives, mean of 13 items rated from 1 to 5; Friendship importance, ratings from 1 (Not important) to 5 (Very important).

^aPercent of all 11,591 person-month observations.

Relationship status

Each month participants were asked, “Tell us about your relationship situation in the past month.” Response options included: “Single (not dating),” “Dating casually (not committed to one partner),” “Dating seriously (have a boyfriend/girlfriend),” “Engaged,” “Married/committed partners,” “Separated/divorced,” and “Widowed.” If participants reported they were single, they were asked, “How interested in dating are you right now?” Response options included: 0 (Not at all interested, would not date someone no matter what right now), 1 (Somewhat interested, would take opportunity if it came but am not actively looking), and 2 (Very interested, am actively looking). Those who answered 0 or 1 were coded as single and not interested in dating and those who answered 2 were coded as single and interested in dating. For data analyses, relationship status was coded into three groups: “single and not interested in dating” (for brevity, now referred to as “single”), “dating seriously/engaged/married,” and “single and interested in dating/casually dating” (now referred to as “casually dating”). Two dummy codes were created using “casually dating” as the reference group.

Frequency of drinking

Each month participants were asked how many days of the week they drank alcohol in the past month (National Institute on Alcohol Abuse & Alcoholism, 2003). Response

options ranged from 0 (Did not drink at all) to 10 (Everyday).

Typical drinks per week

Each month participants completed a modified Daily Drinking Questionnaire (Collins et al., 1985), where they indicated typical number of alcoholic beverages they consumed each day of the week in a typical week in the previous month. For example, “On a typical Monday, I had ... drinks.” The seven items were summed to calculate total drinks per week.

Alcohol-related consequences

Participants completed the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler et al., 2005) each month. The BYAACQ consists of 24 yes/no items assessing alcohol-related consequences experienced in the previous month. Total alcohol-related consequences were calculated as a sum score.

Social, conformity, and coping drinking motives

Each month participants reported consuming alcohol, they also completed the Modified Drinking Motives Questionnaire-Revised (Modified DMQ-R; Grant et al., 2007) to assess drinking motives for the prior month. The DMQ-R assesses drinking motives on a 1 (Almost Never/Never) to 5 (Almost Always/Always) scale. For the present analyses, the five questions assessing social drinking motives (e.g. “as a way to celebrate,” “to be sociable”) were averaged with higher scores indicating higher social motives to drink. At each of the 24 months, internal consistency was high (α range: 0.74 to 0.80). Five questions assessing conformity drinking motives (e.g. “to be liked,” “because my friends pressure me to use”) were averaged with higher scores indicating higher conformity motives (α range: 0.80 to 0.90). Five questions assessing drinking motives to cope with anxiety or depression (e.g. “to forget your worries,” “to cheer you up when you are in a bad mood”) were averaged (α range: 0.90 to 0.93).

Analytic plan

To examine associations of friendship importance and relationship status with alcohol outcomes and the role of social motives, we used Bayesian Markov Chain Monte Carlo (MCMC) forms of multilevel models (Gelman & Hill, 2006). This Bayesian MCMC approach was selected over a traditional frequentist maximum likelihood approach because of computational challenges associated with generalized versions of the multilevel model (Dunson, 2001). Analyses were conducted using R statistical software with the “brms” package (Bürkner, 2017).

Separate models examined associations between predictors of interest and the three primary alcohol outcomes (frequency of drinking, typical drinks per week, and alcohol-related consequences). A first set of models only

included the predictor of interest and demographic covariates (Model 1). To understand whether social drinking motives explained associations, a second set of models included social drinking motives (Model 2). Social motives were treated as continuous with a Gaussian distribution. To examine specificity of links between social drinking motives and the predictors of interest (friendship importance and relationship status), as post-hoc exploratory analyses we examined associations between predictors of interest and conformity and coping drinking motives. For each Bayesian model, we specified non-informative priors, 12,000 iterations and a burn-in of 2000, and a thinning interval of 10; thus, obtaining a sample of 1,000 draws from the posterior distribution. Evaluation of trace plots suggested models reached convergence. All models included a random intercept for the individual. Because drinking motives were only assessed during months when participants reported alcohol consumption, analyses included only months when alcohol use was reported.

Predictors and outcomes were assessed concurrently across months because it was expected that the influences of friendship importance, relationship status, and social motives on alcohol use and consequences were proximal and occur within the same month. Drinking frequency was an ordered categorical variable and thus a cumulative probability (or ordinal logistic) form of the multilevel model was run and was collapsed into six categories (1: once a month or less; 2: 2 times a month; 3: 3 times a month; 4: once a week; 5: 2 times a week; 6: 3 times a week or more). Odds Ratios (ORs) were estimated that described proportional change in odds of being in the next higher category associated with a 1-unit increase in the covariate. Other alcohol outcomes were discrete integers bounded at 0 showing positive skew and over-dispersion. For these outcomes we specified a negative binomial distribution that allowed us to estimate Count Ratios (CRs), which describe the proportional change in the count outcome associated with a 1-unit increase in the covariate, conditional on random effects.

To disentangle between- from within-person effects, for models with friendship importance, friendship importance scores were decomposed into two variables that were simultaneously included in the models. The first was the time-fixed (Level 2) covariate for the mean value of friendship importance across all available observations for a given person, i (friendship importance_{*i*}). The second variable was a time-varying (Level 1) covariate indicating the deviation in each month from one's own mean friendship importance, t (friendship importance_{*it*} - friendship importance_{*i*}). When examining relationship status, we included dummy codes for time-varying relationship status at month, t , with casually dating as the reference group and a time-fixed variable for the proportion of available months when participants reported casually dating. In models adjusting for social motives (Model 2), the person-mean of social motives across observations and a monthly deviation in social motives from one's own mean were included as covariates. All models included time-fixed covariates for race (White [reference], Asian, Other), Hispanic ethnicity, and age at

baseline, and time-varying covariates controlling for 4-year college status and month of study.

Results

Table 1 shows descriptive characteristics of the analytic sample ($n=752$) with a total of 11,591 monthly observations for which drinking was reported (4,765 months were excluded because participants indicated that they did not use alcohol that month). On average across drinking months, friendship importance was generally rated as high (mean = 4.1, $SD=0.7$). Participants reported being in a serious relationship in about half of the drinking months (52.5%), followed by casually dating (30.2%) and being single (17.3%).

Associations of friendship importance and relationship status with social motives

Table 2 shows estimates for associations of friendship importance and romantic relationship status with social motives. Friendship importance was positively associated with social drinking motives at the between-person ($b=0.29$; 95% Credible Interval [CI]: 0.20, 0.38) and within-person levels ($b=0.09$; 95% CI: 0.07, 0.12). Between-persons, having a greater proportion of months casually dating was associated

Table 2. Estimates from separate models for associations of friendship importance and relationship status with social motives, adjusted for covariates.

	Social motives	
	b	95% CI
Friendship importance model		
Average friendship importance	0.29*	0.20, 0.38
Monthly deviation in friendship importance	0.09*	0.07, 0.12
Four-year college status	0.21*	0.14, 0.28
Study month	-0.02*	-0.02, -0.010
Male sex	0.04	-0.05, 0.14
Race		
White (reference)	-	-
Asian	0.27*	0.14, 0.40
Other	0.09	-0.03, 0.21
Hispanic ethnicity	-0.06	-0.24, 0.12
Baseline age	0.01	-0.01, 0.04
Relationship status model		
Monthly relationship status		
Casually dating (reference)		
Single, not interested in dating	-0.03	-0.07, 0.02
Serious relationship	-0.12*	-0.17, -0.07
Proportion of months in casual dating relationship	0.27*	0.07, 0.48
Four-year college status	0.23*	0.16, 0.30
Study month	-0.02*	-0.02, -0.01
Male sex	0.02	-0.08, 0.11
Race		
White (reference)		
Asian	0.28*	0.15, 0.41
Other	0.05	-0.07, 0.18
Hispanic ethnicity	-0.06	-0.24, 0.12
Baseline age	0.01	-0.02, 0.04

*Indicates estimate is statistically significant at $p < .05$.

with greater social motives. Within-person, being in a serious relationship (compared to casually dating) was negatively associated with social motives. Sensitivity analyses showed that friendship importance at both the between- and within-person level was not statistically significantly associated with conformity or coping motives (see [Supplemental Table 1](#)). We did observe that being in a serious relationship relative to being casually dating was significantly associated with lower conformity and coping motives; however, the magnitude of these associations was approximately the same or weaker relative to those with social motives as the outcome (See [Supplemental Table 2](#)). Together, results lend support to a prominent role of social motives for drinking as suggested by the Transitions Catalyst Model.

Associations between friendship importance and alcohol use

[Table 3](#) shows estimates for associations of friendship importance with alcohol outcomes. Prior to adjusting for social motives, at the between-person level, individuals who on average reported greater friendship importance drank more frequently (OR = 1.71; 95% CI: 1.24, 2.32) and consumed more drinks per week (Count Ratio [CR] = 1.19; 95% CI: 1.01, 1.40) during drinking months. The between-person association of friendship importance and alcohol-related consequences did not reach statistical significance (CR = 1.11; 95% CI: 0.90, 1.35). Within-person, on drinking months when individuals reported higher levels of friendship importance than their own average, they drank more frequently (OR = 1.15; 95% CI: 1.07, 1.23), consumed more drinks per week (CR = 1.06; 95% CI: 1.03, 1.09), and experienced a greater number of alcohol-related consequences (CR = 1.06; 95% CI: 1.02, 1.10).

[Table 3](#) also shows estimates for associations of friendship importance with alcohol outcomes adjusting for social

motives. Between-persons, individuals who on average reported higher social motives over the course of the study also drank more frequently (OR = 1.65; 95% CI: 1.31, 2.10), consumed more drinks per week (CR = 1.70; 95% CI: 1.51, 1.91), and reported more alcohol-related consequences (CR = 2.61; 95% CI: 2.26, 3.03) during drinking months. Within-person, during drinking months with higher levels of social drinking motives than one's average, individuals drank more frequently (OR = 1.24; 95% CI: 1.17, 1.31), consumed more drinks per week (CR = 1.23; 95% CI: 1.20, 1.26), and reported more alcohol-related consequences (CR = 1.33; 95% CI: 1.29, 1.37). Associations between monthly deviations in friendship importance and alcohol outcomes adjusting for social motives were slightly attenuated compared to the total effects model, but remained statistically significant. Thus, social motives appeared to account for a small portion of the monthly association between friendship importance and alcohol outcomes and friendship importance remained positively associated with alcohol outcomes above and beyond the impact of social drinking motives.

Associations between casual dating and alcohol outcomes

[Table 4](#) shows estimates for associations of relationship/dating status with alcohol outcomes. Between-persons, individuals who on average reported more months of casual dating showed greater frequency of drinking, typical drinks per week, and alcohol consequences during drinking months compared to those who reported being single or in a relationship. Within-persons, compared to drinking months when casually dating, when participants were single or in a serious relationship, drinking frequency and drinks per week were lower; and on months when participants were in a serious relationship, drinking frequency, drinks per week, and alcohol consequences were lower.

Table 3. Odds ratios or count ratios from separate models for the association of friendship importance with drinking frequency, typical drinks per week, and drinking consequences with and without adjustment for social drinking motives, adjusted for covariates.

	Model 1		Model 2	
	OR ^a or CR ^b	95% CI	OR ^a or CR ^b	95% CI
Drinking frequency				
Friendship importance, average	1.71*	1.24, 2.32	1.50*	1.08, 2.10
Social motives, average	–	–	1.65*	1.31, 2.10
Friendship importance, monthly deviation	1.15*	1.07, 1.23	1.13*	1.05, 1.21
Social motives, monthly deviation	–	–	1.24*	1.17, 1.31
Typical drinks per week				
Average friendship importance	1.19*	1.01, 1.40	1.05	0.89, 1.22
Average social motives	–	–	1.70*	1.51, 1.91
Monthly deviation in friendship importance	1.06*	1.03, 1.09	1.04*	1.01, 1.07
Social motives, monthly deviation	–	–	1.23*	1.20, 1.26
Drinking consequences				
Average friendship importance	1.11	0.90, 1.35	0.86	0.71, 1.03
Average social motives	–	–	2.61*	2.26, 3.03
Monthly deviation in friendship importance	1.06*	1.02, 1.10	1.04	1.00, 1.08
Social motives, monthly deviation	–	–	1.33*	1.29, 1.37

Note. Models are adjusted for time-fixed covariates (age, sex, race, Hispanic ethnicity) and time-varying covariates (4-year college status, month of study).

*Indicates estimate is statistically significant at $p < .05$.

^aOdds Ratio (OR) estimated for drinking frequency outcome.

^bCount Ratio (CR) estimated for typical drinks per week and drinking consequences outcomes.

Table 4. Odds ratios or count ratios from separate models for the association of relationship status with drinking frequency, typical drinks per week, and drinking consequences with and without adjustment for social motives for alcohol use, adjusted for covariates.

	Model 1		Model 2	
	OR ^a or CR ^b	95% CI	OR ^a or CR ^b	95% CI
Drinking frequency				
Monthly relationship status				
Casually dating (reference)	–	–	–	–
Single, not interested in dating	0.75*	0.65, 0.86	0.76*	0.66, 0.86
Serious relationship	0.71*	0.61, 0.82	0.71*	0.63, 0.85
Average social motives	–	–	1.66*	1.30, 2.11
Proportion of months casual dating	2.05*	1.01, 3.94	1.77	0.92, 3.45
Social motives, monthly deviation	–	–	1.24*	1.17, 1.32
Typical drinks per week				
Monthly relationship status				
Casually dating (reference)	–	–	–	–
Single, not interested in dating	0.92*	0.87, 0.97	0.93*	0.88, 0.97
Serious relationship	0.80*	0.76, 0.85	0.83*	0.78, 0.87
Average social motives	–	–	1.66*	1.48, 1.88
Proportion of months casual dating	1.63*	1.17, 2.30	1.38*	1.00, 1.93
Social motives, monthly deviation	–	–	1.22*	1.20, 1.25
Drinking consequences				
Monthly relationship status				
Casually dating (reference)	–	–	–	–
Single, not interested in dating	0.95	0.88, 1.02	0.95	0.89, 1.02
Serious relationship	0.77*	0.71, 0.83	0.80*	0.74, 0.86
Average social motives	–	–	2.46*	2.12, 2.84
Proportion of months casual dating	2.36*	1.56, 3.53	1.80*	1.22, 2.60
Social motives, monthly deviation	–	–	1.32*	1.28, 1.36

Note. Models are adjusted for time-fixed covariates (age, sex, race, Hispanic ethnicity) and time-varying covariates (4-year college status, month of study).

*Indicates estimate is statistically significant at $p < .05$.

^aOdds Ratio (OR) estimated for drinking frequency outcome.

^bCount Ratio (CR) estimated for typical drinks per week and drinking consequences outcomes.

Table 4 also shows estimates for associations of relationship status with alcohol outcomes adjusting for social motives. Between-persons, those with higher social motives for alcohol use on average showed higher levels of all drinking outcomes. Within-person and consistent with earlier models, during drinking months when individuals reported higher social motives than their own average, frequency of drinking, typical drinks per week, and alcohol-related consequences were higher, after adjusting for relationship status. Within-person monthly associations between being single or in a relationship relative to casually dating and alcohol outcomes were only slightly attenuated or were similar after adjusting for social motives (Model 2). All comparisons of monthly serious relationship status with casual dating on outcomes also remained significantly significant.

Discussion

The current study is among the first to examine the Transitions Catalyst Model describing high-risk alcohol use among young adults (Schulenberg & Maggs, 2002). Using monthly surveys across two years, we examined how friendship importance and relationship status varied across months in conjunction with social drinking motives, alcohol use, and alcohol consequences. Bridging theories from developmental and addiction research, current findings support that

young adults' alcohol use is linked together across time in tandem with social roles, specifically friendship and dating relationships. The pattern of results is consistent with the notion that alcohol may be used to help to facilitate relationships at times when those relationships are more important to young adults. Specifically, months when young adults reported friendships as being more important were also months they endorsed higher social motives for drinking, which helped explain greater alcohol use and consequences that month. It is important to note that there are likely different pathways *via* which friendships (or the lack thereof) may relate to higher alcohol use. One pathway may be that a lack of higher quality friendships leads to alcohol use (Borsari & Carey, 2006), potentially as a way to cope with depression, while another pathway (suggested here) may be the desire for friendship groups that lead to increased drinking due to higher social motives for drinking.

We also found when young adults were in a relationship or single, compared to months when they were casually dating, they reported lower social drinking motives, decreased alcohol use and related consequences, and as before higher social motives were associated with higher alcohol use and consequences. These findings are consistent with previous research suggesting that compared to casual dating, being single and being in a relationship are linked with decreased alcohol use (Salvatore et al., 2014) and with findings from a subset of the data used here, showing that

relationship patterns across 12 months are related to alcohol use and specifically that being in a relationship is associated with decreased alcohol use (Fleming et al., 2018).

The Transitions Catalyst Model was originally conceptualized in somewhat broad terms. The current study takes an important step forward by delineating in a finer-grained manner that the importance attached to friendships and dating relationships during young adulthood is tied with alcohol use as these attitudes and behaviors vary across months. Examining social drinking motives as the mechanism through which friendships and casual dating may lead to increased alcohol use represents a critical elaboration and refinement of the Transitions Catalyst Model. An extensive literature exists documenting the important role of drinking motives among young adults (Cooper, 1994; Kuntsche et al., 2005) and the current study demonstrates how social motives may reflect the importance of social relationships during this developmental period. For instance, findings indicate social drinking motives were higher during months when friendship importance was more strongly endorsed and decreased during months when individuals were single or in a relationship compared to months when individuals were casually dating. Findings also suggest that friendship importance was positively related to alcohol-related consequences at the within-person level, but not the between-person level. It may be that during months where individuals report higher than average friendship importance, they are drinking even more which may in-turn be related to increased alcohol-related consequences.

Forming and maintaining social relationships appear especially important during young adulthood. It has long been known that not being in a serious romantic relationship is associated with more alcohol use during this time (Bachman et al., 2014; Staff et al., 2010); however, extant research has given relatively little consideration to the nuances and dynamic aspects of dating relationships during young adulthood (c.f., Fleming et al., 2018; Patrick et al., 2020). Likewise, consideration of friendship influences on alcohol use among young adults has rarely gone beyond relatively static conceptualizations and measurement. The present study utilizes 24 monthly assessments to better understand social influences on alcohol use during young adulthood and to gain a more nuanced picture of the within-individual variation and interplay between social variables relating to friendship and romantic relationships and alcohol use during the high-risk developmental period of young adulthood. As we show, there is important covariation within individuals between more micro-level (i.e. monthly) changes in romantic status and friendship importance and alcohol use and consequences. Future research using repeated measures from similar designs should continue to consider how alcohol use is perceived to facilitate important developmental tasks, and whether using alcohol to pursue these developmental tasks is associated with acute and longer-term positive or negative consequences.

Results indicate young adults who are casually dating are at increased risk for high levels of alcohol use and consequences, perhaps because they are using alcohol in goal-directed ways to meet and interact with potential

partners and/or meeting and interacting with partners in contexts where alcohol is readily available and socially normative. Examining potential third variables, such as impulsivity and extraversion, which may explain some of the association between friendship importance and/or casual dating and increased alcohol use, is another priority for future research. Further, interventions that support healthy dating behaviors and relationships, and mitigate negative alcohol-related consequences and related risks while dating, are needed to support young adults during this transition period.

This study has many strengths, including the use of 24 consecutive months of surveys collected from a heterogeneous community sample of young adults. By using repeated measures of monthly data, we were able to capture dynamic associations among friendship importance, dating status, and alcohol use and related-consequences, and social motives during a highly transitional developmental period, however findings should be considered in light of limitations. Our sample is a community sample in the Seattle metropolitan area; results may not be generalizable to other geographic areas. We also only included months when alcohol use was reported which limits the generalizability of findings. Measures were all self-report, which could introduce bias or socially desirable responding, and we did not account for time-varying covariates, such as frequent changes in student status and living situation (see Patrick et al., 2020) due to the complexity of modeling and interpreting monthly within-person variability. Future research should be designed to consider changes in student status and living situation. The current study also did not consider how the number of friends or how close-knit friendship groups were may play a role in perceptions of friendship importance and their association with social drinking motives.

As young adults navigate the many social role transitions common to this period (e.g. transitions in education, work, relationships with parents, and attachments to peers), many young adults simultaneously seem to enact cultural scripts in which alcohol use is believed to play a facilitative role. Young adulthood has long been associated with lifetime peaks in substance use. Thus, understanding how drinking behaviors are linked with variability in developmentally normative changes in relationships with friends and romantic partners is a fundamental question that should be of interest to developmental scholars, prevention scientists, health care professionals, and young adults themselves.

Declaration of interest

The authors declare that they have no conflict of interest. The authors alone are responsible for the content and writing of the article.

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References

- Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Bryant, A. L., & Merline, A. C. (2014). *The decline of substance use in young adulthood: Changes in social activities, roles, and beliefs*. Psychology Press.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (2013). *Smoking, drinking, and drug use in young adulthood: The impacts of new freedoms and new responsibilities*. Psychology Press.
- Borsari, B., & Carey, K. B. (2006). How the quality of peer relationships influences college alcohol use. *Drug and Alcohol Review*, 25(4), 361–370. <https://doi.org/10.1080/09595230600741339>
- Bürkner, P.-C. (2017). brms: An R package for Bayesian multilevel models using Stan. *Journal of Statistical Software*, 80(1), 1–28. <https://doi.org/10.18637/jss.v080.i01>
- Cadigan, J. M., Duckworth, J. C., Parker, M. E., & Lee, C. M. (2019). Influence of developmental social role transitions on young adult substance use. *Current Opinion in Psychology*, 30, 87–91. <https://doi.org/10.1016/j.copsyc.2019.03.006>
- Child Trends. (2019). *Dating among teens*. <https://www.childtrends.org/>
- Clapp, J. D., Reed, M. B., Holmes, M. R., Lange, J. E., & Voas, R. B. (2006). Drunk in public, drunk in private: The relationship between college students, drinking environments and alcohol consumption. *The American Journal of Drug and Alcohol Abuse*, 32(2), 275–285. <https://doi.org/10.1080/00952990500481205>
- Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology*, 53(2), 189–200. <https://doi.org/10.1037//0022-006x.53.2.189>
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment*, 6(2), 117–128. <https://doi.org/10.1037/1040-3590.6.2.117>
- Cooper, M. L., Kuntsche, E., Levitt, A., Barber, L. L., & Wolf, S. (2016). Motivational models of substance use: A review of theory and research on motives for using alcohol, marijuana, and tobacco. In K. S. Sher (Ed.), *The Oxford handbook of substance use and substance use disorders* (Vol. 1, 375–421). Oxford University Press.
- Dunson, D. B. (2001). Commentary: Practical advantages of Bayesian analysis of epidemiologic data. *American Journal of Epidemiology*, 153(12), 1222–1226. <https://doi.org/10.1093/aje/153.12.1222>
- Erikson, E. H. (1968). *Identity: Youth and crisis*. WW Norton & Company.
- Fleming, C. B., Lee, C. M., Rhew, I. C., Ramirez, J. J., Abdallah, D. A., & Fairlie, A. M. (2018). Descriptive and prospective analysis of young adult alcohol use and romantic relationships: Disentangling between-and within-person associations using monthly assessments. *Substance Use & Misuse*, 53(13), 1–10. <https://doi.org/10.1080/10826084.2018.1467455>
- Fleming, C. B., White, H. R., & Catalano, R. F. (2010). Romantic relationships and substance use in early adulthood: An examination of the influences of relationship type, partner substance use, and relationship quality. *Journal of Health and Social Behavior*, 51(2), 153–167. <https://doi.org/10.1177/0022146510368930>
- Furstenberg, F. F. (2010). On a new schedule: Transitions to adulthood and family change. *The Future of Children*, 20(1), 67–87. <https://doi.org/10.1353/foc.0.0038>
- Gelman, A., & Hill, J. (2006). *Data analysis using regression and multilevel/hierarchical models*. Cambridge University Press.
- Gianoulakis, C. (2004). Endogenous opioids and addiction to alcohol and other drugs of abuse. *Current Topics in Medicinal Chemistry*, 4(1), 39–50. <https://doi.org/10.2174/1568026043451573>
- Grant, V. V., Stewart, S. H., O'Connor, R. M., Blackwell, E., & Conrod, P. J. (2007). Psychometric evaluation of the five-factor modified drinking motives questionnaire-revised in undergraduates. *Addictive Behaviors*, 32(11), 2611–2632. <https://doi.org/10.1016/j.add-beh.2007.07.004>
- Hatzenbuehler, M. L., Corbin, W. R., & Fromme, K. (2008). Trajectories and determinants of alcohol use among LGB young adults and their heterosexual peers: Results from a prospective study. *Developmental Psychology*, 44(1), 81–90. <https://doi.org/10.1037/0012-1649.44.1.81>
- Hingson, R. W., Zha, W., & Smyth, D. (2017). Magnitude and trends in heavy episodic drinking, alcohol-impaired driving, and alcohol-related mortality and overdose hospitalizations among emerging adults of college ages 18–24 in the United States, 1998–2014. *Journal of Studies on Alcohol and Drugs*, 78(4), 540–548. <https://doi.org/10.15288/jsad.2017.78.540>
- Kahler, C. W., Strong, D. R., & Read, J. P. (2005). Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The brief young adult alcohol consequences questionnaire. *Alcoholism: Clinical and Experimental Research*, 29(7), 1180–1189. <https://doi.org/10.1097/01.ALC.0000171940.95813.A5>
- Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, 25(7), 841–861. <https://doi.org/10.1016/j.cpr.2005.06.002>
- Lee, C. M., Geisner, I. M., Lewis, M. A., Neighbors, C., & Larimer, M. E. (2007). Social motives and the interaction between descriptive and injunctive norms in college student drinking. *Journal of Studies on Alcohol and Drugs*, 68(5), 714–721. <https://doi.org/10.15288/jsad.2007.68.714>
- Lewis, M. A., & Neighbors, C. (2006). Social norms approaches using descriptive drinking norms education: A review of the research on personalized normative feedback. *Journal of American College Health*, 54(4), 213–218. <https://doi.org/10.3200/JACH.54.4.213-218>
- MacLean, S. (2016). Alcohol and the constitution of friendship for young adults. *Sociology*, 50(1), 93–108. <https://doi.org/10.1177/0038038514557913>
- Maisto, S. A., Carey, K. B., & Bradizza, C. M. (1999). Social learning theory. In H. T. Blane & K. E. Leonard (Eds.), *Psychological theories of drinking and alcoholism* (2nd ed., pp. 106–163). Guilford Press.
- National Institute on Alcohol Abuse and Alcoholism. (2003). *Recommended alcohol questions*. <https://www.niaaa.nih.gov/research/guidelines-and-resources/>
- Patrick, M. E., Evans-Polce, R., Kloska, D. D., Maggs, J. L., & Lanza, S. T. (2017). Age-related changes in associations between reasons for alcohol use and high-intensity drinking across young adulthood. *Journal of Studies on Alcohol and Drugs*, 78(4), 558–570. <https://doi.org/10.15288/jsad.2017.78.558>
- Patrick, M. E., Maggs, J. L., & Lefkowitz, E. S. (2015). Daily associations between drinking and sex among college students: A longitudinal measurement burst design. *Journal of Research on Adolescence: The Official Journal of the Society for Research on Adolescence*, 25(2), 377–386. <https://doi.org/10.1111/jora.12135>

- Patrick, M. E., Rhew, I. C., Duckworth, J. C., Lewis, M. A., Abdallah, D. A., & Lee, C. M. (2020). Patterns of young adult social roles transitions across 24 months and subsequent substance use and mental health. *Journal of Youth and Adolescence*, 49(4), 869–880. 12. <https://doi.org/10.1007/s10964-019-01134-8>
- Patrick, M. E., Rhew, I. C., Lewis, M. A., Abdallah, D. A., Larimer, M. E., Schulenberg, J. E., & Lee, C. M. (2018). Alcohol motivations and behaviors during months young adults experience social role transitions: Microtransitions in early adulthood. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 32(8), 895–903. <https://doi.org/10.1037/adb0000411>
- Patrick, M. E., & Schulenberg, J. E. (2011). How trajectories of reasons for alcohol use relate to trajectories of binge drinking: National panel data spanning late adolescence to early adulthood. *Developmental Psychology*, 47(2), 311–317. <https://doi.org/10.1037/a0021939>
- Patrick, M. E., Terry-McElrath, Y. M., Evans-Polce, R. J., & Schulenberg, J. E. (2020). Negative alcohol-related consequences experienced by young adults in the past 12 months: Differences by college attendance, living situation, binge drinking, and sex. *Addictive Behaviors*, 105, 106320. <https://doi.org/10.1016/j.addbeh.2020.106320>
- Raley, R. K., Crissey, S., & Muller, C. (2007). Of sex and romance: Late adolescent relationships and young adult union formation. *Journal of Marriage and Family*, 69(5), 1210–1226. <https://doi.org/10.1111/j.1741-3737.2007.00442.x>
- Rauer, A. J., Pettit, G. S., Lansford, J. E., Bates, J. E., & Dodge, K. A. (2013). Romantic relationship patterns in young adulthood and their developmental antecedents. *Developmental Psychology*, 49(11), 2159–2171. <https://doi.org/10.1037/a0031845>
- Rhoades, B. L., & Maggs, J. L. (2006). Do academic and social goals predict planned alcohol use among college-bound high school graduates? *Journal of Youth and Adolescence*, 35(6), 913–923. [Database] <https://doi.org/10.1007/s10964-006-9040-y>
- Salvatore, J. E., Kendler, K. S., & Dick, D. M. (2014). Romantic relationship status and alcohol use and problems across the first year of college. *Journal of Studies on Alcohol and Drugs*, 75(4), 580–589. <https://doi.org/10.15288/jsad.2014.75.580>
- Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2020). *Monitoring the future national survey results on drug use, 1975–2018. Volume II, college students and adults ages 19–60*. Institute for Social Research, The University of Michigan. 492 pp.
- Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol, Supplement*, 14(s14), 54–70. <https://doi.org/10.15288/jsas.2002.s14.54>
- Schulenberg, J. E., Maslowsky, J., Maggs, J. L., & Zucker, R. A. (2018). Development matters: Taking the long view on substance use during adolescence and the transition to adulthood. In P. M. Monti, S. M. Colby, & T. Tevyaw (Eds.), *Brief interventions for adolescent alcohol and substance abuse* (pp. 13–49). Guilford Press.
- Staff, J., Schulenberg, J. E., Maslowsky, J., Bachman, J. G., O'Malley, P. M., Maggs, J. L., & Johnston, L. D. (2010). Substance use changes and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Development and Psychopathology*, 22(4), 917–932. <https://doi.org/10.1017/S0954579410000544>
- White, A. M., & Hingson, R. W. (2013). The burden of alcohol use: Excessive alcohol consumption and related consequences among college students. *Alcohol Research: Current Reviews*, 35(2), 201–218.
- White, H. R., Anderson, K. G., Ray, A. E., & Mun, E.-Y. (2016). Do drinking motives distinguish extreme drinking college students from their peers? *Addictive Behaviors*, 60, 213–218. <https://doi.org/10.1016/j.addbeh.2016.04.011>
- Williams, K. A., Thomas, N. S., Adkins, A. E., & Dick, D. M. (2018). Perception of peer drinking and access to alcohol mediate the effect of residence status on alcohol consumption. *American Journal of Undergraduate Research*, 14(4), 13–21. <https://doi.org/10.33697/ajur.2018.003>
- Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, 139(1), 53–80. <https://doi.org/10.1037/a0028601>
- Yurasek, A. M., Borsari, B., Magill, M., Mastroleo, N. R., Hustad, J. T., Tevyaw, T. O. L., Barnett, N. P., Kahler, C. W., & Monti, P. M. (2015). Descriptive norms and expectancies as mediators of a brief motivational intervention for mandated college students receiving stepped care for alcohol use. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 29(4), 1003–1011. <https://doi.org/10.1037/adb0000092>