

ALCOHOL-RELATED PERCEIVED PARENTAL APPROVAL: THE MODERATING ROLE
OF IDENTITY EXPLORATION

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Abstract

Alcohol-related perceived parental approval: The moderating role of identity exploration

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Perceived parental approval plays a key role in influencing college student alcohol use outcomes. However, much remains unknown about how it varies over time, whether there are within-person associations with alcohol use, and whether identity exploration moderates its influence. To address this gap, we estimated cross-sectional (Aim 1 $N = 2767$ college students, 62.8% female, $M_{age} = 19.94$) and longitudinal (Aim 2 $N = 1494$ students, 63.2% female, $M_{age} = 20.13$) associations between perceived parental approval and four alcohol use indices: number of weekly drinks, peak estimated blood alcohol concentration, alcohol-related negative consequences, and alcohol-related attitudes. As hypothesized, all cross-sectional associations were significant and, at the within-person level, students reported elevated weekly drinking when perceiving their parents as more approving than usual. Identity exploration enhanced associations between perceived parental approval and negative consequences both cross-sectionally ($b = -0.21, p < .01, 95\% \text{ CI } [-0.35, -0.07]$) and at the between-person level from the longitudinal

model, the latter of which was probed using finite differences: at an identity exploration of a standard deviation below the mean, a one-unit increase moving from a mean of parent-approval grand-mean centered to a standard deviation above the mean corresponds with a 0.96 increase (95% CI [0.76, 1.22]). in alcohol-related negative consequences. By contrast, at a one standard deviation above the mean of identity exploration, a one-unit increase moving from a mean of parent-approval grand-mean centered to a standard deviation above the mean corresponds with a 0.42 point increase (95% CI [0.3, 0.6]) in alcohol-related negative consequences. These findings highlight need for further study of within-person effects and emphasize that parental disapproval is less protective for students who have a strong commitment to exploring their own personal identity.

Introduction

Background

College student alcohol use is a significant public health priority in the United States: 55.0% of students report drinking alcohol in the past 30 days, and 21.9% report binge drinking in the past two weeks (i.e., drinking five or more drinks for males or four or more drinks for females; NIAAA, 2025; Patrick et al., 2024). Alcohol use during college is associated with multiple negative consequences, including alcohol-related unintentional injuries, assault, academic problems, development of alcohol use disorder, risky sexual behavior, and health problems (Hingson et al., 2005, 2017; Presley & Pimentel, 2006; Wechsler et al., 2002). Given the prevalence and risk for future problems associated with alcohol use during college, prevention efforts have focused on identifying factors that contribute to alcohol use.

College students' decisions regarding alcohol use are often shaped by social influences, including parental influences. Although it is often assumed that parents have a limited role once young adulthood begins, there is strong support that parents still serve as powerful influences shaping college student alcohol use, including through perceived parental approval of alcohol use (Abar & Turrisi, 2008; Labrie & Sessoms, 2012; Nelson et al., 2011; Turner et al., 2000; Turrisi & Ray, 2010). Within the larger sphere of parental influence, including through perceived parental approval of alcohol use has received much attention.(Abar & Turrisi, 2008; Labrie & Sessoms, 2012; Nelson et al., 2011; Turner et al., 2000; Turrisi & Ray, 2010). Perceptions, rather than actual self-report from the other person, may have a greater influence on alcohol involvement (Cottrell et al., 2003; Haynie et al., 1999; Padilla-Walker et al., 2008). These perceptions often encompass social norms, which include both injunctive norms that refer to perceptions of others' approval of a given behavior (i.e., what "ought to be done"), and

descriptive norms, which refer to perceptions of others' actual behaviors (Cialdini et al., 1990). Perceived parental approval, an injunctive norm, serves as a powerful influence on college student alcohol use (Angosta et al., 2023; LaBrie et al., 2010; Neighbors et al., 2008).

College is an important time to engage in identity exploration, as for many, college is the first time individuals leave their family home and can establish greater separation from their parents (Mullendore et al., 2018). Research has found that greater identity exploration is linked to greater alcohol use in college students (Gates et al., 2016; Ritchie et al., 2013). However, it is unknown whether it weakens the influence of perceived parental approval; that is, whether students who are both high in exploration and perceive greater parental approval of alcohol use are more likely to drink problematically. Students with a greater emphasis on identity exploration may perceive this period as a time for making independent decisions, placing less emphasis on their parents' approval. Alternatively, they may continue to value their parents' approval while simultaneously exploring their identities.

Furthermore, past studies have predominantly assessed parental approval at a single timepoint and operationalized it as a static, trait-level construct, but perceptions of parental approval of alcohol use may actually be dynamic. Indeed, students' perceptions of peer approval tend to fluctuate (Angosta et al., 2023; Graupensperger et al., 2021; Neighbors et al., 2022). Less is known about how perceived parental approval varies within person over time, and how this within person variation predicts student alcohol use and attitudes. The present study attempts to reduce this gap by examining cross-sectional and longitudinal within-person associations between perceived parental approval of alcohol use, student identity exploration, and various student alcohol use indices during college.

Perceived Parental Approval of Alcohol Use

Much literature has examined the role of parents during emerging adulthood and has emphasized that while parenting still occurs during emerging adulthood, relationships with parents may be reorganized (Tanner, 2006). Parents serve as salient influences on the development and trajectory of college student alcohol use (Rulison et al., 2016). Student perceptions of parental approval still serve as powerful injunctive norms shaping their own drinking, even if they may not be seeing their parents as often as they perhaps used to. Research has consistently found that perceived parental approval is associated with a variety of patterns of student alcohol use and consequences, both cross-sectionally and longitudinally (e.g., Abar et al., 2009; Boyle & Boekeloo, 2006; Chawla et al., 2009; Hummer et al., 2013; Messler et al., 2014, 2016; Neighbors et al., 2008; Ramer et al., 2021; Turrisi & Ray, 2010).

Despite the present consensus on the overall importance of parental approval, less is known about how parental approval processes unfold within the individual, particularly whether fluctuations in perceived parental approval correspond to variability in students' alcohol use indices over time. While some research has found that a general increase in perceived parental approval across age (Hummer et al., 2022), other research has identified distinct clusters of individuals with unique patterns of variability, suggesting that parental approval processes do not increase identically across students as they age as previously thought; rather, variability in trajectories of parental approval may explain individual differences in college student alcohol use. For instance, Calhoun and colleagues (2018) specifically examined perceived parental permissibility (PPP) and identified four clusters of variability from the last year of high school to the third year of college: 1) consistently low PPP each year, 2) low PPP until the child was almost 21 and could legally drink, 3) low PPP until matriculation to college, and 4) consistently high PPP, suggesting that heterogeneity in trajectories of perceived parental permissibility (i.e.,

perceived parent approval) reflects meaningful differences in students' risk for alcohol use and related consequences. Furthermore, an open question remains regarding the influence of developmentally salient processes, specifically identity exploration, as potential moderators.

Identity Exploration

Emerging adulthood, the developmental period characterizing individuals aged 18-29, is marked by five key features: identity exploration, instability, self-focus, feeling in-between, and having possibilities (Arnett, 2000, 2005; Nelson, 2021). Identity exploration can occur in multiple areas of life, such as “love, work, and worldviews,” (Arnett, 2000, p. 473). Arnett (2000) proposes that emerging adults view this developmental period as the most ideal for identity exploration, even more than adolescence. Identity development in emerging adulthood is shaped by social influences, including parents and peers (Mullendore et al., 2018; Torres et al., 2009). Research has found that various aspects of parenting influences identity exploration, and identity exploration in turn shapes parenting (LeBlanc & Lyons, 2022; Luyckx et al., 2007; Mullendore et al., 2018; Reifman et al., 2007). However, much is left to be known about how identity exploration may impact the salience of parental influence: does greater identity exploration weaken the salience of parental influence? Mullendore et al. (2018) theorized that first-year students may allow for greater parental influence, whereas fourth-year students may have a filter that manages and sometimes limits such influence, which is supported by Alexander & Lowe (2023) who found that fourth-year students receive situation-specific support from their parents regarding their occupational choices.

To our knowledge, it is unknown how identity exploration may impact the salience of perceived parental approval of alcohol use specifically. Arnett (2005) proposed that identity exploration includes wanting to experiment with altered states of consciousness induced by

substances. He additionally posited that emerging adults may increase their substance use as a coping mechanism to manage distress related to identity confusion and that various identity styles may be linked differentially to substance use patterns. Specifically, he hypothesized that individuals high in the exploration dimension may be more likely to use substances, including alcohol, which has received empirical support (Gates et al., 2016; Ritchie et al., 2013).

While parents play a significant role, establishing independence is also crucial. Consequently, parental approval may have less influence on alcohol use and attitudes for individuals who prioritize their independence. Therefore, identity exploration may serve as a potential moderator to explain variability in individual associations between perceived parental approval and student alcohol use, negative consequences, and attitudes. While literature broadly suggests a positive association between perceived parental approval and student alcohol use during emerging adulthood, it is important to emphasize heterogeneity, described as one of the distinguishing features of the emerging adulthood period (Arnett, 2000). Emerging adults engage in the various elements of the developmental period differently: some may be more interested in and able to explore their identities during this time than others (Arnett, 2000), which may influence the variability of alcohol use, negative consequences, and attitudes. Furthermore, it could be that individuals who view their identities as increasingly separate from their parents may not regard their parents' approval as highly when it comes to shaping their own alcohol use indices. To our knowledge, no study has empirically tested this possibility.

Objectives

To build on prior literature that has examined 1) the influence of perceived parental approval on college student alcohol use, and 2) the influence of identity exploration on college student alcohol use, the present study examines the potential moderating role of identity

exploration on alcohol-related parental influence processes. Because identity exploration is a defining feature of emerging adulthood that may alter how young adults interpret parental norms, we hypothesized that higher identity exploration will weaken the association between perceived parental approval and various alcohol use indices among students.

This study, utilizing data from a larger randomized controlled trial (RCT), explores two key objectives: (1) examining how identity exploration moderates the cross-sectional, between-person relationship between perceived parental approval and college student alcohol use indices using screening data that includes a normative sample of college students (i.e., both those that do and do not use alcohol), and (2) a deeper longitudinal investigation among students who use alcohol of within-person associations between perceived parental approval of alcohol use and student alcohol use indices over a one year period, with identity exploration as a trait-level moderator measured at screening. The cross-sectional analysis serves as a foundational examination, including all screening survey participants, even those who do not drink or do not ultimately enroll in the full RCT. The longitudinal design allows for assessing both the descriptive aim of estimating within-person variability in perceived parental approval of alcohol use, and the primary aim of determining whether fluctuations in perceived parental approval covary with fluctuations in student alcohol use indices over time, beyond cross-sectional findings, and examining the moderating role of identity exploration. Distinct alcohol use indices were included as outcomes using separate models: weekly number of drinks, peak estimated blood-alcohol concentration (i.e., peak-eBAC), alcohol-related negative consequences, and personal alcohol use attitudes. A priori hypotheses are as follows:

1. Based on prior research, there will be a main, between-person association between perceived parental approval and various college student alcohol use outcomes, such that

greater perceived parental approval will predict greater student alcohol use across all indices. Similarly, we anticipate that within-person fluctuations in perceived parental approval will predict greater student alcohol use across all indices.

2. Student identity exploration will moderate the association between perceived parental approval and various student alcohol use outcomes, such that greater identity exploration will weaken the association between parental approval and student alcohol use across all indices.

Methods

Participants and Procedures

This study involved a secondary data analysis of a larger randomized controlled trial (RCT) investigating the efficacy of brief interventions to reduce alcohol use among college students (Larimer et al., 2023). A total of 5,998 students were randomly chosen from the Registrar's lists of two universities on the West Coast and were invited via email to complete an online screening survey. The first university, located in the Pacific Northwest, is a large public institution with around 30,000 undergraduates, while the second, a mid-sized private university in Southern California, has approximately 6,000 undergraduates. Data collection took place in 2010-2011.

For the first (cross-sectional) aim, only data from the screening survey were analyzed. A total of 2,767 students (46.1%) partially or fully completed the screening survey, with 1,521 participants from Campus 1 and 1,246 from Campus 2. Participants were between 18 and 25 years old (average age = 19.94), and 62.8% identified as female. The racial/ethnic breakdown was as follows: 55.1% White non-Hispanic, 18.7% Asian non-Hispanic, 12.9% Hispanic, 7.1% multiracial, 2.4% Black/African American non-Hispanic, 2.2% identifying as another

race/ethnicity, 1.4% Native Hawaiian/Pacific Islander non-Hispanic, and 0.2% American Indian/Alaskan Native non-Hispanic. Participants were compensated with \$15 for completing the survey.

For the second (longitudinal) aim, data from the longitudinal subset of the RCT were analyzed. Of the students who completed the screening survey, 1,494 (54%) reported engaging in at least one instance of heavy episodic drinking in the past month (defined as consuming 4 or more drinks for women and 5 or more for men in a single occasion). These students met the inclusion criteria for the RCT. Participants included in the final analysis were between 18 and 24 years old (average age = 20.13, SD = 1.36), with 63.2% identifying as female. The racial/ethnic breakdown was: 62.6% non-Hispanic White, 12.5% Hispanic/Latinx, 12.1% non-Hispanic Asian, 7.5% non-Hispanic multiracial, 2.2% non-Hispanic Black/African American, 1.6% non-Hispanic Native Hawaiian/Pacific Islander, and 0.3% non-Hispanic American Indian/Alaskan Native, with 1.2% selecting "other." Class standing distribution was as follows: 14.6% first-year, 20.2% second-year, 25.6% third-year, and 39.6% fourth-year or higher. Follow-up survey completion rates were high, with 92.89% responding at 3 months, 91.64% at 6 months, and 88.92% at 12 months. Participants were compensated with \$15 for screening, \$25 for the baseline survey, and \$25, \$30, and \$35 for the 3-, 6-, and 12-month follow-up surveys, respectively. An additional \$25 bonus was provided to those who completed all assessments. The study was approved by the institutional review boards at both universities, and a Federal Certificate of Confidentiality was obtained to protect participant data. See Larimer et al. (2022) for full RCT procedures, including randomization, sample size determination, exclusions, interventions, and outcome measures.

Aims 1 and 2 Measures

Weekly Number of Drinks

Participants' weekly number of drinks was assessed using the Daily Drinking Questionnaire (DDQ; Collins et al., 1985) at screening and at 3-, 6-, and 12-month follow-ups. They reported the number of drinks they typically consumed on each day of a typical week within the past month. These daily values were summed to calculate the total number of drinks consumed in a typical week. The DDQ is widely used in research on college student drinking and has demonstrated strong convergent validity and high test-retest reliability (Borsari & Carey, 2001; Miller et al., 2002). To minimize the impact of potential outliers, extreme values were recoded to three standard deviations above the mean (Tabachnick & Fidell, 2019).

Alcohol-Related Negative Consequences

Alcohol-related negative consequences were assessed using a mean composite score of the 25-item version of the Rutgers Alcohol Problem Index (RAPI) at screening and at 3-, 6-, and 12-month follow-ups. Responses ranged from 0 (*never*) to 4 (*10 or more times*). The original RAPI (White & Labouvie, 1989) 23 items, but Geisner et al. (2018) included two additional items: "Drove shortly after having two or more drinks" and "Drove shortly after having four or more drinks." Cronbach's alpha was .92.

Peak Estimated Blood-Alcohol Concentration

Peak estimated blood-alcohol concentration (peak-eBAC) was calculated using two measures: (a) the highest number of drinks consumed on a single occasion over the past 30 days and (b) the duration (in hours) of drinking during that occasion (Dimeff et al., 1999). These values were input into the formula developed by Matthews & Miller, 1979: $[(\text{number of drinks}/2) \times (\text{gender constant}/\text{body weight})] - (.016 \times \text{hours})$. To minimize the impact of extreme

values, any scores exceeding 0.40 were recoded to 0.40 (Martens et al., 2010). Peak e-BAC was measured at screening and at 3-, 6-, and 12-month follow-ups.

Alcohol Use Attitudes

Alcohol use attitudes were assessed using an injunctive norms measure (Krieger et al., 2016) at screening and at 3-, 6-, and 12-month follow-ups. Participants were asked about (a) the highest number of drinks they deemed acceptable for each day of the week, (b) the typical and peak number of drinks they considered appropriate for a single occasion, and (c) the greatest drinking frequency they regarded as acceptable.

Perceived Parental Approval of Alcohol Use

A mean composite score of Baer's (1994) 4-item measure was used to assess students' perceptions of their parents' approval of four specific drinking behaviors: drinking every weekend, drinking daily, driving after drinking, and consuming enough alcohol to pass out. Responses were rated on a scale from 1 (*strong disapproval*) to 7 (*strong approval*). As highlighted by Neighbors et al. (2008), this measure offers a more comprehensive assessment of perceived approval than single-item scales (e.g., Perkins & Berkowitz, 1986) while remaining less burdensome than longer assessments. Perceived parental approval was assessed at screening and at 3-, 6-, and 12-month follow-ups. Cronbach's alpha was .62.

Identity Exploration

A mean composite score of Reifman et al.'s (2007) 7-item subscale of identity exploration within the Views of Life Survey was used to assess students' perceptions of the extent to which they view the present moment of time as a time of identity exploration. Participants were asked, "Is this period of your life a time of...", with responses rated on a scale from 1 (*strongly disagree*) to 4 (*strongly agree*). The 7 items are, "finding out who you are,

separating from parents, defining yourself, planning for the future, seeking a sense of meaning, deciding on your own beliefs and values, and learning to think for yourself.” Identity exploration was measured once at screening. Cronbach’s alpha was .82.

Analyses

Aim 1

We calculated zero-order correlations first, and then we fit separate multiple linear regression models for each of the alcohol use indices. Models included the main effects of perceived parental approval, the interaction between perceived parental approval and identity exploration, and covariates (i.e., age, sex, campus, race, ethnicity, family history of alcohol use, living with parents).

Aim 2

We computed intraclass correlation coefficients (ICC) to estimate the extent that the variance in perceived parental approval could be attributed to person-level effects. Multilevel modeling with maximum likelihood estimation was used to estimate the effects of perceived parental approval on participants’ own alcohol use and attitudes at both the between- and within-person levels. Separate multilevel models were fit for each of the indices of alcohol use and were fit using a two-step approach. In step one, we included covariates (i.e., age, sex, campus, race, ethnicity, family history of alcohol use, living with parents, treatment condition, time). Notably, treatment condition was included as a covariate as opposed to simply using the control group to increase statistical power for moderation. Then in step two, we entered the main effects for perceived parental approval and the interaction effects between identity exploration and perceived parental approval, both grand-mean and person-mean centered. Intercepts were allowed to vary across individuals. Multilevel modeling was conducted in R using the

“glmmTMB” package (Brooks et al., 2017). We used a negative binomial model for weekly number of drinks and alcohol-related negative consequences since they are overdispersed count data and Gaussian models for continuously scored eBAC and alcohol use attitudes.

Results

Aim 1

Descriptive statistics are displayed in Table 1. The four indices of alcohol use were moderately to strongly correlated with each other. Cross-sectional regression results, as shown in Table 2, showed that as expected, perceived parental approval was positively associated with weekly number of drinks, alcohol-related negative consequences, and alcohol use attitudes (all $ps < .05$). The significant interaction effect shows that identity exploration moderated the association between parental approval and alcohol-related negative consequences, such that greater identity exploration weakened the positive association between perceived parental approval and alcohol-related negative consequences ($b = -0.21, p < .01, 95\% \text{ CI } [-0.35, -0.07]$). See Figure 1 for simple slopes illustrating the moderating effect, showing that the positive association between perceived parental approval and alcohol-related negative consequences was strongest at low levels of identity exploration and attenuated at higher levels.

Aim 2

Descriptive statistics are displayed in Table 3. Multilevel zero-order correlations revealed several notable associations. The four indices of alcohol use behaviors were moderately to strongly correlated at the between person level. Despite these positive correlations, each indicator of alcohol use holds unique relevance. Perceived parental approval was positively correlated with all four alcohol use indices. Between-person correlations indicated that those

who typically perceived parents as more approving also typically reported more alcohol use behaviors.

Within-Person Variability

The ICC values displayed in Table 3 indicate that between 63.10% and 75.30% of the total variance in study outcomes is due to between-person differences. Given that ICCs are calculated by dividing the between-person variance by the total variance (i.e., the sum of between- and within-person variance), it follows that while a majority of the variability was between person, there was non-negligible within-person variability. Notably, the ICC value for perceived parental approval (i.e., 63.10%) can be interpreted as showing that 36.9% of the total variance is due to within-person variability across the four waves.

Multilevel Models

As anticipated, perceived parental approval was positively related to all of the participants' alcohol use outcomes (i.e., between-person effects), as shown on Table 4. After accounting for these between-person associations, the models revealed several significant within-person associations. Relative to person-mean levels, participants reported greater weekly number of drinks and more favorable attitudes at timepoints in which they perceived their parents as being relatively more approving of alcohol use. For instance, when interpreting the rate ratio values, this finding indicates that even after controlling for the between-person effect, every one-unit increase in perceived parental approval (conditional upon one's intercept) predicted a 4% exponential increase in weekly number of drinks and 5% exponential increase in alcohol use attitudes.

Moderation

Identity exploration significantly moderated the between-person effect between perceived parental approval and alcohol-related negative consequences. This moderation was probed using finite differences (McCabe et al., 2022; Mize, 2019): at an identity exploration of a standard deviation below the mean, a one-unit increase moving from a mean of parent-approval grand-mean centered to a standard deviation above the mean corresponds with a 0.96 increase (95% CI [0.76, 1.22]). in alcohol-related negative consequences. By contrast, at a one standard deviation above the mean of identity exploration, a one-unit increase moving from a mean of parent-approval grand-mean centered to a standard deviation above the mean corresponds with a 0.42 point increase (95% CI [0.3, 0.6]) in alcohol-related negative consequences. The double finite difference suggested the interaction explains about half a count of a difference in alcohol-related negative consequences, in excess of main effects alone (see Figure 2).

Discussion

Parental attitudes toward alcohol can significantly influence college students' drinking behaviors. This study advanced the literature on perceived parental approval in two key ways: first, by demonstrating its dynamic nature over time, and second, by highlighting how individual traits, specifically identity exploration, moderate its effects. We investigated (1) how perceived parental approval relates to college student alcohol use both cross-sectionally and longitudinally, at both the within-person and between-person levels, and (2) whether students' levels of identity exploration moderate these associations.

For Aim 1, using data from a diverse college sample that included both heavy and non-heavy drinkers, we identified cross-sectional associations between higher perceived parental approval and greater alcohol use, more favorable alcohol attitudes, and more alcohol-related negative consequences. Among students who consumed alcohol (Aim 2), descriptive analyses

showed that perceived parental approval varied meaningfully across the four study timepoints. Multilevel models indicated that at times when students perceived their parents to be more approving than usual, they also reported drinking more and endorsing more positive attitudes toward alcohol.

Identity exploration emerged as a significant moderator in the link between perceived parental approval and alcohol-related consequences in both aims. Specifically, students with lower levels of identity exploration were more strongly influenced by perceived parental approval in predicting negative alcohol outcomes, both cross-sectionally and at the between-person level in the longitudinal model. The between-person interaction effect indicates that on average, greater identity exploration as measured at screening weakens longitudinal associations between perceived parental approval and alcohol-related negative consequences. We did not find a significant interaction effect at the within-person level, implying that identity exploration may operate as a relatively stable individual difference shaping general susceptibility to parental influence, rather than a process that dynamically moderates moment-by-moment changes relative to one's own average in how parental approval affects consequences. Together, these findings suggest that students still less engaged in exploring their identity may remain more attuned to the perceived attitudes of their parents, whereas that students who are more engaged may be less impacted by their parents' approval or disapproval. This result aligns with developmental theories of emerging adulthood which emphasize growing autonomy from parents, especially during college (Aquilino, 2006). From a prevention standpoint, these findings imply that traditional parent-based interventions focused on parent disapproval of heavy drinking might be more effective for students who are engaged in lower identity exploration. For students more motivated towards independence and development of their personal identity, parents may need to

balance autonomy support by communicating alcohol-related expectations in ways that respect the student's individuality and simultaneously emphasize shared values. Prevention and intervention efforts could also emphasize forms of identity exploration that are simultaneously aligned with students' self-endorsed goals and incongruent with risky drinking and consequences.

To our knowledge, this study is the first to separate within-person fluctuations in perceived parental approval from between-person differences across time in relation to alcohol use. By incorporating identity exploration, a developmentally relevant process, this research adds nuance to our understanding of how parental influence interacts with emerging adult development in shaping alcohol-related behaviors.

Limitations

The reported findings and their implications should be interpreted in light of several important limitations. First, although this study employed a longitudinal design to examine within-person associations between perceived parental approval and student alcohol use, causal inferences cannot be drawn. These associations are likely complex, dynamic, and potentially bidirectional: students' alcohol use may influence their perceptions of parental approval just as much as parental approval may influence their drinking behavior. Second, the sample for Aim 2 was restricted to college students who reported engaging in at least one occasion of heavy episodic drinking within 30 days prior to baseline. While this selection criterion ensured the inclusion of high-risk drinkers for whom social and parental influences may be particularly salient, it limits the generalizability of the findings to students who abstain from or rarely engage in heavy drinking. Third, although college students are a relevant population for examining alcohol use during a critical developmental period, the findings may not generalize to emerging

adults who are not enrolled in college, as their drinking patterns and social contexts may differ. Nonetheless, the college context where identity development, autonomy, and peer influence are heightened provides a theoretically and empirically grounded setting for studying parental and social influences on alcohol use. Fourth, the operationalization of injunctive norms in the current study relied on student-reported perceptions of general approval from parents and peers. While this is a commonly used approach, it does not capture more nuanced or context-specific forms of approval (e.g., approval of specific drinking contexts or behaviors), which may be differentially related to alcohol outcomes. Lastly, although intervention condition assignment was statistically controlled for in Aim 2 analyses to increase power for detecting moderation effects, this may introduce interpretational complexities, particularly if intervention effects interacted with other study variables. Given the limited empirical guidance on required sample sizes for detecting cross-level interactions in multilevel models, we emphasize effect size estimates and the clinical relevance of observed associations in addition to statistical significance.

Conclusion

The present study offers descriptive evidence that college students' perceptions of parental approval are not static but vary over the course of the academic year. Additionally, we observed that within-person changes in alcohol use and related attitudes were associated with corresponding shifts in perceived parental approval, even after controlling for stable between-person differences. We also identified identity exploration as a significant moderator in the between-person link between perceived parental approval and alcohol-related consequences. These findings contribute to theoretical literature by highlighting how individual developmental factors, such as identity exploration, shape the influence of perceived parental approval on

college drinking behaviors. The results also suggest potential applications for norms-based interventions aimed at reducing alcohol-related harm in emerging adulthood.

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Table 1*Descriptive Statistics and Zero-Order Correlations Among Key Variables*

Variable	M	SD	Range	1	2	3	4	5	6	7	8
1. Identity Exploration	3.29	0.55	1–4	1	-0.08	0.04	0.03	0.07	0.01	-0.14	0.11
2. Perceived Parental Approval	1.71	0.73	1–7		1	0.16	0.11	0.11	0.2	0.2	-0.07
3. Weekly Number of Drinks	6.63	8.94	0–101	0.04		1	0.58	0.67	0.72	0.07	-0.22
4. Consequences	3.94	5.64	0–25	0.03	0.11		1	0.52	0.44	0.05	-0.09
5. Peak eBAC	0.1	0.1	0–0.4	0.07	0.11	0.67		1	0.53	0.04	-0.02
6. Alcohol Attitudes	2.31	2.11	0–25	0.01	0.2	0.72	0.44		1	0.12	-0.3
7. Age	19.94	1.4	18–25	-0.14	0.2	0.07	0.05	0.04		1	-0.06
8. Sex (1 = Female)	0.63	0.48	0–1	0.11	-0.07	-0.22	-0.09	-0.02	-0.3		1

Note. $N = 2767$. Correlations are Pearson's r .

Table 2

Regression Analyses Predicting Alcohol-Related Outcomes from Identity Exploration, Perceived Parental Approval, and Their Interaction (Cross-Sectional Models)

Effect	DDQ				RAPI				Peak eBAC				Attitudes			
	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>z</i>	<i>p</i>
Intercept	-	0.627	-1.352	0.176	-	0.684	-	0.016	-	1.372	-	0.006	-	0.339	-2.256	0.024
	0.848				1.649		2.410		3.766		2.745		0.764			
Age	0.084	0.022	3.911	<	0.055	0.025	2.251	0.024	0.045	0.048	0.940	0.347	0.061	0.012	5.245	<
				0.001												0.001
Sex (1 = Female)	-	0.057	-	<	-	0.065	-	0.000	-	0.131	-	0.814	-	0.031	-	<
	0.570		10.038	0.001	0.244		3.730		0.031		0.235		0.502		16.035	0.001
Campus	0.076	0.059	1.295	0.195	0.074	0.069	1.067	0.286	0.096	0.135	0.712	0.477	-	0.034	-1.941	0.052
													0.065			
Race (2 = Asian)	-	0.078	-6.888	<	-	0.088	-	0.183	-	0.190	-	0.249	-	0.046	-6.420	<
	0.541			0.001	0.118		1.332		0.219		1.152		0.294			0.001
Race (7 = Other)	-	0.075	-1.345	0.179	-	0.086	-	0.196	-	0.176	-	0.643	-	0.043	-2.090	0.037
	0.101				0.111		1.293		0.082		0.464		0.090			
Ethnicity (1 = Hispanic/Latino)	-	0.100	-0.581	0.561	0.058	0.114	0.515	0.607	-	0.232	-	0.914	0.009	0.058	0.151	0.880
	0.058								0.025		0.108					
Family Alcohol Use Problem (1 = Yes)	0.047	0.057	0.815	0.415	0.307	0.065	4.707	<	0.101	0.130	0.779	0.436	0.017	0.032	0.535	0.593
								0.001								
Live with Parents (1 = Yes)	-	0.090	-7.848	<	-	0.101	-	<	-	0.243	-	0.042	-	0.051	-3.040	0.002
	0.707			0.001	0.419		4.165	0.001	0.494		2.030		0.155			
Identity Exploration	0.343	0.134	2.552	0.011	0.519	0.142	3.652	<	0.127	0.282	0.451	0.652	0.142	0.070	2.015	0.044
								0.001								
Perceived Parental Approval	0.473	0.223	2.125	0.034	0.830	0.230	3.601	<	0.125	0.441	0.283	0.777	0.235	0.109	2.151	0.031
								0.001								
Identity Exploration*Perceived Parental Approval	-	0.069	-1.219	0.223	-	0.071	-	0.003	-	0.136	-	0.965	-	0.034	-0.591	0.554
	0.084				0.210		2.939		0.006		0.043		0.020			

Note. *N* = 2767. *B* = unstandardized regression coefficient; *SE* = standard error.

Table 3*Zero-Order Correlations, Descriptive Statistics, Intraclass Correlation Coefficients*

Variable	1	2	3	4	5	6	7	8
1. Identity Exploration	1***		0.05	0.01	0.06	-0.02	-	0.07
							0.15***	
2. Perceived Parental Approval (GMC)	-0.07*	1***		0.17***	0.01	0.2***	0.2***	-0.07
3. Weekly Number of Drinks	0.05	0.15***	1***		0.59***	0.73***	-0.07	-0.3***
4. Consequences	0.01	0.17***	0.51***	1***		0.3***	-0.03	-0.08
5. Peak eBAC	0.06	0.01	0.59***	0.36***	1***		-	0.05
							0.23***	
6. Alcohol Attitudes	-0.02	0.2***	0.73***	0.3***	0.45***	1***		-
								0.38***
7. Age	-	0.2***	-0.07*	-0.03	-0.23***	0.02	1***	
	0.15***							
8. Sex (1 = Female)	0.07*	-0.07*	-0.3***	-0.08**	0.05	-	-0.05	1***
						0.38***		
M	3.315	-0.001	10.076	6.311	0.144	21.023	20.129	0.632
SD	0.529	0.616	8.312	7.356	0.074	13.515	1.364	0.482
Range	1–4	-.8–2.2	0–76.25	0–58	0.002–	2.25–	18–24	0–1
					0.396	125		
Between-person variability (ICC)	—	63.10%	72.30%	75.30%	—	73.50%	—	—

Note. $N = 1494$. Correlations are Pearson's r . ICCs could not be computed for identity exploration and peak eBAC due to convergence issues.

Table 4*Multilevel Models Examining Associations Between Perceived Parental Approval, Identity Exploration, and Indices of Alcohol Use*

	Weekly drinks				Consequences				Attitudes				Peak eBAC		
	Rate Ratio	CI (95% LL)	CI (95% UL)	p	Rate Ratio	CI (95% LL)	CI (95% UL)	p	Rate Ratio	CI (95% LL)	CI (95% UL)	p	β	SE	p
Intercept	26.31	12.08	57.31	< .001	16.75	5.62	49.94	< .001	45.24	26.16	78.22	< .001	0.397	0.039	< .001
Age	0.95	0.92	0.98	0.004	0.92	0.87	0.96	< .001	0.97	0.95	1	.038	-0.012	0.002	< .001
Sex (1 = Female)	0.68	0.62	0.74	< .001	0.91	0.8	1.03	.127	0.66	0.62	0.7	< .001	0.007	0.004	.096
Campus	1.09	0.99	1.2	.065	1.06	0.93	1.21	.355	0.88	0.83	0.94	< .001	0.010	0.005	.028
Race (2 = Asian)	0.84	0.73	0.97	.017	1.09	0.9	1.33	.382	0.84	0.76	0.93	.001	0.003	0.007	.627
Race (7 = Other)	0.95	0.84	1.07	.394	0.89	0.76	1.06	.186	0.89	0.82	0.97	.007	-0.008	0.006	.169
Ethnicity (1 = Hispanic/Latino)	0.97	0.83	1.14	.739	1.09	0.88	1.36	.418	0.98	0.87	1.09	.667	0.001	0.008	.91
Family Alcohol Use Problem (1 = Yes)	0.95	0.87	1.04	.255	1.32	1.16	1.49	< .001	0.96	0.9	1.02	.209	0.001	0.004	.861
Live with Parents (1 = Yes)	0.78	0.66	0.93	.005	1.03	0.81	1.3	.828	0.87	0.77	0.98	.02	-0.014	0.008	.097
Treatment (1 = Yes)	0.84	0.76	0.94	.002	0.87	0.75	1.01	.064	0.9	0.83	0.97	.006	-0.015	0.005	.004
Time	0.99	0.99	0.99	< .001	0.98	0.98	0.99	< .001	1	1	1	.396	-0.002	0.001	< .001

Identity Exploration	1.09	1	1.18	.057	1.14	1.01	1.28	.033	1.02	0.97	1.09	.426	0.00 0	0.00 4	.932
Perceived Parental Approval (BW)	1.24	1.15	1.34	< .00 1	1.29	1.16	1.43	< .00 1	1.19	1.13	1.25	< .00 1	0.00 8	0.00 4	.041
Perceived Parental Approval (WI)	1.04	1	1.08	.03	1.04	0.99	1.1	.114	1.05	1.01	1.09	.012	- 0.00 2	0.00 3	.405
Identity Exploration*Perceived Parental Approval (BW)	0.97	0.86	1.1	.652	0.82	0.7	0.97	.019	1.03	0.95	1.12	.487	0.00 1	0.00 6	.877
Identity Exploration*Perceived Parental Approval (WI)	0.04	0.86	1.03	.217	0.94	0.87	1.02	.127	0.98	0.92	1.05	.557	- 0.00 4	0.00 5	.377

Note. *BW* = between-person level (i.e., aggregated person means). *WI* = within-person level (i.e., person-mean centered). For weekly number of drinks, alcohol-related negative consequences, and alcohol use attitudes, negative binomial models were fit due to the count nature of the outcomes and overdispersion. For peak eBAC, a linear mixed-effects model (lmer) was fit due to its continuous distribution.

Figure 1

Identity Exploration Moderating Cross-Sectional Associations Between Parent Approval and Alcohol-Related Negative Consequences (Aim 1)

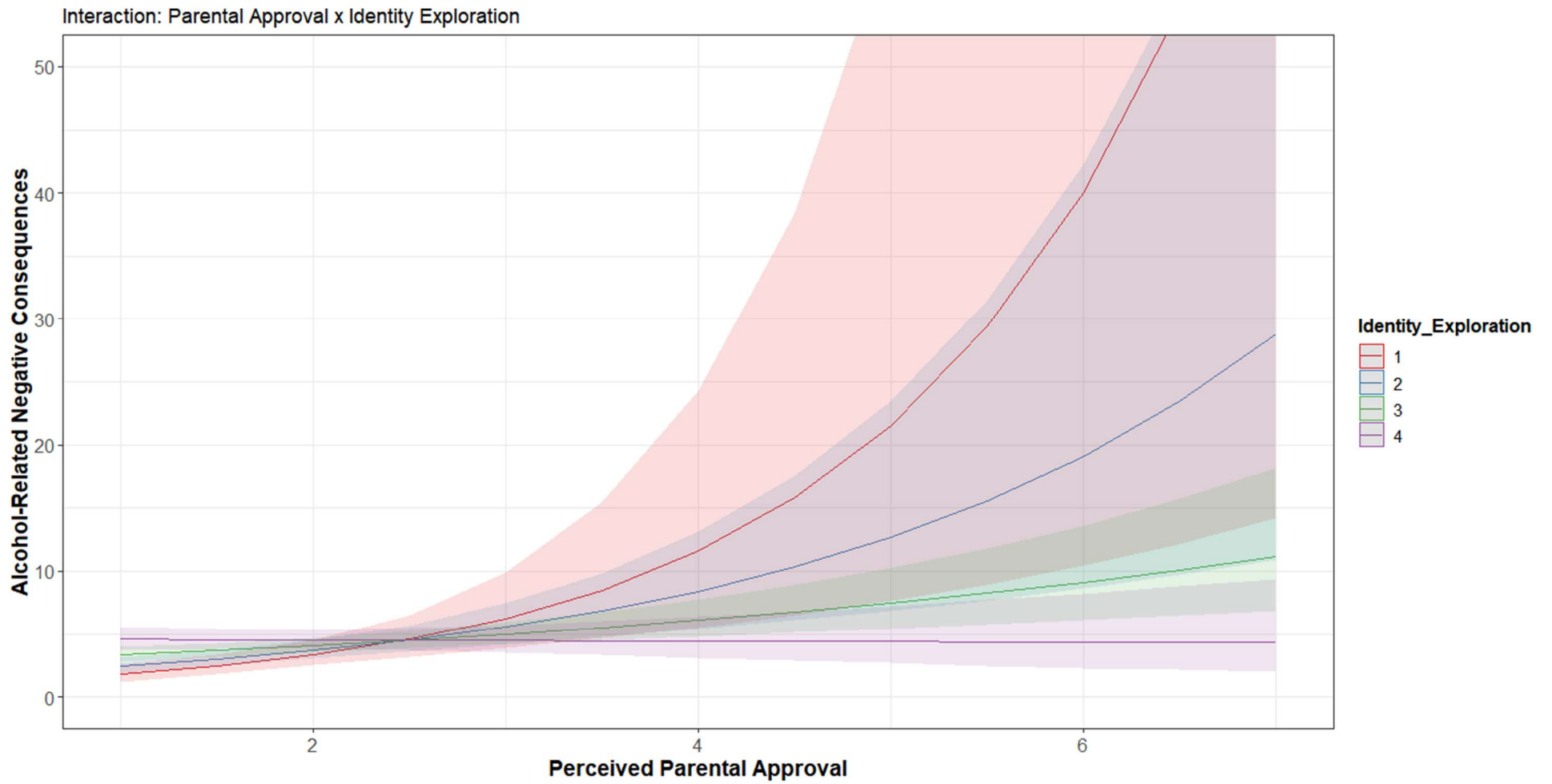
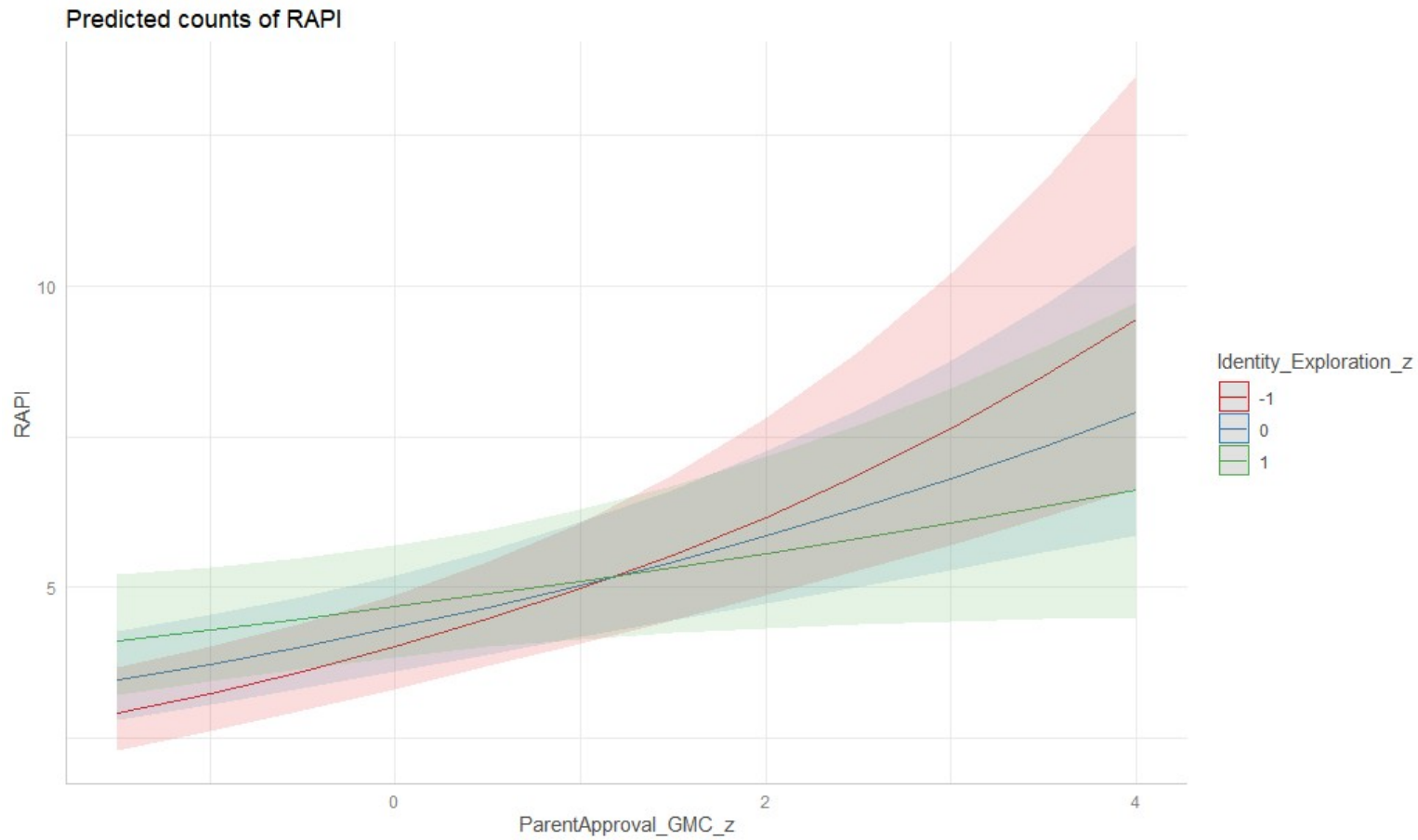


Figure 2

Identity Exploration Moderating Multilevel Associations Between Between-Person Parent Approval and Alcohol-Related Negative Consequences

(Aim 2)



Note. Identity exploration is z-scored, with -1 indicating 1 standard deviation below the mean and 1 indicating 1 standard deviation above the mean.

Perceived parental approval was grand-mean centered and z-scored.