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Intrapersonal and Interpersonal Pathways Linking 21st Birthday Celebration Beliefs, Intentions, and Drinking Behavior

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Abstract

In the United States, turning 21 often involves heavy drinking and high rates of alcohol-related consequences. Friends are an important source of social influence on young adult drinking, including during 21st birthdays. However, research is needed to investigate the specific pathways through which this interpersonal influence occurs. Data were drawn from a larger intervention study focused on reducing 21st birthday drinking. Using data from 166 celebrant and friend dyads ($N=332$ individuals), we prospectively examined relations among each person's beliefs about 21st birthday celebrations, drinking intentions for the celebrant, and celebrants' estimated blood alcohol concentration (eBAC) on their 21st birthdays. Path analyses evaluated the impact of celebrant and friend beliefs on their own report of celebrant intentions, each other's report of celebrant intentions, and celebrant eBAC, as well as the mediating role of each individual's report of celebrant intentions. Results revealed significant indirect effects of each individual's beliefs on celebrant eBAC via their own report of celebrant 21st birthday drinking intentions. Friend beliefs also predicted celebrant eBAC via celebrant drinking intentions, beyond the effect of celebrant beliefs. Importantly, celebrant eBAC was as strongly predicted by friend 21st birthday celebration beliefs as they were by their own beliefs. Results highlight multiple pathways through which friends influence 21st birthday drinking and reveal that friend influence is not constrained to the celebration, but begins in advance of the event by shaping celebrants' drinking intentions. Findings highlight key directions for future work leveraging friends as intervention agents to reduce drinking related to this high-risk event.

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1. Introduction

In the United States, the 21st birthday represents a transition to the legal age to consume alcohol, and it is often accompanied by extremely high-risk drinking celebrations. The vast majority of undergraduate college students (80-90%) drink alcohol while celebrating their 21st birthday,^{1,2} with more than 70% meeting criteria for heavy episodic drinking.³ In fact, the average celebrant consumes approximately eight drinks during the celebration,⁴ which often represents more than double their typical consumption.⁵ In one sample, 21st birthday celebrants reported an average estimated blood alcohol concentration (eBAC) of .17, with 23% reaching or surpassing the .26 threshold for dangerous alcohol intoxication—a point where severe negative and sometimes fatal consequences can arise.³ Indeed, 21st birthday drinking is linked with a high rate of experiencing negative consequences, ranging from blackouts and nausea to injuries, accidents, property damage, physical or sexual assault, and experiences with police.⁶ Because of the particularly high risk associated with drinking during this event, investigating factors that contribute to celebrant drinking is of critical importance. In this manuscript, we examine the intersection of 21st birthday beliefs, drinking intentions, and interpersonal influence on celebrant drinking. Specifically, we examine how beliefs about 21st birthday drinking held by both the celebrant and a friend present at the celebration are related to intentions for the celebrant's 21st birthday drinking and subsequent eBAC.

1.1. Beliefs, Intentions, and 21st Birthday Drinking

Social interactions and stories surrounding 21st birthday celebrations likely contribute to belief formation related to this commonly viewed “rite of passage,” as well as individuals' intentions for alcohol consumption during the event. People can hold many types of beliefs, but all relate to salient information about a target.⁷ For example, with respect to 21st birthday celebrations, these may include beliefs about what is supposed to happen, what is normal to happen, whether it is an important milestone in one's life, or to what extent the birthday merits excessive celebration or alcohol use. It is well-established that beliefs and intentions can exert powerful influence on behavior.⁸ Indeed, beliefs play a key role in multiple health behavior theories/models, and intentions are a key mediator in the relation between various cognitive factors and ultimate behavior.^{9,10} However, at present, the authors are aware of no prior research specifically examining beliefs about 21st birthdays and related celebrations, nor the potential implications of those beliefs for behavior.

Some work has examined a related concept: alcohol-related expectancies. Alcohol-related expectancies are one type of belief that focus on how alcohol affects cognitions, emotions, and behavior.^{11,12} Generally and reliably, alcohol expectancies are positively related to drinking.¹³ Specific to 21st birthday experiences, one study investigated celebrants' alcohol-related expectancies for 21st birthdays. Geisner and colleagues¹⁴ found celebrants report

higher positive (e.g., social facilitation, tension reduction) and negative (e.g., cognitive impairment, risk/aggression) alcohol-related expectancies related to 21st birthday drinking compared to typical drinking. Additionally, the birthday-specific expectancies were related to the number of negative consequences experienced during the celebration. Specifically, greater expectancies related to social and sexual facilitation, “liquid courage,” and risk/aggression were all positively linked with experiencing more alcohol-related consequences. These findings suggest there is utility in examining 21st birthday beliefs and their relation to ultimate drinking behavior.

Literature suggests a robust association between drinking intentions and consumption among college students,^{15,16} and intentions for 21st birthday drinking are no exception.^{17,18} Even with the strong norms and expectancies contributing to intentions for higher drinking levels during 21st birthday celebrations, prior research has found almost 70% of students drink more than they intend while celebrating their 21st birthday.¹⁹ Indeed, approximately 30% of celebrants drink five or more drinks than they intended, partly due to receiving free drinks, peer encouragement, and engagement in 21st birthday traditions (e.g., drinking at midnight, drinking 21 shots).¹⁹ Taken together, these findings underscore the significance of understanding factors related to alcohol use during these celebrations. Furthermore, they point to the need to look beyond the individual celebrant to investigate social influences that contribute to drinking more than they intended. In particular, examining friend influence may be a valuable direction to turn.

1.2. Friend Influence on 21st Birthday Celebrations

The beliefs and intentions of those with whom individuals celebrate their 21st birthdays are also likely to exert unique influence on their drinking behavior. Indeed, drinking during 21st birthdays is often a social experience, as individuals frequently report celebrating in public places (e.g., bars, restaurants) and at the homes of friends and family members.³ Friends, in particular, exert an especially powerful social influence on drinking among emerging adults across a variety of contexts.^{20,21}

Interdependence theory provides a lens through which this influence can be understood.^{22,23} Two people are considered interdependent when one’s emotion, cognition, or behavior affects the other person’s cognition, emotion, and/or behavior. Applied to 21st birthday drinking, friends have their own set of 21st birthday-related beliefs, as well as their own intentions for the celebrant. These beliefs likely develop as a function of their own experiences, normative perceptions, and typical drinking levels. They also likely exert unique influence on the celebrant’s drinking during the event. Indeed, previous research has shown friends’ perceived norms about the 21st birthday uniquely predicts celebrants’ drinking during the celebration, above and beyond friends’ perceptions of general 21st birthday norms and norms specific to 21st birthday drinking among students at the same university.²⁴ Additionally, one manuscript utilizing the same parent dataset as the present research evaluated how friend intentions to exacerbate celebrant drinking (termed “pro-intoxication intentions”), as well as their intentions to protect and support the celebrant (termed “pro-safety/support intentions”), during the 21st birthday celebration, predicted celebrant experience of alcohol-related consequences.²⁵ Results showed friend pro-safety/

support intentions predicted celebrant experience of fewer alcohol-related consequences, and these supportive intentions also buffered celebrants from the harmful influence of friend pro-intoxication intentions.

Emerging evidence suggests friend influence may begin before the party even starts by shaping celebrant intentions for birthday-related drinking. Recent studies have demonstrated the impact of close others (e.g., romantic partners, parents, adolescent children) on individuals' intentions for a range of health-related behaviors, including physical activity^{26,27} and condom use,²⁸ as well as fruit/vegetable consumption, junk food/sugary drink consumption, and sedentary behavior.²⁷ Thus, there is ample theoretical and empirical evidence to support investigating the influence of specific friends' beliefs and perceived celebrant intentions on celebrant intentions and ultimate drinking.

1.3. Current Research

The present research sought to contribute to the literature on 21st birthday drinking by simultaneously investigating intrapersonal and interpersonal pathways through which beliefs about 21st birthday celebrations predict celebrant drinking during the event. Direct relations between celebrant beliefs and celebrant drinking during the celebration were examined, as well as the potential role of celebrant-reported 21st birthday drinking intentions in mediating this relation (intrapersonal effects). Further, as a way to model interdependence between celebrants and friends, we simultaneously examined the potential influence of a specific friend's beliefs and perceived celebrant intentions—who was present at the birthday celebration—on celebrant drinking (interpersonal effects). We hypothesized that each individual's 21st birthday celebration beliefs would predict their own report of celebrant 21st birthday drinking intentions, and these intentions, in turn, would predict the celebrant's actual birthday drinking. Furthermore, based on the growing literature demonstrating close other effects on behavioral intentions, we hypothesized that friend 21st birthday celebration beliefs would influence celebrant drinking intentions, above and beyond celebrants' own beliefs. Thus, the effect of friend beliefs on celebrant intentions would also be mediated by celebrant drinking intentions.

2. Materials and Methods

2.1. Participants and Procedure

Data were drawn from two conditions of a larger randomized controlled trial for 21st birthday drinking reduction, which recruited participants from university registrar lists of undergraduate college students turning 21 at a large public northwestern university.²⁹ This intervention enrolled college students who were (a) about to turn 21, (b) intended to drink heavily during their birthday (4 drinks [women], 5 drinks [men]), and (c) identified at least one friend with whom they planned to celebrate. Individuals were not eligible if they had previously participated as the friend of another celebrant. The present analyses utilized data from individuals in the two friend-involved conditions. Both conditions involved feedback modeled on the BASICS intervention³⁰, but was specific to 21st birthdays. They only varied from each other in delivery modality (in-person vs. web). See Neighbors et al.²⁹

for additional details of the full intervention study and conditions not included in the present analyses.

Celebrants completed an initial screening survey (\$10), a baseline survey three weeks prior to their 21st birthday (\$30), a brief post-intervention assessment (\$10), and a follow-up survey one week after the birthday (\$30). Of the 213 eligible participants in the friend-involved conditions, 201 completed the baseline survey. Friends identified by the celebrant during the baseline survey (up to three) were also invited to participate in the study. Of the 383 friends invited to participate, 283 consented and 241 logged on to the online assessment (81.5%). This was completed two days before the birthday celebration (\$20).

Celebrant-friend dyads were included in the analytic sample if data were available from at least one friend who (a) consented to participate, (b) completed all surveys, and (c) was ultimately present during the celebration. If more than one friend met these criteria ($n=19$), the friend with the closer relationship type was selected (e.g., “romantic partner” closer than “friend”, “friend” closer than “acquaintance”). If multiple friends had the same type of relationship, the person listed first by the participant in the survey was chosen. The final sample of friends were predominantly classified as best friends (38.6%), friends (30.7%), or romantic partners (22.9%). A small proportion of celebrants also identified relatives (6.6%), coworkers/colleagues (0.6%), or acquaintances (0.6%).

The final analytic sample included 166 celebrants (45.8% male) and 166 friends (48.2% male). The majority of the celebrants were Caucasian (67.5%), 15.7% were Asian, 8.4% were Multi-ethnic, 4.8% were “Other”, 1.8% were Black/African American, and 1.8% were Native Hawaiian/Other Pacific Islander. The majority of friends were Caucasian (73.5%), 13.9% were Asian, 4.8% were Multi-ethnic, 4.2% were “Other”, 1.2% were Native American/American Indian, and 1.2% were Native Hawaiian/Other Pacific Islander, and 0.6% were African American. With respect to ethnicity, 5.1% percent of celebrants and 3.2% of friends identified as Hispanic/Latino. All celebrants turned 21 during the study. On average, the friends were 20.8 years old ($SD=1.70$).

2.2. Measures

2.2.1. 21st birthday celebration beliefs.—Prior to the 21st birthday celebration, celebrants and friends each reported their beliefs regarding the extent to which 21st birthdays are a time of excessive celebration using five items created for this study. Specifically, these items included: “Turning 21 is a big marker in one’s life,” “21st birthdays are an important milestone worthy of sometimes excessive celebration,” “21st birthday celebrations are a time to go all out,” “Turning 21 is a reason to celebrate a change in status,” and “Turning 21 is really no big deal” (reverse scored). Items were rated on 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Responses were averaged across the five items to create a composite measure of 21st birthday celebration beliefs ($\alpha_{\text{celebrant}}=.80$; $\alpha_{\text{friend}}=.87$).

2.2.2. 21st birthday drinking intentions - celebrant.—Prior to the 21st birthday celebration, celebrants reported the number of drinks they intended to consume on day of their 21st birthday. Celebrant responses were capped at 30 drinks.

2.2.3. 21st birthday drinking intentions – friend perceived celebrant intentions.

—Prior to the 21st birthday celebration, friends reported the number of drinks they thought the celebrant intended to drink on the day of their 21st birthday. Friend responses were capped at 30 drinks.

2.2.4. Celebrant alcohol consumption during celebration.—Estimated blood alcohol concentration (eBAC) during the 21st birthday celebration was assessed using an adapted version of the Daily Drinking Questionnaire (DDQ)³¹. Participants were asked, “How many drinks did you consume on the day of your 21st birthday?” with options ranging from 0 drinks to 25 or more drinks. The 21st birthday eBAC was calculated using a variation of the Widmark formula provided by the Administration³². This incorporates the participants’ birth sex, weight, the number of drinks consumed on the 21st birthday and the number of hours spent consuming alcohol on the 21st birthday. Estimates were capped at .50.

2.3. Data Analytic Plan

Hypotheses were tested using path modeling in MPlus version 8.0.³³ The model (see Figure 1) examined celebrant birthday eBAC (Y) as a function of covariates (celebrant sex: male = 1, female = -1; study condition), celebrant drinking beliefs (X_1), friend drinking beliefs (X_2), celebrant drinking intentions (M_1), and friend perceptions of celebrant drinking intentions (M_2). Celebrant intentions and friend perceived celebrant intentions, in turn, were each modeled as a function of covariates (celebrant sex), celebrant beliefs, and friend beliefs. Covariance paths between celebrant and friend variables on analogous constructs (i.e., beliefs, intentions) were also included in the model. The indirect effects of celebrant and friend 21st birthday drinking beliefs on celebrant eBAC each via both celebrant and friend 21st birthday drinking intentions were examined using the product of coefficients approach ($a*b$; 4 paths: a_1b_1 , a_2b_2 , a_3b_1 , a_4b_2). Standard errors and 95% confidence intervals for all parameter estimates and indirect paths were estimated using bias-corrected bootstrapping with 1000 samples,^{34,35} and statistical significance is determined by the absence of zero from the 95% confidence interval. We also explored celebrant typical drinking quantity per occasion as an additional covariate in the model. This term was not significant and resulted in poorer model fit. Therefore, it was removed from the model and is not discussed further.

3. Results

3.1. Preliminary Analyses

Descriptive statistics and correlations among focal variables are presented in Table 1. There were significant bivariate relations among most variables. However, celebrant 21st birthday celebration beliefs were not related to friend 21st birthday celebration beliefs or friend perceptions of celebrant 21st birthday drinking intentions. On average, celebrants and friends believed 21st birthdays are a time of excessive celebration ($M_{\text{celebrant}}=5.57$; $M_{\text{friend}}=5.08$). However, celebrant beliefs were stronger than friend beliefs ($t(165)=4.61$, $p < .001$), and 21st birthday beliefs between celebrants and friends within dyads were not correlated. On average, celebrants intended to consume 9.93 drinks during their 21st birthday celebrations,

and friends' perceptions of these intentions ($M=9.73$) were accurate ($t(164)=0.44, p=.66$). In terms of actual 21st birthday consumption, celebrants reported consuming an average of 9.58 drinks ($SD=6.14$). This is more than double the typical number of drinks per occasion reported by both celebrants ($M=4.23, SD=2.34$) and friends ($M=3.71, SD=2.39$), with respect to their drinking over the three months prior.^A Converted to eBAC, this level of alcohol consumption indicates celebrants reached an average of more than double ($M=0.19$) the legal BAC limit in the United States (0.08) during their birthday celebrations.

With respect to covariates, all examined effects of celebrant sex were significant in the model. Male celebrants intended to drink an estimated 3.46 more drinks during the 21st birthday celebration than did female celebrants (coeff=1.729, CI [0.976, 2.420]), and friends of male celebrants perceived them to have higher intentions for drinking (3.33 more drinks) than did friends of female celebrants (coeff=1.667, CI [0.911, 2.519]).^B Further, male celebrants reached eBAC levels .04 lower than did female celebrants (coeff=-0.021, CI [-0.042, -0.001]). Study condition was unrelated to celebrant eBAC (coeff=-0.017, CI [-0.055, 0.017]).

3.2. Focal Analyses

Estimates for direct relations among focal variables are presented in Table 2. Celebrant 21st birthday beliefs significantly predicted their own birthday drinking intentions (a_1), but did not significantly predict friend perceptions of celebrant birthday drinking intentions (a_2). Friend 21st birthday beliefs predicted celebrant drinking intentions (a_3) and friend perceptions of celebrant drinking intentions (a_4). In turn, both celebrant drinking intentions (b_1) and friend perceived celebrant intentions (b_2) predicted celebrant birthday eBAC. Accounting for this effect via celebrant and friend perceived celebrant intentions, neither celebrant beliefs (c_1) nor friend beliefs (c_2) directly predicted celebrant eBAC.

Total and indirect effects are presented in Table 3. Significant indirect effects are depicted in Figure 2. There were significant total effects of celebrant (c_1) and friend (c_2) 21st birthday beliefs on celebrant eBAC. Greater celebrant and friend beliefs that 21st birthdays are a time for excessive celebration predicted higher celebrant eBAC. Additionally, there were significant total indirect effects of both belief variables on celebrant eBAC. For celebrant beliefs, only the specific indirect effect via their own drinking intentions (a_1b_1) was significant. Celebrants with greater 21st birthday celebration beliefs intended to drink more, which in turn predicted reaching a higher eBAC during that celebration. The specific indirect effect via friend perceived celebrant intentions (a_2b_2) was not significant. However, for friend beliefs, both specific indirect effects via celebrant intentions (a_3b_1) and friend perceived celebrant intentions (a_4b_2) were significant. Greater friend 21st birthday celebration beliefs predicted celebrant drinking intentions and friend perceived celebrant

^ACelebrant and friend typical drinking means correspond to the following item, assessed as part of the Daily Drinking Questionnaire (DDQ)^{31,48}: "During the last three months, when you have consumed alcohol, how many drinks on average did you typically consume on a given occasion?"

^BNote that there is a two-unit difference between men and women for the celebrant sex variable in the present analyses (male = 1, female = -1). However, regression estimates represent the change in the criterion variable for each one-unit change in the predictor. Therefore, estimates for effects of the celebrant sex variable in the model need to be multiplied by 2 to get the difference between males and females in the corresponding units for each criterion examined (i.e., celebrant birthday drinking intentions, friend perceptions of celebrant drinking intentions, celebrant eBAC).

drinking intentions, which in turn predicted the celebrant reaching a higher eBAC during their birthday celebration.

Wald tests revealed there were no differences in the magnitude of the direct effects of celebrant and friend beliefs on celebrant drinking intentions. Additionally, there were no differences in the magnitude of the specific indirect, total indirect, or total effects on celebrant eBAC for celebrant beliefs compared to friend beliefs. In other words, celebrant drinking intentions and eBAC were each as strongly predicted by friend 21st birthday celebration beliefs as they were by their own beliefs.

4. Discussion

The present research sought to identify specific pathways through which celebrant and friend beliefs influence celebrant drinking during 21st birthday celebrations. Specifically, this study examined the extent to which celebrant and friend 21st birthday celebration beliefs—reported before the birthday—influenced celebrant drinking during the event. These effects were examined directly as well as indirectly via both their own and each other's report of celebrant drinking intentions. Overall, findings contribute to the literature on 21st birthday drinking by revealing multiple intrapersonal and interpersonal pathways through which 21st birthday celebration beliefs influence celebrant drinking.

In line with hypotheses, celebrant 21st birthday beliefs predicted the extent of their own drinking (eBAC) during the celebration. This effect was mediated by their own intentions for their drinking during the celebration. These findings are in line with the robust literature on the influence of beliefs on behavior^{8,36} as well as that demonstrating intentions to be the key proximal indicator of behavior.³⁷

Results also revealed two interpersonal influence pathways. Above and beyond celebrant intrapersonal effects, there were also significant indirect effects of friend 21st birthday beliefs on celebrant drinking via their perception of celebrant drinking intentions and the celebrant's self-reported intentions. In fact, celebrant drinking during the birthday celebration was as strongly influenced by friend 21st birthday beliefs as it was by celebrant beliefs. Friend perceptions of celebrant drinking intentions likely influence celebrant drinking by shaping friend behavior during the celebration. These perceived intentions may influence the degree to which friends attempt to exacerbate (e.g., buying drinks, encouraging continuing to drink past intoxication) and mitigate (e.g., giving glasses of water, ensuring a safe ride home) the celebrant's drinking and related consequences.

Findings also suggest that friend influence may begin in advance of the event. Friend beliefs predicted celebrant intentions, beyond the effect of celebrant beliefs. Indeed, friend beliefs were as strong of a predictor of celebrant intentions as were celebrants' own beliefs. Thus, friend beliefs may influence conversations and planning related to the upcoming celebration (e.g., location of event, importance placed on alcohol), which likely shape the celebrant's intentions for their own drinking. The present research was not able to examine this process directly, as beliefs and intentions were assessed during the same pre-birthday survey. Future research should examine the nature of friends' roles in this planning and intention-formation

process, as well as the behavioral manifestation of friends' intentions during the event (e.g., encouragement of drinking or taking shots). Taken together, these findings contribute to the emerging literature demonstrating the utility of dyadic extensions of intrapersonal models and theories for understanding health-related behavior.^{26-28,38-40}

It is worthwhile to note that celebrants did not exert the same degree of influence on their friends. Celebrant and friend beliefs were unrelated at the bivariate level, and celebrant beliefs were unrelated to friend perceptions of the celebrant's birthday drinking intentions. There are multiple potential reasons for this imbalance in influence. The event is strongly focused on the celebrant reaching the legal age to consume alcohol. Therefore, it stands to reason that they would be more strongly influenced by their friend than vice versa. Additionally, although speculative, this finding may suggest that friends' perceptions of celebrant drinking intentions and their behaviors related to the celebrant's 21st birthday may be more strongly driven by the friend's own beliefs than by a focus on helping or enabling the celebrant to enact theirs.

There is a well-established literature demonstrating the utility of referencing various peer groups in drinking-related interventions. Many feedback-based interventions have been effective in reducing drinking and related negative consequences by providing social norms feedback in relation to peer groups at varying levels of specificity (e.g., students of the same sex, race, Greek affiliation, on same campus),⁴¹⁻⁴³ as well as in relation to others attending or celebrating the same occasions (e.g., Spring Break, 21st birthdays, Mardi-Gras)^{17,44,45}. In these interventions, recipients' own drinking is compared to their perceptions of peers' drinking and with peers' actual drinking. This approach aims to correct normative misperceptions about peer drinking, which is related to reduced drinking for the intervention participant.^{17,41,42}

Yet, the present research is one of only a few studies^{44,46} that have directly incorporated specific peers in the intervention context. In doing so, it highlights key directions for future interventions incorporating peers or other social network members. Importantly, the present findings have important implications for the content, scope, and timing of future prevention and intervention efforts targeting 21st birthday drinking. First, there is need for prevention strategies to focus on changing the culture surrounding 21st birthday drinking. The larger intervention focused on 21st birthday intentions, but these were related to both celebrant and friend beliefs. Future interventions may benefit from directly targeting these beliefs about the importance of the celebration. Additionally, the unique effects of friend beliefs about 21st birthdays and friend perceptions of celebrant intentions—above and beyond celebrant factors—highlights the need to target both intrapersonal and interpersonal pathways of influence related to celebrant drinking. The presence of multiple friend influence pathways also suggests that friend influence occurs not only during, but also in advance of the celebration. Therefore, interventions need to occur early enough to influence the planning and intention-formation process, not just celebrant and friend behavior during the event. Whereas interventions delivered immediately prior to the event may be more fresh in the minds of participants, they may be too late to substantially alter these earlier friend influence processes. Additional research is needed to understand the time course of this intention-formation process and identify optimal time points for intervention.

The present research has limitations worth noting. Participants included college students turning 21 who intended to drink heavily on their 21st birthday, and the sample was largely Caucasian. This may limit the generalizability of the findings to young adults not enrolled in college, those who are turning 21 but who do not intend to drink heavily, non-White college students, and other high-risk drinking events. Further, excessive celebration associated with 21st birthdays is a unique product of the laws and culture surrounding drinking within the U.S., limiting generalizability of the findings outside of the U.S. The primary outcome variable was calculated using celebrants' self-reported alcohol use. As is the case with all self-report research, this may be subject to social desirability bias. However, given that heavy drinking during 21st birthdays is perceived as normative,²⁴ typical social desirability effects leading to underreporting drinking were likely dampened in this context. Indeed, the high mean number of drinks reported in the sample—both on the birthday ($M=9.58$) and during the birthday week ($M=19.48$)—supports this notion. Finally, whereas we examine how the beliefs of a specific individual influence the celebrant's drinking, this person is only one component of the larger social environment in which the birthday celebration takes place. Future research may wish to simultaneously examine features of multiple social network members and celebrants' relationships with those individuals (e.g., type, length, importance, closeness), which may shape their influence on the celebrant's drinking during these high-risk events.

4.1. Conclusions

The present findings contribute to the literature on the riskiest high-risk drinking event—21st birthdays. Building upon prior work demonstrating the existence and influence of expectancies¹⁴ and perceived norms⁴⁷ specific to this event, the present research revealed the role of beliefs about 21st birthday celebrations in driving celebrant drinking. Indeed, it is the first to examine such beliefs and their potential influence on 21st-birthday-related drinking. Future work may wish to examine factors that contribute to the formation of these beliefs. Prior research has explored personality characteristics linked with 21st birthday intentions, normative perceptions, and consumption.⁴ It may be valuable to explore various individual difference factors (e.g., impulsivity, sensation seeking, Big Five characteristics), which may be related to 21st birthday beliefs and drinking intentions.

Another notable strength is examination of the influence of a specific friend present during the birthday celebration. It is well established that friends are a key source of social influence on drinking in emerging adulthood.^{20,21} However, prior research in this domain has largely relied on individuals' perceptions of "friends" as a general social group, or the concept of a "close friend" more abstractly. Our approach provides a more accurate measurement of this important source of social influence, rather than simply celebrant perceptions of such influence. This prospective, dyadic examination of beliefs, intentions, and celebrants' ultimate drinking behavior allowed us to examine the influence of specific friends above and beyond intrapersonal processes, as well as the timing of such influence. Such an approach enabled us to discover that friend influence begins before the celebration even starts and is just as influential as celebrants' own beliefs in shaping celebrant intentions and ultimate drinking.

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Highlights

1. Examined intra- and inter-personal processes influencing 21st birthday drinking
2. Celebrant beliefs indirectly influence their eBAC via their drinking intentions
3. Friend beliefs indirectly influence celebrant eBAC via multiple pathways
4. Effect of friend beliefs on celebrant eBAC was as strong as celebrant beliefs
5. Friend influence on birthday drinking occurs during and in advance of the event

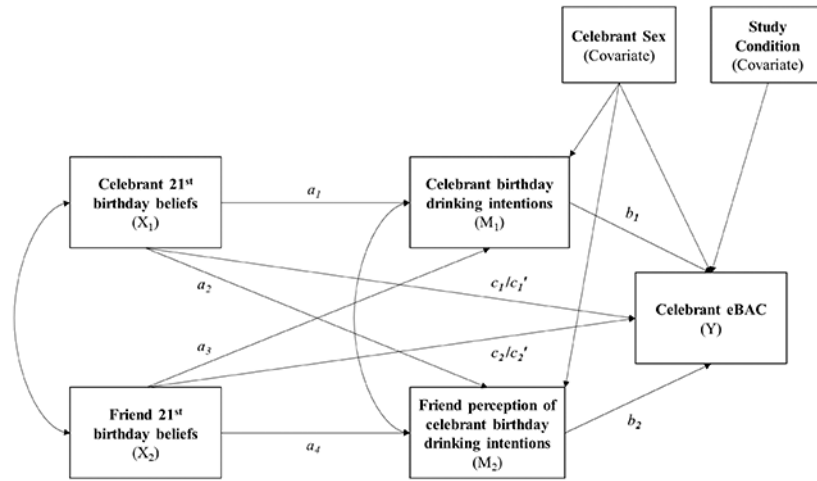


Figure 1. Model of direct and indirect effects of celebrant and friend 21st birthday beliefs on celebrant eBAC via 21st birthday drinking intentions.

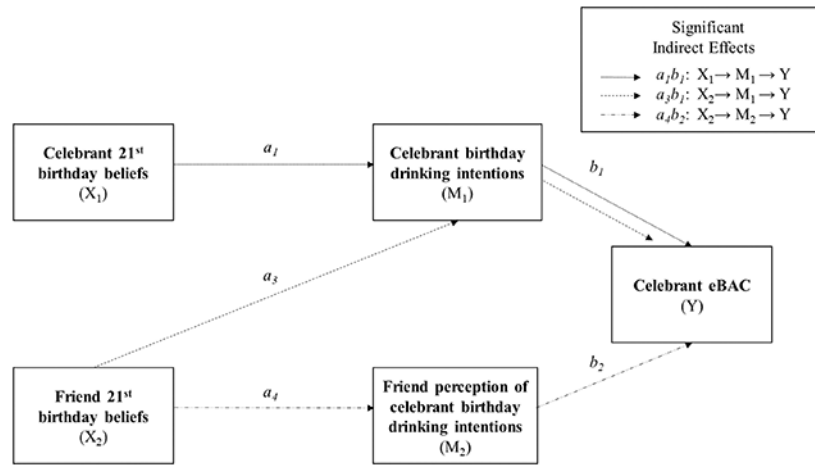


Figure 2. Indirect effects of celebrant and friend 21st birthday beliefs on celebrant eBAC, via 21st birthday drinking intentions.

Table 1

Descriptive Statistics and Zero-Order Correlations among Focal Variables

Variable	1.	2.	3.	4	M (SD)
1. Celebrant beliefs (1 - 7)	-				5.57 (0.87)
2. Celebrant intentions (# drinks)	.19*	-			9.93 (5.16)
3. Celebrant eBAC (0 - .50)	.24**	.42***	-		0.19 (0.14)
4. Friend beliefs (1 - 7)	.12	.23**	.20*	-	5.08 (1.16)
5. Friend perceived celebrant intentions (# drinks)	.07	.47***	.37***	.39***	9.73 (5.75)

Note.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Estimates of Direct Relations among Celebrant and Friend 21st Birthday Beliefs, Drinking Intentions, and eBAC

Table 2

Effect	Estimate	SE	Boot LCI	Boot HCI
<i>a</i> effects (Beliefs → Intentions)				
<i>a</i> ₁ Celebrant beliefs → Celebrant intentions	1.087	0.440	0.272	1.982
<i>a</i> ₂ Celebrant beliefs → Friend perceived celebrant intentions	0.203	0.417	-0.945	0.982
<i>a</i> ₃ Friend beliefs → Celebrant intentions	0.983	0.321	0.369	1.682
<i>a</i> ₄ Friend beliefs → Friend perceived celebrant intentions	1.972	0.397	1.216	2.742
<i>b</i> effects (Intentions → eBAC)				
<i>b</i> ₁ Celebrant intentions → Celebrant eBAC	0.009	0.003	0.004	0.014
<i>b</i> ₂ Friend perceived celebrant intentions → Celebrant eBAC	0.006	0.002	0.001	0.010
<i>c</i> ' effects (Beliefs → eBAC)				
<i>c</i> ' ₁ Celebrant beliefs → Celebrant eBAC	0.022	0.010	0.000	0.041
<i>c</i> ' ₂ Friend beliefs → Celebrant eBAC	0.003	0.009	-0.019	0.020

Estimates of Total, Total Indirect, and Specific Indirect Effects of Celebrant and Friend 21st Birthday Beliefs on Celebrant eBAC

Table 3

	Effect	Estimate	SE	Boot LCI	Boot HCI
Total Effects					
c_1	Celebrant beliefs	0.032	0.012	0.011	0.055
c_2	Friend beliefs	0.023	0.009	0.005	0.041
Total Indirect Effects (Beliefs → Intentions → eBAC)					
-	Celebrant intentions	0.011	0.006	0.001	0.024
-	Friend perceived celebrant intentions	0.020	0.006	0.010	0.033
Specific Indirect Effects (Beliefs → Intentions → eBAC)					
a_1b_1	Celebrant beliefs → Celebrant intentions → Celebrant eBAC	0.009	0.005	0.002	0.022
a_2b_2	Celebrant beliefs → Friend perceived celebrant intentions → Celebrant eBAC	0.001	0.003	-0.003	0.007
a_3b_1	Friend beliefs → Celebrant intentions → Celebrant eBAC	0.009	0.004	0.003	0.019
a_4b_2	Friend beliefs → Friend perceived celebrant intentions → Celebrant eBAC	0.012	0.005	0.003	0.024

Note. 95% confidence intervals are bias-corrected bootstrapped confidence intervals based on 1000 bootstrapped samples.