A Dual-Process Examination of Alcohol-Related Consequences Among First-Year College Students

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ABSTRACT. Objective: Despite showing reductions in college student drinking, interventions have shown some inconsistency in their ability to successfully decrease consequences. With the goal of improving prevention efforts, the purpose of this study was to examine the role of consequence-specific constructs, in addition to drinking, that influence students' experiences with alcohol-related problems. The study examined how drinking and protective behaviors mediated the relationships between students' willingness to experience consequences, intentions to avoid them, and four categories of alcohol-related problems (physiological, social, sexual, and academic). **Method:** First-year college student drinkers ($n = 2,024$) at a large northeastern university completed surveys during the fall and spring of their freshman year. **Results:** As expected, different patterns of associations emerged for physiological and non-

physiological consequences. When physiological consequences (e.g., hangover, vomiting) were examined, drinking significantly mediated the effect of willingness on the consequences. Drinking-specific protective behaviors indirectly influenced consequences through drinking behaviors whereas general protective behaviors did not. When nonphysiological (e.g., social, sexual, academic) consequences were examined, drinking and general protective behaviors emerged as significant mediators of the effects of willingness and intentions on the consequences, whereas drinking-specific protective behaviors did not. **Conclusions:** The results suggest that prevention efforts (e.g., personalized feedback) could be tailored to address specific types of protective behaviors as well as specific types of consequences frequently experienced by college students. (*J. Stud. Alcohol Drugs*, 76, 862–871, 2015)

ALCOHOL-RELATED CONSEQUENCES among students are a significant public health concern for colleges and surrounding communities across the country (Barnett et al., 2014; Jackson & Sher, 2006, 2008; Jackson et al., 2001). To combat risky drinking and resulting problems, universities have implemented a variety of interventions with mixed success (Cronce & Larimer, 2011; Hingson & White, 2014; Larimer & Cronce, 2002, 2007). Systematic reviews of intervention efforts have shown that education-based efforts have been the least successful, whereas brief motivational interventions have shown the most promise. Alcohol expectancy challenges, parent-based interventions, personalized normative feedback, and approaches involving skills training have also demonstrated success (Cronce & Larimer, 2011). Even among the most successful interventions, inconsistencies in reducing drinking and consequences have been observed (Walters et al., 2009; White, 2006; Wood et al., 2007). For example, brief motivational interventions have shown efficacy in reducing overall drinking and related consequences in some studies (e.g., Marlatt et al., 1998;

Murphy et al., 2004; White et al., 2007), but other studies have observed reductions in drinking but not consequences (e.g., Carey et al., 2010; Larimer et al., 2001; Turrisi et al., 2009). Overall, although significant advances have been made to combat risky drinking and problems during the first year of college, the consensus among prevention scientists and college administrators is that our interventions can continue to be strengthened (Hingson et al., 2005, 2009).

One potential way to enhance the efficacy of existing interventions is to identify and better understand malleable variables other than drinking that directly influence consequences. Studies have shown that the relationship between drinking and consequences is imperfect, typically leaving 40%–50% of the variance unexplained (Larimer et al., 2004; Mallett et al., 2011; Turner et al., 2000). Although drinking is consistently and positively associated with consequences, studies have demonstrated that alcohol-related consequences are multi-determined and influenced by additional factors (Benton et al., 2006; Mallett et al., 2013; Neal & Carey, 2007; Turrisi et al., 2000). Specifically, Mallett and colleagues (2011) found that students' willingness to experience consequences significantly predicted consequences after controlling for drinking. Related research has shown normative perceptions about experiencing consequences (Lee et al., 2010), drinking-to-cope motives (Merrill et al., 2014), and protective behaviors (Ray et al., 2009), such as alternating between alcoholic and nonalcoholic drinks, are uniquely associated with consequences, over and above the influence of drinking.

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Although previous studies were an important initial step in identifying additional predictors of consequences, they had certain limitations such as a lack of longitudinal data and/or they examined a limited number of predictors and consequence outcomes. The current study extended previous work by (a) using a more comprehensive, longitudinal examination of predictors (willingness to experience consequences, intentions to avoid them); (b) including multiple consequence outcomes (physiological, social, sexual, and academic); and (c) examining drinking and two unique types of protective behaviors as mediators of these relationships.

Examination of different types of consequences

Alcohol-related consequences vary widely in terms of being intra- or interpersonal in nature and whether they involve physiological symptoms. Physiological consequences (hangovers, vomiting, blackouts) are prevalent among college students and are strongly related to blood alcohol concentration (BAC) (Barnett et al., 2014; Perkins, 2002). To reduce these consequences, intervention efforts may encourage drinking-specific protective behaviors that limit or slow down the intake of alcohol in order to keep BACs below the level at which these consequences are likely to occur (e.g., Brief Alcohol Screening and Intervention for College Students [BASICS]; Dimeff et al., 1999). In contrast, the relationship between BAC and nonphysiological consequences is somewhat more complicated. For example, other situational variables must occur in order to experience consequences that are interpersonal in nature (e.g., regretted or forced sex, getting into fights). In addition to drinking, an individual also needs to be in the presence of other individuals who may potentially facilitate experiencing the consequence. Further, individuals may experience nonphysiological consequences at a variety of BACs and do not necessarily need to be intoxicated to have a negative consequence occur (Giesbrecht et al., 2010; Langley et al., 2003). Although drinking-related protective behaviors may reduce some risk, other protective behaviors (e.g., walking home with friends) may be needed to prevent a variety of interpersonal alcohol-related consequences. To capture differential relationships between unique predictors and specific types of alcohol-related problems, we examined four categories of consequences in the present study: physiological, social, sexual, and academic.

Identifying unique predictors and mediators of alcohol-related consequences

A potential key factor in enhancing prevention efforts is to identify modifiable constructs in addition to drinking that influence students' likelihood of experiencing alcohol-related problems. The current study evaluated the associations between unique consequence-specific constructs (willingness and intentions), protective behaviors, drinking behaviors, and

longitudinal alcohol-related problems to identify potential agents of change.

Willingness and intentions. According to the behavioral prototype/willingness model, there are two influences on behavior: a social reaction influence and a reasoned influence (Gibbons & Gerrard, 1997; Gibbons et al., 2003). Willingness reflects neither planned nor intentional behavior, but rather openness to opportunity (i.e., social reaction influence). Intentions are goals or plans that lead to actions (i.e., reasoned influence). Research suggests that willingness and intentions are both unique constructs that contribute independently to behavior (Gibbons & Gerrard, 1997). Accordingly, students who are willing to experience consequences are more likely to experience consequences independent of drinking (Mallett et al., 2011). In contrast, students who experience fewer consequences may have stronger intentions to avoid them. As such, they may act in a conscious and deliberate manner to avoid consequences by reducing drinking and using specific types of protective behaviors. Previous work has not examined both types of constructs in relation to consequence outcomes. Further, it is unclear how these constructs differentially influence protective behaviors and drinking.

Protective behaviors. The specific manner in which protective behaviors influence drinking and consequences remains somewhat unclear. Previous work examining the unique association between protective behaviors and consequences has used both global measures of protective behaviors (Delva et al., 2004; Martens et al., 2004) and different subscales that include drinking protective behaviors (e.g., Ray et al., 2012) and more general harm-reduction items (Lewis et al., 2010). In the present study, protective behaviors are uniquely conceptualized as either drinking specific or general, non-drinking specific. Drinking-specific protective behaviors consist of strategies used to limit the amount of alcohol consumed (e.g., pacing drinks, limiting drinks, etc.), whereas general protective behaviors encompass nondrinking strategies to avoid other negative outcomes (e.g., stay with friends at all times, determine clear sexual boundaries while drinking, watch drinks being made, etc.). It is unclear how these different types of protective behaviors uniquely influence various consequences. The current study addressed this limitation by examining both types of protective behaviors as mediators of the relationships between willingness and intentions and a variety of physiological and nonphysiological consequences.

Current study

The focus of the current study was to extend previous work by using a longitudinal design to examine specific ways in which two types of protective behaviors and drinking mediated the relationships between willingness, intentions, and four distinct types of consequences (see hypothesized

FIGURE 1. Heuristic path model testing consequence-specific predictors of physiological and nonphysiological consequences. T1 = Time 1; T2 = Time 2.

paths in Figure 1). It is important to note that willingness, intentions, protective behaviors, and drinking were all measured at Time 1 (T1). For example, in a given evening, individuals make decisions about whether to use protective behaviors and drink based on their willingness and intentions at that moment. We hypothesized that individuals who were less willing to experience consequences or who had higher intentions to avoid consequences would use more drinking-specific and general protective behaviors.

With regard to the relationship between specific categories of protective behaviors and consequences, three hypotheses were proposed. Considering that physiological consequences (e.g., vomiting) are closely related to high BACs, whereas nonphysiological consequences (e.g., getting assaulted) are likely to be a function of multiple behaviors (e.g., being in a risky social setting while drunk), we hypothesized that drinking-specific protective behaviors would be directly and negatively associated with physiological consequences. We also expected that drinking-specific protective behaviors would be indirectly associated with nonphysiological consequences (e.g., social, sexual, academic) such that students using these types of protective behaviors would drink less, which over time would directly decrease consequences. Further, we hypothesized that general protective behaviors would directly influence nonphysiological consequences, but they would not affect physiological consequences. Last, because alcohol use is a reliable and necessary predictor of consequences, we hypothesized that drinking would mediate the relationship between willingness/intentions and all types of consequences.

Specifically, individuals who were more willing to experience consequences and had fewer intentions to avoid them would endorse higher rates of drinking. In turn, drinking and all types of consequences would be significantly and positively related.

Method

Recruitment procedures and participant retention

During their first semester on campus, 4,000 participants were randomly selected from the university registrar's database of first-year students at a large, public university in the northeastern United States. Participants received a pre-notification letter and an email invitation describing the study and inviting their participation. All recruitment materials (the pre-notification letter, an invitation email, and up to seven reminder emails) included a URL and a personal identification number for accessing the survey. Informed consent information was presented to students upon their log-in to the initial baseline survey. Participants completed a baseline survey during fall semester of their freshman year (October) and a follow-up survey 6 months later during spring semester (April). Data collection was timed to avoid overlap with spring break and midterm exam periods in order to reflect typical drinking patterns. Students received \$25 for completing each survey and a \$5 bonus if they completed the survey within 5 days of receiving the email invitation. Thus, participants had the potential to earn up to \$60 if they completed both surveys within 5 days of initial recruitment.

All study procedures were reviewed and approved by the university's institutional review board.

At baseline, 67.3% ($n = 2,690$) of invited participants elected to participate in the study, which is comparable to response rates reported in other studies using similar web-based recruitment and data collection methods (e.g., Turrissi et al., 2009, 2013). The goal of the study was to assess participants' experiences with consequences of their drinking, so only participants who completed the baseline assessment and identified as drinkers (based on typical and peak drinking reported in the month before baseline) were invited to complete the follow-up assessment. Of those who completed the baseline assessment, 75.2% ($n = 2,024$) met participation criteria and were invited to participate in the follow-up. Retention from fall (T1) to spring (T2) was 92.2%. Because of the large sample size and number of variables compared (e.g., ethnicity, race, age at drinking onset, high school drinking and consequences, etc.), we adopted a criterion of an effect size of .02 when comparing differences between those who completed both assessments and those who completed only the first assessment. Using this criterion, no meaningful differences were observed.

Participants

In the final sample of 2,024 first-year students, the mean age at T1 was 18.18 years ($SD = 0.39$), and the majority identified as female (56.0%), White (87.4%), and heterosexual (98.0%). A significant minority of participants identified as Hispanic (5.1%), Asian (4.7%), African American (3.3%), or multiracial (2.9%). Further, 16.2% indicated current membership in or intentions to join a fraternity or sorority, and 40.7% endorsed participation in either intramural, club, or varsity-level athletics. Participants reported an average of 10.84 ($SD = 8.63$) drinks per week, which is comparable to national averages using data collected from more than 100 universities (Engs et al., 1997).

Measures

At T1, participants reported their willingness to experience consequences, intentions to avoid consequences, use of drinking-specific and general protective behaviors, and drinking behaviors. The T2 survey assessed physiological, social, sexual, and academic consequences. All measures used in the current study are described below.

Main outcomes (assessed at T2): Consequences

Subscales for physiological, social, academic, and sexual alcohol-related consequences were assessed at T2 using items adapted from the Brief Young Adult Alcohol Consequences Questionnaire (Read et al., 2006) and the Young Adult Alcohol Problems Screening Test (Hurlbut & Sher, 1992; Larimer

et al., 1999). Participants were asked to indicate how many times they had experienced each consequence during the current semester. Response options ranged, on a 9-point Likert scale, from *never* (0) to *40 or more times* (8) to assess severity. Items were selected for each subscale based on the following criteria: (a) the content of each item was conceptually consistent with the subscale category (physiological, social, academic, sexual), (b) the item was endorsed by at least 5% of the sample, and (c) the item did not weaken the internal consistency of the subscale (i.e., $\alpha > .70$; items significantly correlated with one another).

The physiological consequences subscale ($\alpha = .80$) included four items: (a) vomiting, (b) having a hangover, (c) blacking out, and (d) passing out. Social consequences ($\alpha = .71$) were measured with three items: (a) becoming rude, obnoxious, or insulting after drinking; (b) starting a serious argument or fight with someone; and (c) experiencing problems between oneself and a significant other or relatives because of drinking. The three items measuring sexual consequences ($\alpha = .73$) included (a) regretted sexual situations because of drinking, (b) being pressured or forced to have sex with someone while drinking, and (c) making inappropriate sexual advances toward someone after drinking. The academic subscale ($\alpha = .79$) included two items that assessed (a) missing/skipping a class and (b) having academic work suffer because of drinking.

Mediators (assessed at T1)

Drinking behaviors. Drinking behaviors were assessed using a latent variable consisting of two indicators designed to capture "typical" and "heavy" drinking. Typical drinking was assessed using the Daily Drinking Questionnaire (Collins et al., 1985), which asked participants to indicate how many drinks they consumed on each day of a typical week during the current semester. Responses were summed to indicate the number of drinks one typically consumed each week ($M = 10.84$, $SD = 8.63$). Heavy drinking was assessed using a single item adapted from the Quantity, Frequency, Peak scale (Dimeff et al., 1999). Participants indicated how many times in the past 30 days they had been drunk or very high from alcohol. Response options ranged from *never* (0) to *nine or more times* (5), and participant responses were evenly distributed with the modal response (27.6%) being one to two times ($M = 2.22$, $SD = 1.53$).

General and drinking protective behaviors. Protective behaviors were assessed at baseline using 22 items identified in previous work (see Martens et al., 2005; Ray et al., 2009; Sugarman & Carey, 2007; Werch & Gorman, 1986). Items included statements such as, "When drinking alcohol, I pace my drinks to one or fewer per hour" and "I keep track of where my drinks are," with response options ranging from *never* (0) to *always* (4). Protective behaviors were categorized into two distinct categories: drinking-specific protective

TABLE 1. Correlation matrix between predictors and consequences

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Willingness to experience consequences	1.00									
2. Intentions to avoid consequences	-.36	1.00								
3. Weekly drink (Daily Drinking Questionnaire)	.42	-.21	1.00							
4. Frequency drunk	.37	-.19	.73	1.00						
5. Drinking protective behaviors	-.35	.20	-.48	-.42	1.00					
6. General protective behaviors	-.38	.29	-.32	-.23	.58	1.00				
7. Physiological consequences	.36	-.19	.50	.50	-.36	-.24	1.00			
8. Social consequences	.28	-.19	.35	.36	-.25	-.21	.59	1.00		
9. Sexual consequences	.25	-.19	.25	.29	-.18	-.19	.50	.61	1.00	
10. Academic consequences	.29	-.21	.38	.37	-.23	-.19	.60	.60	.56	1.00

Note: All correlations were significant $p < .01$.

behaviors and general protective behaviors. Consistent with the consequence subscales, items were selected for each subscale based on the following criteria: (a) the content of each item was conceptually consistent with the subscale (drinking-specific, general), (b) the item was endorsed by at least 5% of the sample, and (c) the item did not weaken the internal consistency of the subscale (i.e., $\alpha > .70$; items significantly correlated with one another).

Drinking protective behaviors consisted of 11 items assessing specific behaviors associated with alcohol consumption, such as pacing drinks, limit setting, and alternating with nonalcoholic beverages. These items were averaged to create an index of drinking-specific protective behavior use ($M = 1.86$, $SD = 0.84$; $\alpha = .89$).

General protective behaviors consisted of 11 behaviors aimed at reducing consequences but not specific to one's method of drinking (e.g., "I walk home with a friend or group of friends"; "I watch my drinks being made"; "I communicate sexual boundaries"). These items were averaged to create an index of general protective behavior use ($M = 3.08$, $SD = 0.76$; $\alpha = .89$).

Consequence-specific predictors (assessed at T1)

Willingness to experience negative consequences. Using each of the 12 consequence items described above, participants indicated their level of agreement with the following statement: "In the next few months, I am willing to experience [consequence] as a result of my drinking." Response options ranged from *strongly disagree* (-3) to *strongly agree* (3). Responses to all 12 items were averaged to create a composite score of willingness to experience consequences ($M = -2.30$, $SD = 0.81$; $\alpha = .90$).

Intentions to avoid negative consequences. Participants indicated their level of agreement with the following statement: "In the next few months, I intend to avoid [consequence] as a result of my drinking" using the 12 consequences described above. Response options ranged from *strongly disagree* (-3) to *strongly agree* (3). Responses to all 12 items were averaged to create a composite score of intentions to avoid consequences ($M = 2.18$, $SD = 1.28$; $\alpha = .97$).

Analytic strategy

Preliminary analyses. Patterns of missingness and attrition bias were examined first. Missing responses on any given variable were minimal (<5%) and addressed using full information maximum likelihood estimation in Mplus (version 6). Zero-order correlations assessed the relationships between the variables in Figure 1 (Table 1). Additional preliminary analyses included a series of t tests that examined gender differences in each type of consequence (physiological, social, sexual, and academic). Findings revealed that men experienced more physiological consequences than women; there were no significant gender differences for any other consequence. As a result, the models specific to physiological consequences were examined with and without gender as a covariate. The patterns of findings for both models were equivalent; thus, for consistency across models, the final physiological model presented below does not include a gender covariate.

Examining the hypothesized path model. As displayed in Figure 1, each type of consequence (measured at follow-up) was separately regressed, using path analysis in Mplus, onto drinking behaviors (β_1), drinking-specific protective behaviors (β_2), and general protective behaviors (β_3), which in turn were regressed onto willingness to experience consequences and intentions to avoid consequences, measured at baseline (α_{1-6}). Because it was expected that drinking-specific protective behaviors would reduce consequences by reducing drinking, drinking was also regressed onto drinking protective behaviors (path c). The joint significance test of alpha (α) and beta (β) was used to assess mediation based on the results of a Monte Carlo study in MacKinnon and colleagues (2002). In the study, they compared the joint significance test to 13 other mediation techniques and found that the joint significance test had the most power and the most conservative Type I error rates relative to other approaches. Within the current study, path analyses were used to examine the α and β paths, testing the model shown in Figure 1. First, the α path—the effect from hypothesized predictor to mediator variable (e.g., between willingness to experience consequences and general protective behav-

TABLE 2. Mediated paths for physiological consequences

Predictor	Predictor effect on mediator (α paths)	Mediator effect on physiological consequences (β paths)	Mediated effect ($\alpha\beta$)
Willingness	(α_1) 0.499 (0.046)*	(β_1) 2.041 (0.112)*	1.019 (0.113)*
	(α_2) -0.328 (0.032)*	(β_2) -0.277 (0.153) [†]	0.091 (0.051) [†]
	(α_3) -0.290 (0.029)*	(β_3) -0.140 (0.156)	0.040 (0.047)
Intentions	(α_4) -0.041 (0.024) [†]	(β_1) 2.041 (0.112)*	-0.085 (0.049) [†]
	(α_5) 0.057 (0.020)*	(β_2) -0.277 (0.153) [†]	-0.016 (0.011)
	(α_6) 0.106 (0.022)*	(β_3) -0.140 (0.156)	-0.015 (0.017)

Notes: Paths α_1 , α_2 , and α_3 refer to the effect of willingness on drinking behaviors, drinking protective behaviors, and general protective behaviors, respectively. Paths α_4 , α_5 , and α_6 refer to the effect of intentions on drinking behaviors, drinking protective behaviors, and general protective behaviors, respectively. Paths β_1 , β_2 , and β_3 represent the effect of drinking behaviors, drinking protective behaviors, and general protective behaviors on physiological consequences, respectively.

[†] $p < .10$; * $p < .05$.

iors)—was assessed for statistical significance. Second, the β path—between the mediator and outcome (e.g., general protective behaviors and consequences)—was assessed for significance. If both the α and β paths showed significance at the $p < .05$ level, there was evidence for a significant mediating relationship (e.g., willingness to experience the consequence affects the consequence through changes in the mediating variable). The mediated effect was the product of the α and β values ($\alpha\beta$), which provided an estimate of the effect's relative strength.

Results

Identifying predictors of consequences

Effects of willingness and intentions on mediators (α paths). First, as shown in Table 1, willingness to experience consequences and intentions to avoid them were moderately correlated ($r = -.36$). For all types of consequences, willingness to experience consequences was significantly associated in the anticipated direction with all hypothesized mediators (see α paths 1–3 in Tables 2 and 3). For example, greater willingness to experience consequences was consistently associated with heavier drinking and the use of fewer protective behaviors. Intentions to avoid consequences were positively related to both types of protective behaviors across all types of consequences. The association between intentions to avoid consequences and drinking approached significance for all consequences ($p < .10$; see α paths 4–6 in Tables 2 and 3).

Mediator effects on consequences (β paths). Examination of the β paths in Tables 2 and 3 revealed several significant relationships in the expected directions for mediators and consequence subtypes. Drinking at baseline significantly predicted all types of consequences at follow-up (β_1). Drinking protective behaviors (β_2) were not significantly associated with any consequences, although the association approached significance ($p = .07$) for physiological consequences. Gen-

eral protective behaviors (β_3) significantly predicted social, sexual, and academic consequences, but not physiological consequences.

Mediated effects. Significant mediated effects ($\alpha\beta$) are presented by consequence type in the third column of Tables 2 and 3. Drinking behaviors significantly mediated the effects of willingness on all types of consequences but did not significantly mediate the effects of intentions on any consequences. For example, individuals who were more willing to experience consequences consumed more alcohol, which in turn increased the number of physiological, social, sexual, and academic consequences experienced across the first year of college. Drinking-specific protective behaviors did not significantly mediate the effects of willingness or intentions on any of the consequence types. However, general protective behaviors had significant mediated effects for social, sexual, and academic consequences (Table 3). Lower willingness to experience consequences and higher intentions to avoid consequences were associated with higher general protective behavior use, which predicted experiencing fewer social, sexual, and academic consequences.

The association between drinking protective behaviors and drinking (Path c in Figure 1, but not shown in Tables 2 and 3) was also significant ($B_{\text{path C}} = -0.59$, $SE_{\text{path C}} = .03$), demonstrating that students who used fewer drinking protective behaviors consumed more alcohol. For all types of consequences, drinking-specific protective behaviors mediated the effects of willingness on drinking (path $\alpha_2 \times \text{path c}$) and the effects of intentions on drinking (path $\alpha_5 \times \text{path c}$). Also consistent with our theoretical model in Figure 1, drinking behaviors mediated the effects of drinking-specific protective behaviors on consequences (path $c \times \text{path } \beta_1$). Taken together, individuals with lower willingness to experience consequences and higher intentions to avoid consequences tended to use more drinking-specific protective behaviors, which was associated with decreased alcohol consumption and fewer consequences at follow-up.

TABLE 3. Mediated paths for nonphysiological consequences

Predictor	Predictor effect on mediator (α paths)	Mediator effect on consequences (β paths)	Mediated effect ($\alpha\beta$)
Social consequences			
Willingness	(α_1) 0.487 (0.046)*	(β_1) 0.680 (0.059)*	0.331 (0.045)*
	(α_2) -0.328 (0.032)*	(β_2) 0.035 (0.082)	-0.011 (0.027)
	(α_3) -0.290 (0.029)*	(β_3) -0.241 (0.085)*	0.070 (0.027)*
Intentions	(α_4) -0.042 (0.024) [†]	(β_1) 0.680 (0.059)*	-0.029 (0.017) [†]
	(α_5) 0.057 (0.020)*	(β_2) 0.035 (0.082)	-0.002 (0.005)
	(α_6) 0.106 (0.022)*	(β_3) -0.241 (0.085)*	-0.025 (0.010)*
Sexual consequences			
Willingness	(α_1) 0.489 (0.046)*	(β_1) 0.330 (0.040)*	0.161 (0.026)*
	(α_2) -0.328 (0.032)*	(β_2) 0.078 (0.052)	-0.026 (0.017)
	(α_3) -0.290 (0.029)*	(β_3) -0.208 (0.056)*	0.060 (0.018)*
Intentions	(α_4) -0.042 (0.024) [†]	(β_1) 0.330 (0.040)*	-0.014 (0.008) [†]
	(α_5) 0.057 (0.020)*	(β_2) 0.078 (0.052)	0.004 (0.003)
	(α_6) 0.106 (0.022)*	(β_3) -0.208 (0.056)*	-0.022 (0.008)*
Academic consequences			
Willingness	(α_1) 0.487 (0.046)*	(β_1) 0.637 (0.051)*	0.310 (0.040)*
	(α_2) -0.328 (0.032)*	(β_2) 0.091 (0.062)	-0.030 (0.021)
	(α_3) -0.290 (0.029)*	(β_3) -0.148 (0.071)*	0.043 (0.022)*
Intentions	(α_4) -0.044 (0.024) [†]	(β_1) 0.637 (0.051)*	-0.028 (0.016) [†]
	(α_5) 0.057 (0.020)*	(β_2) 0.091 (0.062)	0.005 (0.004)
	(α_6) 0.106 (0.022)*	(β_3) -0.148 (0.071)*	-0.016 (0.008)*

Notes: Paths α_1 , α_2 , and α_3 refer to the effect of willingness on drinking behaviors, drinking protective behaviors, and general protective behaviors, respectively. Paths α_4 , α_5 , and α_6 refer to the effect of intentions on drinking behaviors, drinking protective behaviors, and general protective behaviors, respectively. Paths β_1 , β_2 , and β_3 represent the effect of drinking behaviors, drinking protective behaviors, and general protective behaviors on nonphysiological consequences, respectively.

* $p < .05$; [†] $p < .10$.

Discussion

The current study examined unique predictors and mediators of different types of alcohol-related problems across the first year of college. Specifically, the study tested both drinking behaviors and protective behaviors (drinking-specific and general) as mediators of the relationships between willingness to experience consequences, intentions to avoid consequences, and physiological and nonphysiological consequences. As expected, both willingness to experience consequences and intentions to avoid them were significantly related to drinking-specific and general protective behaviors. Further, willingness to experience consequences was significantly associated with drinking. Overall, students who were more willing to experience consequences drank more alcohol and used fewer protective behaviors. Conversely, students who had higher intentions to avoid consequences used more protective behaviors; however, the relationship between intentions and drinking was not significant. This suggests that although individuals may have stronger intentions to avoid consequences, it does not necessarily mean they drink less. These findings demonstrate the usefulness of addressing both willingness and intentions in relation to risk and protective behaviors. Although both constructs are related, they were only moderately correlated and demonstrated differential effects, suggesting they also have distinct qualities. This is

consistent with the behavioral prototype/willingness model, which states that there is both a social reaction influence and a reasoned influence on behavior (Gibbons & Gerrard, 1997; Gibbons et al., 2003) and highlights the importance of addressing both constructs in intervention contexts.

Next, as expected, drinking had a significant and direct influence on all types of consequence subscales. In contrast, drinking protective behaviors had no direct effects on any subscales. Instead, drinking mediated the relationships between drinking-specific protective behaviors and all consequence outcomes. Although we hypothesized that drinking protective behaviors would directly influence physiological consequences based on previous work (Ray et al., 2012), this finding was not surprising considering drinking-specific protective behaviors are intended to reduce the amount of alcohol consumed or pace drinks to maintain lower BAC levels, which are highly associated with physiological consequences. Overall, individuals who were less willing to experience physiological consequences and had higher intentions to avoid them were more likely to use increased drinking protective behaviors, which was associated with decreased alcohol consumption and significantly fewer consequences. This pattern was also observed among nonphysiological consequence subscales. Last, general protective behaviors were found to directly influence nonphysiological consequences, supporting our hypotheses. Results indicated that

general protective behaviors significantly predicted social, sexual, and academic consequences but not physiological consequences. Further, general protective behaviors mediated the relationships between willingness and all three nonphysiological consequences as well as the relationships between intentions and all three nonphysiological consequences.

Taken together, these findings suggest that in order for students to reduce the likelihood of physiological consequences, they should focus on using protective strategies to reduce alcohol consumption because these consequences are highly correlated with BAC. However, students can reduce their likelihood of experiencing social, sexual, and academic consequences by reducing alcohol consumption and by using general protective behaviors that involve awareness of and planning for aspects of one's context or environment (e.g., staying with friends, communicating sexual boundaries, watching their drinks being made, and so on).

Past research has shown that students do not necessarily attribute experiencing consequences to the amount of alcohol consumed (Mallett et al., 2006) and emphasizes the importance of using a variety of protective behaviors to reduce risk. Our findings suggest that in addition to reducing drinking, using the appropriate type of protective behaviors (i.e., drinking-specific or general) may be useful in terms of reducing the likelihood of experiencing specific consequences. Further, additional work is needed to examine perceived barriers and positive motives for using protective behaviors relative to behavioral willingness and intentions.

Limitations and future directions

Although every effort was made to ensure that controls were in place throughout the study, some limitations should be noted. First, the study was conducted on a campus that consisted of primarily White students. Future studies would benefit from testing the proposed theoretical model on more diverse samples. Second, the current study examined students across the first year of college, thereby limiting our understanding of the maturation process. Although this is an important examination considering that the first year of college is a vulnerable window for high-risk drinking and experiencing consequences, future studies need to explore the relationships between these important constructs during different points across the college experience in order to identify and better understand individuals who develop chronic alcohol problems. Third, although the current study examined a large sample of drinkers, it would be useful to explore different types of high-risk students in future studies. For instance, consequence-specific predictors may behave differently among the highest-risk individuals who experience the most consequences. Identifying different relationship patterns among varying risk groups will allow interventions to be tailored appropriately. Finally, future studies that identify malleable predictors of willingness

and intentions are needed to inform intervention efforts. Although intra- and interpersonal predictors are often targets of change in intervention efforts (e.g., BASICS; Dimeff et al., 1999), they have been specific to drinking rather than to consequences. More work is needed to better understand and target variables that can reduce individuals' willingness to experience consequences and enhance intentions to avoid them.

Conclusion

The findings from the current study underscore the importance of enhancing specificity when examining consequences and protective behaviors to gain a better understanding of risky behavior. The results suggest that, in addition to reducing drinking, emphasizing the use of general protective behaviors among students who are motivated to avoid social, sexual, and academic consequences may be potentially advantageous for prevention efforts, particularly those using a tailored approach such as brief motivational interventions incorporating personalized feedback.

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