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An Examination of College Students' Willingness to Experience Consequences as a Unique Predictor of Alcohol Problems

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Abstract

The focus of the study was to examine: 1) the unique variance between willingness to experience specific consequences (e.g., vomit) and reported experience of the consequence after controlling for drinking, and 2) the relationships between consequence specific constructs (attitudes and norms) and willingness to experience specific consequences in the context of a structural equation model. Freshmen students ($n = 167$) from a large northeastern university were randomly selected to participate. Results indicated willingness to experience consequences accounted for significant variance across consequence outcomes controlling for drinking. Significant relationships were observed between consequence specific constructs (attitudes and norms) and students' willingness to experience consequences. Findings provide empirical support that alcohol-related consequences have multiple determinants and are not only a function of alcohol consumption. Prevention efforts may benefit from a more comprehensive approach that includes both drinking and consequence-specific constructs as targets of change.

Keywords

consequence-specific constructs; alcohol-related consequences; college students

Alcohol abuse among college students continues to be a major public health concern (Hingson, Zha, & Weitzman, 2009). Nearly one out of four students reports high-risk drinking including frequent heavy episodic drinking (3 or more times within a two-week period), as well as drinking on 10 or more occasions within the past 30 days (Johnston, O'Malley, Bachman, & Schulenberg, 2007; Wechsler et al., 2002). Research has also shown that frequent heavy episodic drinkers are at higher odds to experience physical, academic, interpersonal, sexual and legal consequences (Perkins, 2002; Wechsler, Lee, Kuo, & Lee, 2000; Wechsler et al., 2002).

Interventions targeting reductions in alcohol consumption and consequences have had mixed success (Larimer & Cronce, 2002; 2007; White, 2006). While some have shown efficacy in

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changing both drinking and consequences (Collins, Carey, & Sliwinski, 2002; Marlatt et al., 1998; Murphy et al., 2004; Wood, Capone, Laforge, Erickson, & Brand, 2007), others have only observed reductions in drinking (Borsari & Carey, 2000; Larimer et al., 2001; Turrisi, et al., 2009; Walters, Bennett, & Miller, 2000). Considering the harm alcohol-related consequences pose to students and the inconclusive findings demonstrated in previous research, further attention to the consequences associated with drinking is needed.

Extensive research has identified important predictors of drinking in college students such as attitudes and norms (Borsari & Carey, 2003; Cooper, Frone, Russell, & Mudar, 2005; Johnson & Fromme, 1994; Larimer et al., 2009; Neighbors et al., 2008; Read, Wood, Davidoff, McLacken, & Campbell, 2002; Wood, Sher, & Strathman, 1996). By contrast, there have been significantly fewer efforts focused on identifying predictors of consequences apart from drinking despite several studies documenting the existence of independent variables that account for unique variance (e.g., protective behaviors, drinking norms, and drinking expectancies) after controlling for alcohol use (Delva, et al., 2004; LaBrie et al., 2010; Martens, et al., 2004; Neighbors et al., 2007; Ray, Turrisi, Abar, & Peters, 2009). Research has indicated that the correlation between drinking quantity and frequency and consequences as measured rarely exceeds .5-.6, suggesting that there remains a large proportion of variance that is unaccounted for by drinking alone (Larimer, Turner, Mallett, & Geisner, 2004; Turner, Larimer, & Sarason, 2000). Studies have shown not all individuals who drink experience consequences and individuals may not experience consequences every time they drink (Turrisi, Wiersma, & Hughes, 2000). To be sure, alcohol-related consequences are multi-determined and may occur more frequently in the presence of certain intrapersonal, interpersonal, or environmental conditions, independent of a heavy drinking episode (Neal & Carey, 2007; LaBrie & Pedersen, 2008). Thus, specifically examining and identifying predictors of consequences may elucidate some of these inconsistencies among the outcomes of intervention studies.

One construct that may provide useful information in relation to consequences is an individual's willingness to experience a given consequence. According to Gerrard and colleagues (2007), willingness is a distinct construct that is based on heuristics and affect. It can be conceptualized as openness to experiencing a consequence and is associated with a lack of motivation to actively avoid a consequence. Willingness to engage in a behavior differs from an intention which is based on deliberative systematic reasoning. While similar to behavioral intentions (Fishbein & Ajzen, 1975), willingness allows for behavior that is neither planned nor intentional and has been shown to be more a reliable predictor of diverse risk behaviors in prospective studies (Gerrard et al., 2007; Gibbons, Gerrard, & Lane, 2003). Research has examined willingness in relation to alcohol use in adolescent and preadolescent samples (Andrews et al., 2008; Gerrard et al., 2006), however no studies have examined willingness directly in relation to consequences.

The present research takes a novel approach by examining whether consequence-specific constructs have unique relationships to consequences independent of drinking. According to the conceptual model in Figure 1, behavior (e.g., experiencing a consequence) is a function of willingness to perform the behavior (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2007). The current study examined the relationship between the willingness to experience specific consequences (e.g., vomit after drinking) and the experience of those consequences controlling for alcohol consumption.

Consistent with decision theoretic frameworks (e.g., Ajzen, 1991; Fishbein & Ajzen, 1975), two factors will be examined as the immediate psychological predictors of one's willingness to experience alcohol consequences. The first factor is the overall *attitude* students hold toward experiencing the specific consequence. Individuals who have a strong negative

attitude toward a consequence will be less willing to experience it (Triandis, 1972). Attitudes may consist of individuals' perceptions of the aversiveness of the consequence, how favorable they feel toward experiencing the consequence, and how upsetting it would be if they did experience it. We hypothesize that the more positive students' orientations were toward a consequence, the more willing they would be to experience it. The second factor consists of *normative* (injunctive and descriptive) influences (Cialdini, 2003). Injunctive norms encompass perceptions of approval or disapproval of experiencing consequences, whereas descriptive norms focus on perceived base rates of different referent groups experiencing consequences. We hypothesize that as perceived approval and base rates increased, individuals would be more willing to experience the consequences.

In sum, the focus of the study was to examine: 1) the unique variance between willingness and reported experience of consequences after controlling for drinking, and 2) the relationships between consequence specific constructs (attitudes and norms) and willingness to experience specific consequences. Further, the study will compare two models in order to examine willingness to experience consequences as a proximal predictor of consequences. The first model will evaluate the independent contribution of attitudes and norms directly on consequences. The second model will include willingness to experience specific consequences as a mediator between attitudes and norms and consequences. Based on the work of Gerrard et al. (2007), we hypothesize the second model will have better model fit indices and the direct impact of attitudes and norms on consequences will be minimized when willingness is included in the model.

Method

Participants

The sample consisted of 167 first year students from a large public university in the northeast who completed the study. The mean age of the sample was 18.03 (SD=0.17) years and 61.7% were female. With regard to ethnic background, 83.2% identified as white, 4.8% as African American, 4.8% as multiracial, 4.2% as Asian, 0.6% as Hispanic or Latino, and 1.8% as other, which was consistent with the racial and ethnic distribution of the student body.

Procedure

An invitation to an online confidential survey was e-mailed to 400 randomly selected freshmen from the university registrar's database in fall 2009. The invitation included study information, procedures, a URL and personal identification number (PIN). There was a 45.5% initial response rate, which is consistent with other web-delivered surveys with college populations (McCabe, Boyd, Couper, Crawford, & D'Arcy, 2002; Larimer et al., 2007). Participants received \$20 upon completion of the survey. The university's institutional review board approved all study procedures.

Measures

Alcohol consumption and consequences—Alcohol consumption was assessed in two ways: typical weekly drinking and peak drinking. Weekly drinking was measured using the Daily Drinking Questionnaire (DDQ; Collins, Graham, Hansen, & Johnson, 1985). Participants were asked to think of a typical week during the past 3 months and report how many drinks they would have each day of that week. These responses were summed to create a measure of typical weekly drinking. Peak drinking was measured by how many drinks participants reported consuming on the occasion that they drank the most in the past month (Dimeff, Baer, Kivlahan, & Marlatt, 1999). A standard drink chart was provided with

the survey questions (12 oz. beer, 10 oz. wine cooler, 4 oz. wine, 1 oz. 100-proof liquor or 1/4 oz. 80-proof liquor).

Four specific consequences from The Young Adult Alcohol Problems Screening Test (YAAPST; Hurlbut & Sher, 1992) were used to assess alcohol-related consequences experienced by participants: hangover, vomit, black out, and become rude or obnoxious after drinking. These specific consequences were selected because they were endorsed by at least 10% of the sample and they include physical and social consequences and therefore may be helpful in terms of generalizing to other consequences in these domains. For each of the consequences, participants indicated how frequently they had experienced the consequence in the past 3 months, using a 5-point scale ranging from “0 times” to “10 or more times.” Regardless of whether or not participants reported experiencing each consequence in the past 3 months, they responded to the following consequence-specific measures.

Behavioral willingness—Willingness was assessed using a format found to be reliable in previous research (Gibbons et al., 2003). Participants were asked, “During an occasion when you consume alcohol, how willing are you to experience [a specific consequence]?” Response options were on a 4-point scale ranging from “not at all willing” to “extremely willing.”

Consequence attitude—The attitude construct consisted of three unique indicators. The first was based on the work of Mallett and colleagues (2008) and assessed the aversiveness of a given consequence by asking: “how positive or negative would it be to experience [specific consequence]?” with a 5-point response scale ranging from “extremely negative” to “extremely positive.” The second item was “to what degree would experiencing this consequence upset you?” with 4 response options: “not at all” to “extremely” (Longabaugh et al., 1995). Third, participants were asked how favorable or unfavorable they would feel about experiencing each consequence using 5-point “favorable” to “unfavorable” scales (Turrisi, 1999). In our analyses, we include these as one latent construct labeled “attitudes” with 3 indicators. All items were coded so that higher scores indicated a more positive attitude toward experiencing a consequence.

Perceived peer injunctive and descriptive norms—For injunctive norms, participants were asked for each consequence, “How would your closest friends respond if they knew you [experienced specific consequence]?” using 5-point disapproval to approval scales (Baer, 1994). For descriptive norms, participants were asked how many times they believed their closest friends experienced each consequence in the past year (responses ranged from 0 to more than 10 times; Baer, Stacy, & Larimer, 1991).

Demographics—Age, gender, year in school, and ethnic background were recorded.

Results

Descriptives

All participants (both drinkers and non-drinkers) were included in all analyses. Almost two thirds of the sample (64.7%) reported drinking at least one alcoholic drink during a typical week over the last three months, and the mean number of drinks for typical weekly drinking was 7.75 (SD=8.74). The mean for peak drinks was 5.09 (SD=4.90). Half of the sample reported having a hangover after drinking in the last year, 45% vomited, 38% blacked out, and 22% became rude or obnoxious. The mean for willingness to experience a hangover was .39 (SD=.64). For vomiting, the mean willingness was .14 (SD=.40); for black out, the mean was .11 (SD=.35); and for becoming rude or obnoxious the mean was .30 (SD=.65).

Zero order correlations between the consequences, willingness to experience the consequences, and the drinking variables (typical weekly and peak drinking) are located in Table 1. In each case, willingness to experience the consequences and drinking were each significantly correlated with the consequences.

Statistical Analysis

The focus of the analyses was to examine: 1) the unique variance between willingness and reported experience of consequences after controlling for drinking, and 2) the relationships between consequence specific constructs (attitudes and norms) and willingness to experience specific consequences. The analyses examined both of these simultaneously in the context of structural equation models (SEM) using AMOS 17.0 (Arbuckle, 2006). Separate SEM models were conducted for each consequence (e.g., hangover, vomit, black out, become rude or obnoxious). An example of the SEM model tested for the consequence “black out” is shown in Figure 2. In the model, the latent drinking variable has two observed indicators (typical weekly drinking and peak drinking); the latent consequence attitudinal variable has three indicators (aversiveness, upsetting, and favorableness); and the latent consequence norm variable has two indicators (descriptive and injunctive norms). Willingness to experience the consequence and the consequence being analyzed each has only one indicator. Model fit was evaluated by the examination of the CFI and the RMSEA values. Significance of the individual paths was established by examining the t-values.

Evaluation of Model Fit

Examination of Table 2 reveals the CFIs for each of the models ranged from .97 to .98, the RMSEAs ranged from .06 to .08, and the RMSEA tests for close fit were all non-significant except for the consequence “hangover.” Taken together, these indices are suggestive of good fit for the models.

For each consequence, a second SEM analysis was conducted to examine whether the effect of willingness on consequences was mediated by drinking. The models tested resembled what is shown in Figure 2, however, a new path from “willingness” to “drinking” was added (indirect effect model). The indirect effect model and the model without the direct path between willingness and drinking (direct effect model; Figure 2) were compared by taking the difference between the chi-squares for the respective models. Examination of Table 3 reveals that in each instance the chi-square for the indirect effect model was significantly greater indicating a poorer fit than the direct effect model. In sum, these findings suggest that the effects of willingness on consequences do not seem to be mediated by drinking.

Evaluation of Paths

Willingness to Experience Consequences, Drinking, and Consequences—

Examination of the coefficients in Table 4a reveal that after controlling for drinking, willingness to experience a consequence was significantly related to experiencing the consequence (all t 's > 6.0, p 's < .01). As willingness to experience a consequence decreased, the corresponding consequence also decreased. These findings indicate that behavioral willingness was significantly and uniquely related to consequences after controlling for drinking.

Correlates of willingness to experience consequences—Examination of Table 4b revealed that for each consequence examined, willingness to experience the consequence was significantly related to attitudes about the consequence and norms about the consequence. As participants' attitudes about the consequences were more negative (more aversive, more upsetting, and less favorable) the less they would be willing to experience it.

Similarly, as participants' perceptions of their friends' approval and friends' experiences of the consequences decreased, so did their own behavioral willingness.

Examination of attitudes and norms about consequences as unique predictors of consequences—Correlations between the latent attitude and norm variables and the consequences were all significant (range from .30 to .57; mean $r = .46$). However, examination of Table 4c reveals that after controlling for willingness to experience a consequence, attitudes and norms did not account for any significant variance over and above willingness for any of the consequences. These findings, taken together, offer further support that willingness is an important mediator in the relationship between attitudes, norms, and consequences.

Discussion

The first goal of the current study was to examine the relationship between behavioral willingness to experience consequences and reported consequences after controlling for drinking. Numerous studies have shown that behavioral willingness is an important predictor of behavior in young adults who may be willing to take risks if presented with the opportunity and who have something to gain from the behavior (e.g., Gerrard et al., 2007). In the context of college drinking, students are generally willing to take risks and perceive the benefits of doing so to outweigh the risks (Park, 2004; Park & Grant, 2005; Patrick & Maggs, 2008).

Results indicated willingness to experience consequences accounted for a significant amount of variance across different consequence outcomes even when controlling for drinking. These findings provide empirical support for the importance of examining behavioral willingness to experience consequences and its consequence specific correlates. We also observed that the effect of willingness on the consequences was not mediated by drinking. The correlations between the willingness and drinking measures ranged from .25 to .53 with an average correlation of .38 which translates into an $r^2 = .14$. Thus, they typically share only about 14% of common variance. This is suggestive of the uniqueness of these two constructs and of their independent influence on consequences.

The present study offers support for the notion that alcohol-related consequences are multi-determined and not only a function of alcohol consumption. From a conceptual standpoint, individuals who drink alcohol may be willing to drink a lot but not necessarily willing to experience consequences. There may be other individuals who are both willing to drink a lot and willing to experience consequences. It may be useful to consider how intervention efforts may differ for these two types of individuals. For instance, both types of individuals drink the same amount but the motivations to avoid consequences differ (this is perhaps an explanation of why the correlations between these constructs is not higher). The first type of individual is already motivated to avoid consequences so the focus might be placed on encouraging or reinforcing protective behaviors. The second type of individual is not as motivated to avoid consequences. Thus, the focus might emphasize the harm they have experienced to explore ways to enhance motivations to avoid consequences. Once that has been achieved, the focus may shift to increasing behaviors that reinforce avoiding consequences. Prevention efforts may benefit from a more comprehensive approach that includes both drinking and consequence specific constructs as targets of change.

The second goal of the study was to examine the relationships between consequence specific constructs (attitudes and norms) and students' willingness to experience specific consequences. Both attitudes and norms were significantly related to the willingness construct. This is consistent with Gerrard et al. (2007) and other decision-making models

(e.g., Ajzen, 1991) that highlight the importance of both inter- and intrapersonal constructs in influencing decision making. Further, the current study examined attitudes and normative perceptions specific to consequences (e.g., how favorable do you feel about experiencing a blackout) rather than attitudes specific to drinking (e.g., how favorable do you feel about drinking). Emerging research in this area has explored the direct relationship between norms toward consequences and actual consequences (e.g. Lee, Geisner, Patrick, & Neighbors, 2010), which may be a useful enhancement to intervention efforts aimed at reducing consequences as well as drinking. Finally, the current study examined whether the effect of attitudes and norms about experiencing the consequences was independent of willingness to experience the consequence. Although the correlations between attitudes and norms and the consequences were initially significant, the results of the SEM analyses revealed that attitudes and norms did not account for unique variance predicting the consequences when controlling for willingness. Although the cross sectional nature of the data that might limit conclusions in terms of “full mediation,” the results do support the notion that willingness is an important proximal predictor of consequences, whereas attitudes and norms about the consequences would be better considered as distal predictors.

This study was designed as an initial step in examining relevant predictors of alcohol related consequences among college students. Despite efforts to ensure rigorous methods, the study is not without limitations. First, the study used cross sectional data and although the information provided is important as a preliminary step, future studies are needed to examine longitudinal and causal relationships. Second, only freshmen were included in the study which limits generalizability of the findings. It should be noted freshmen have become the focus of early interventions as they transition from high school to college and are prone to initiate or escalate their alcohol use, putting them at risk of excessive drinking and related problems. Future studies would benefit from examining high-risk groups and students of varying ages which would allow for a study of additional consequences that may develop over time (e.g. academic problems), and of relationships among these variables on both event and global levels.

The literature on brief interventions for college students has consistently focused on reducing drinking as a means of indirectly reducing consequences. Our findings provide empirical support that willingness to experience consequences is both a unique predictor of consequences and may serve as a target variable to directly reduce consequences. Further, it should be noted that many promising brief, motivational, feedback interventions incorporate consequences and use them as a deterrent in order to motivate individuals to drink less. This may be problematic if individuals are willing to experience consequences or do not find them to be aversive. Further, our study provides empirical support for predictors of willingness that could potentially be targeted to reduce participants’ willingness to experience consequences, which may lead to improvements in prevention efforts designed to reduce drinking and consequences. In addition, the findings from the current study support the significance and generalizability of willingness to experience consequences and its related correlates across different physical, cognitive, and social consequences. Future studies are needed to examine the potential utility of incorporating these constructs into intervention efforts aimed at reducing alcohol related consequences among college students.

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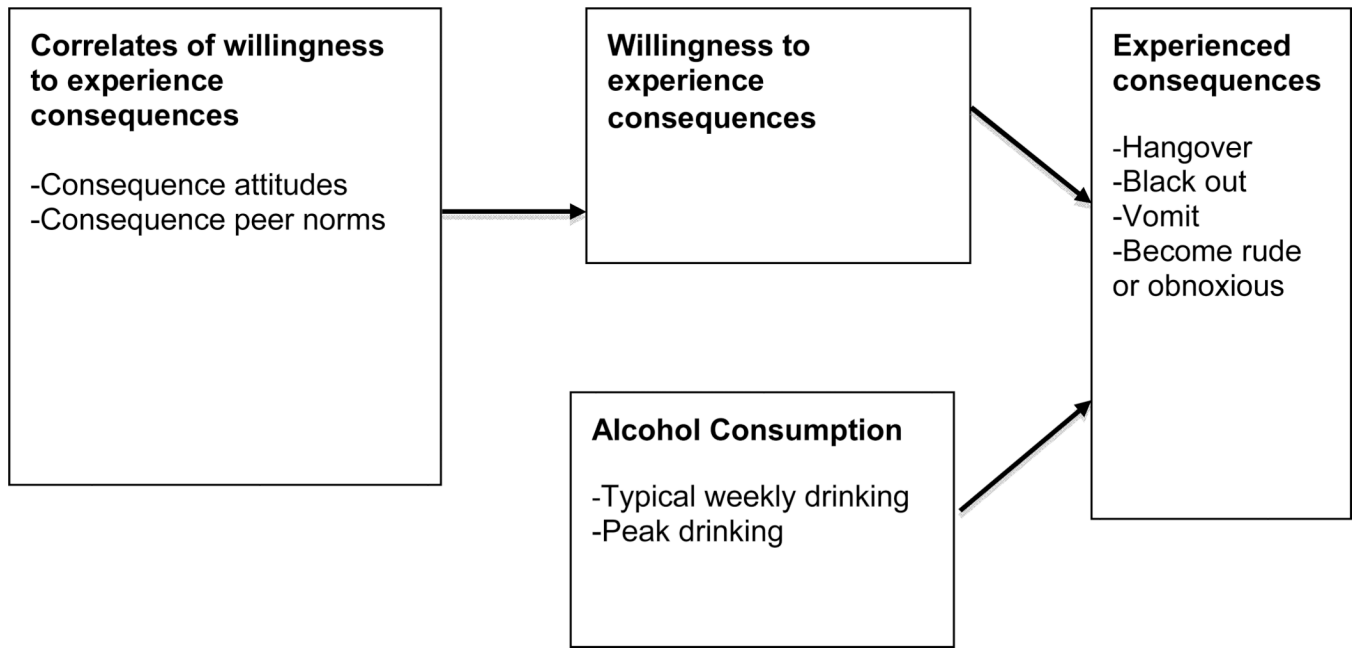
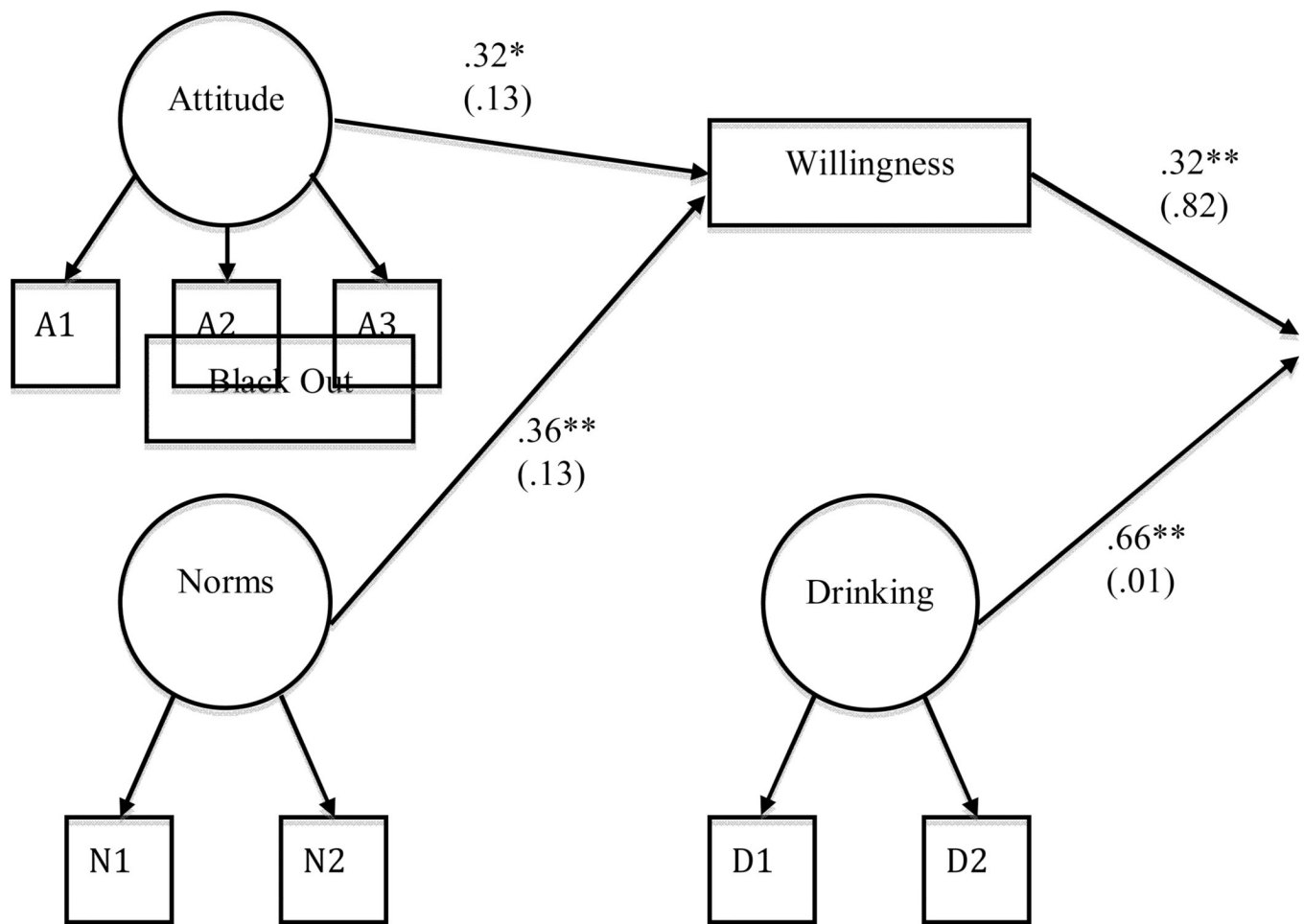


Figure 1.
Heuristic model relating to willingness to experience consequences.



CFI= .98; RMSEA=.06

Figure 2.
SEM model for the consequence black out

Table 1

Correlations among consequences, willingness to experience consequences, and drinking variables

	Experienced consequence	Typical weekly drinking	Peak drinking
Hangover			
Willingness to experience consequence	.57**	.44**	.45**
Experienced consequence		.69**	.67**
Vomit			
Willingness to experience consequence	.37**	.35**	.32**
Experienced consequence		.56**	.56**
Black out			
Willingness to experience consequence	.54**	.53**	.46**
Experienced consequence		.71**	.69**
Become rude or obnoxious			
Willingness to experience consequence (become rude)	.49**	.25**	.26**
Experienced consequence		.52**	.49**

Note.

**
 $p < .01$

Table 2

Model fit indices

	CFI	RMSEA	90% CI _L	90% CI _U	<i>p</i>
Hangover	.97	.08	.05	.11	.03
Vomit	.97	.07	.04	.11	.09
Black out	.98	.06	.02	.09	.28
Become rude	.97	.06	.03	.10	.20

Table 3 χ^2 Difference between direct and indirect effect models

	χ^2 Direct effect model <i>df</i> =22	χ^2 Indirect effect model <i>df</i> =23	χ^2 Difference <i>df</i> =1
Hangover	49.56	80.68	31.12**
Vomit	44.06	90.67	46.61**
Black out	35.59	53.39	17.80**
Become rude	38.26	46.17	7.91**

Note.

**
p<.01

Table 4

a Path coefficients from the structural equation models for willingness and drinking predicting consequences

	Hangover	Vomit	Black out	Rude/Obnoxious
Willingness	<i>b</i> .48	.37	.32	.71
	<i>se</i> .08	.12	.08	.11
	<i>t</i> 5.53**	2.97**	3.71**	6.22**
Drinking	<i>b</i> .07	.04	.06	.03
	<i>se</i> .01	.01	.01	.01
	<i>t</i> 9.74**	7.81**	9.76**	6.68**

b Path coefficients from the structural equation models for attitudes and norms predicting willingness

	Hangover	Vomit	Black out	Rude/Obnoxious
Attitude	<i>b</i> .32	.12	.32	.21
	<i>se</i> .09	.05	.13	.06
	<i>t</i> 3.65**	2.26*	2.35*	3.46**
Norms	<i>b</i> .18	.12	.36	.15
	<i>se</i> .07	.05	.13	.06
	<i>t</i> 2.58**	2.28*	2.72**	2.39*

c Path coefficients from the structural equation models for attitudes and norms predicting consequences controlling for willingness

	Hangover	Vomit	Black out	Rude/Obnoxious
Attitude	<i>b</i> .15	.04	.10	.14
	<i>se</i> .08	.06	.26	.13
	<i>t</i> 1.81	.70	.39	1.13
Norms	<i>b</i> .09	.04	.11	.11
	<i>se</i> .05	.04	.32	.12
	<i>t</i> 1.57	.98	.36	0.86

Note.

**
p < .01

Note.

* p < .05,
** p < .01

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