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## An Application of the Theory of Planned Behavior to Sorority Alcohol Consumption

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### Abstract

Greek-affiliated college students have been found to drink more heavily and frequently than other students. With female student drinking on the rise over the past decade, sorority women may be at particular risk for heavy consumption patterns. The current study is the first to apply the Theory of Planned Behavior (TPB) to examine drinking patterns among a sorority-only sample. Two-hundred and forty-seven sorority members completed questionnaires measuring TPB variables of attitudes, norms, perceived behavioral control, and intentions, with drinking behaviors measured one month later. Latent structural equation modeling examined the pathways of the TPB model. Intentions to drink mediated the relationship between attitudes and norms on drinking behavior. Subjective norms predicted intentions to drink more than attitudes or perceived behavioral control. Perceived behavioral control did not predict intentions but did predict drinking behaviors. Interpretation and suggestions from these findings are discussed.

### Keywords

Theory of Planned Behavior; sorority members; female students; college drinking; intentions

### 1. Introduction

College drinking continues to be a national public health concern. Alcohol-related negative consequences range from poor academic performance, to sexual assault, to vandalism, and even death (Hingson, Heeren, Winter, & Wechsler, 2005; Wechsler et al., 2002). While male students have been labeled an “at-risk” group by the National Institute of Alcohol Abuse and Alcoholism, (NIAAA, 2002), female students have steadily increased their levels of alcohol

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consumption over the past decade, with the number of women labeled as heavy binge drinkers having increased significantly (O'Malley & Johnston, 2002; Wechsler et al., 2002). Females are especially at risk for many alcohol-related negative consequences due to the inherent physiological differences that cause them to experience the intoxicating effects at lower levels of alcohol than men (Jones & Jones, 1976; Perkins, 2000; NIAAA, 2002). Even when body size is held constant, women still have more adipose tissue (body fat) and less body water to dilute alcohol, and have less alcohol dehydrogenase enzyme in the stomach to break down alcohol (Frezza et al., 1990; NIAAA, 2002). Research indicates that fluctuating hormones in women also contribute to women reaching higher blood alcohol concentrations (BACs) at lower levels of alcohol than men (Frezza et al., 1990; NIAAA, 2002), placing them at greater risk for experiencing alcohol related problems, including sexual assault (NIAAA, 2002; Parks & Fals-Stewart, 2004). Thus, understanding underlying processes concerning college female drinking is necessary to reduce its associated risk.

Among female college students, Greek-affiliated women may be at particular risk for heavy consumption patterns. Greek-affiliated students drink more heavily and more frequently than other students (e.g., Cashin, Presley, & Meilman, 1998; Engs et al., 1996; Sher, Bartholow, & Nanda, 2001; Wechsler, Dowdall, Davenport, & Castillo, 1995) and alcohol-related consequences are higher for Greek members than non-Greek students (e.g., Cashin et al., 1998; Engs et al., 1996; Lo & Globetti, 1995). This higher consumption of alcohol by fraternities and sororities may stem from the fact that Greek members perceive alcohol as more acceptable than non-Greeks (Larimer, Irvine, Kilmer, & Marlatt, 1997). Yet, Greek members are less likely to seek treatment or use campus resources for alcohol problems (Klein, 1989). Moreover, a recent study examining the transition into college from high school found marked increases in drinking patterns among incoming women who merely intended to join a sorority (LaBrie et al., 2007). Thus, the expectation of sorority life and the intention to be a part of the Greek system considerably impacts alcohol consumption within the first month of college and suggests the need to develop a predictive model for understanding drinking behaviors within the sorority system in order to reduce heavy drinking among this population.

To create an explanatory and predictive model of college female sorority drinking, we turned to the literature on health behavior theories. The Theory of Planned Behavior (TPB; Ajzen, 1985, 1991) is an extension of the Theory of Reasoned Action (TRA; Ajzen & Fishbein, 1980) and posits that intentions predict behaviors. Specifically, the TPB suggests that intentions are predicted by attitudes toward the behavior, subjective norms about the performance of the behavior, and extends the TRA to include perceived behavioral control (PBC). While both TPB and TRA examine individual motivation on the likelihood of performing a specific behavior, TPB, specifically, includes the variable of PBC and thus allows for an examination of behaviors in which volitional control may be incomplete. TPB has been applied as a framework for understanding a wide range of behaviors (see review by Ajzen, 1991) including alcohol use (e.g., Bentler & Speckart, 1979; Conner, Warren, Close, & Sparks 1999; Norman & Conner, 2006; O'Callaghan, Chant, Callan, & Baglioni, 1996; Schlegel, d'Avernas, Zanna, DeCourvill, & Manske, 1992). With rising trends of heavier drinking among female college students, and with Greek affiliation influencing higher consumption rates, TPB may contribute to the development of a framework for understanding female sorority drinking and may assist in ascertaining constructs that may be targeted via health promotion and education efforts to reduce such problematic behaviors.

Within the TPB, attitudes toward the behavior include an overall positive or negative evaluation of the behavior. Specific to drinking, positive attitudes towards drinking correlate with drinking behavior among college students (Trafimow, 1996). Furthermore, the TPB suggests that subjective norms are the perceptions of whether important others (or a peer referent group) approve or disapprove of the behavior. The importance of normative influences on alcohol

consumption is supported by research revealing that important others play an influential role in decision making processes of young adults. Peers are the major means of support and guidance for most college students and have been found to be more influential than biological, familial, or cultural influences on behavioral decisions (e.g., Berkowitz & Perkins, 1986; Borsari & Carey, 2001; Perkins, 2002; Wood, Read, Palfai, & Stevenson, 2001). Peer associations are one of the best predictors of binge drinking behaviors (Durkin et al., 2005). As such, peer reference groups (e.g., Greek sororities) have tremendous impact on alcohol consumption decisions. From the perspective of TPB, both attitudes towards drinking and perceived norms about the specific drinking behavior of fellow group members are expected to predict intentions to engage in that behavior. The TPB is a highly suitable framework, considering the strong peer and Greek influence on undergraduate drinking.

Finally, TPB also suggests that perceived control over behaviors has both an indirect (via intentions) and direct influence on behavior. PBC is thought to incorporate both internal (e.g., skills) and external (e.g., pressure) control factors and was added to the TRA to predict behaviors over which people have incomplete volitional control (e.g., want to cut down on drinking but cannot due to environmental pressures). In other words, PBC refers to a person's perception of the ease or difficulty of behavioral performance. This includes the belief of one's personal control (or the presence/absence of facilitators/barriers) over the behavioral performance and the impact of these factors in facilitating or inhibiting the behavior (Montano & Kasprzyk, 2002). A person who holds strong control beliefs about the existence of factors that impede behavior will have low perceived control over the behavior (e.g., less control over refraining from drinking). Low volitional control may also influence the ability to form rational intentions and, in fact, has been found to attenuate the attitude-behavior link (Davidson & Jaccard, 1979). Therefore, a perceived difficulty with the ability to refrain from drinking (low PBC) may significantly contribute to an increase in drinking among sorority members and will be examined within the framework of TPB.

To our knowledge, no studies thus far have specifically examined sorority drinking under the framework of the TPB. In fact, very few studies have even investigated alcohol consumption with a sorority-only sample. Investigating this population is necessary when considering the higher rates of consumption among Greek affiliated students, coupled with the rising trend of drinking among female college students over the past decade. Among female college students, perhaps sorority members are the most at-risk for serious negative consequences from excessive alcohol use. The current study applies TPB to sorority members and uses latent structural equation modeling to explore the relative contribution of attitudes, norms, and control on intentions to drink over the next 30 days. Drinking behaviors were then measured one month following the initial assessment. Aside from the application of a theory, a benefit of this longitudinal design is the ability to examine future intentions (i.e., over next 30 days) and then subsequently measure actual behaviors that coincide with the same time frame (i.e., measure taken 30 days later). We hypothesized that drinking intentions over the next 30 days will significantly predict actual drinking behaviors over that same time period. Furthermore, it is anticipated that drinking intentions will mediate the relationship between attitudes and norms on drinking behaviors. Also, a lack of perceived behavioral control (inability to refrain from drinking) is expected to positively predict drinking intentions as well as behavior.

## 2. Method

### 2.1 Design and Procedure

A local IRB committee reviewed and approved the current study which was part of a larger program of research involving Greek organizations at a midsize private university in Southern California. For the larger project, of the 7 total sororities at the university, 3 sororities were randomized to the control condition and the remaining 4 sororities were randomized to the

intervention condition. Enrollment in the parent project occurred during the spring semester of the academic year 2005-2006, and sororities received monetary compensation for participation in the parent project. The current study sought to examine natural drinking behaviors of sorority members over a one month timeframe and therefore included female sorority members from the control condition who agreed to participate. No other inclusion criteria existed for the female sorority members.

All data was collected online including baseline and one month follow-up questionnaires. Each participant received an email where they electronically signed an informed consent form and then completed the questionnaire. For the follow-up questionnaire, participants were reminded of the study and that their answers would remain completely confidential. A reminder email was sent every 2 days over a 7 day period following the initial email, for a total of 4 reminder emails at each data collection time point. Of the 315 sorority females who signed the informed consent and completed the baseline questionnaire, 255 participants completed the follow-up questionnaire. Of these, 247 provided complete data for both time points, and they comprised the sample for all subsequent analyses, which utilized list-wise deletion. No significant differences in demographic characteristics were found between those who completed the baseline questionnaire only and those in the final sample.

## 2.2 Participants

The final sample was comprised of 247 female sorority members in which the average age was 19.43 ( $SD = 1.06$ ) years old. Class standing was distributed with 30.4% freshman, 30.4% sophomore, 26.3% junior, and 12.9% senior. Respondents racially self-identified as follows: 70.7% Caucasian, 8.5% Hispanic, 6.1% Asian, 0.4% African American, 10.6% Mixed, and 3.7% Other.

## 2.3 Measures

The survey assessed demographic variables including age, class year, and group membership. Before answering questions about drinking behaviors, participants were presented within the questionnaire, with the definition of a standard drink (defined as a drink containing one-half ounce of ethyl alcohol – one 12 oz. beer, 8 oz. malt liquor, 4 oz. glass of wine, or 1.25 oz. of 80 proof liquor).

**2.3.1. Attitudes**—Three subscales of the 20-item Drinking Motives Questionnaire (DMQ; Cooper, 1994), including, coping, social, and enhancement subscales, assessed attitudes towards drinking. A mean composite was created for the three subscales, and the dimensions were as follows: (1) Coping (e.g., “To forget your worries”) (2) Enhancement (e.g., “Because you like the feeling”); (3) Social (e.g., “To be sociable”). These three scales each had high reliability ( $\alpha = .81, .90, \text{ and } .93$  for coping, enhancement, and social respectively). All items were anchored by 1 (*almost never/never*) and 5 (*almost always/always*).

**2.3.2 Subjective norms**—Subjective norms include the perception of important others' attitudes towards drinking and drinking behaviors. As such, the perceived norm about the behavior of a typical group member was used to assess subjective norms. Three items assessed subjective norms: (1) “How many drinks, on average, does a typical member of {Sorority Name} consume during a typical drinking occasion?” (2) “How many drinks does a typical member of {Sorority Name} drink each week?” (3) “Within the past 30 days, what is the maximum number of drinks the typical member of {Sorority Name} consumed during one occasion?” The field {Sorority Name} was replaced with the actual name of the respondent's sorority. The first item was measured on a scale from 1 (*none*) to 9 (*13 or more*) whereas the last two items were on a scale from 1 (*none*) to 9 (*22 or more*).

**2.3.3. Perceived behavioral control (PBC)**—Among college students, perceived control over the ability to refrain from drinking may directly impact drinking behaviors. As such, items from the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989), which tap into the inability to refrain from drinking, were used to assess PBC. The full RAPI is psychometrically sound and contains 23 items. Four items appeared to tap into the lack of behavior control. Respondents first read, “How many times did the following things happen to you while you were drinking or because of your alcohol use during the PAST MONTH?” This was followed by: (1) “Felt that you needed more alcohol than you used to use in order to get the same effect?” (2) “Tried to control your drinking by trying to drink only at certain times of the day or in certain places?” (3) “Tried to cut down or quit drinking?” (4) “Kept drinking when you promised yourself not to?” These questions were measured from 1 (*never*) to 5 (*more than 10 times*), such that higher scores indicate a lower level of perceived behavioral control, and therefore greater difficulty in refraining from alcohol consumption.

**2.3.4. Drinking intentions**—Drinking intentions were assessed at the baseline survey and included a self-report of the participant's intended drinking over the next 30 days. This factor had two indicators, each answered with open-ended responses. “The following items ask about your intended behavior in the NEXT MONTH (30 days):” (1) “On average, how many drinks do you intend to have when you drink?” (2) “During the next 30 days, what is the maximum number of drinks you intend to drink AT ONE TIME?”

**2.3.5. Drinking behavior**—Actual drinking behavior was assessed at the follow-up survey, collected one month after baseline. The same respondents were asked open-ended items to assess their alcohol consumption. “The following items ask about your behavior in the PAST MONTH (30 days):” (1) “On average, how many drinks did you have each time you drank?” (2) “What is the maximum number of drinks you drank at any one time?”

## 3. Results

### 3.1 Description of Alcohol Consumption

The correlation matrix, along with the means and standard deviations, for the measured variables is presented in Table 1. Among our sample, only 8.1% indicated that they did not drink in the past month, suggesting that the vast majority of sorority members engaged in alcohol consumption. Specifically, the sorority women in our sample consumed an average of 3.59 ( $SD = 2.02$ ) drinks per occasion and 6.03 ( $SD = 3.53$ ) maximum drinks per occasion in the past month (see Table 1). Excluding non-drinkers, sorority females consumed an average of 3.89 ( $SD = 1.82$ ) drinks per drinking occasion and 6.54 ( $SD = 3.20$ ) maximum drinks on their peak drinking occasion. Although 8.1% of the sample were non-drinkers, 20.3% reported meeting the classification of “frequent binge drinkers” (defined as binge drinking three or more times in the past two weeks), while 35.2% were classified as “binge drinkers” (defined as four or more drinks in a two hour period one or two times in the previous two weeks; Wechsler & colleagues, 1994). Our findings suggest that according to these definitions, binge drinking behaviors are relatively typical among this sample. Other descriptive data reveal that, among all participants in the sample, an average of 27.50 ( $SD = 27.52$ ) drinks were consumed per month and an average of 6.11 ( $SD = 4.74$ ) days in the past month were spent drinking.

### 3.2 Analytic Plan

**3.2.1. Model specification**—The structural equation model was conducted with EQS 6.1 (Bentler, 2001). Maximum Likelihood was employed as the method of estimation. In comparison to more conventional statistical methods such as path analysis and multiple regression analysis, a major advantage of structural equation modeling is that each latent factor

captures the shared variance among its indicators and therefore explicitly partials out measurement error (Byrne, 2006).

A two-step approach (Anderson & Gerbing, 1992) was undertaken to evaluate whether the hypothesized model fits the data. The first step involved a confirmatory factor analysis to estimate the measurement component of the constructs in the Theory of Planned Behavior. The confirmatory factor model was specified as follows: Indicators loaded on their underlying factors and inter-factor correlations were allowed. Their corresponding measurement errors were estimated as well. If the psychometric properties of the structure were deemed acceptable, we proceed with the second step, our predictive model, whereby the measurement and structural components were simultaneously estimated. The predictive model was specified as follows: Each factor was specified to predict its respective indicators. Then, attitudes, subjective norms, and perceived behavioral control—allowed to freely intercorrelate with one another—all were set to be predictive of intentions. In addition, both perceived behavioral control and intentions were set to predict behavior. Measurement errors and disturbance terms also were estimated. Considering that the number of parameters did not exceed the number of unique data points, each model was deemed to be over-identified, a necessary condition for estimating a solution.

**3.2.2 Model evaluation**—The overall fit of the confirmatory factor model and the predictive model each were interpreted with several tests. A non-significant chi-square test, leading to non-rejection of the model, would suggest a relatively good approximation of the data. This test, however, is sensitive to sample sizes (Bollen, 1989). Thus, we also examine the chi-square to degrees of freedom ratio, whereby a ratio of less than 3.0 is considered acceptable (Kline, 1998). Also, other commonly reported fit indices, such as the Comparative Fit Index (CFI), Incremental Fit Index (IFI), and the Non-Normed Fit Index (NNFI) were reported. These comparative approaches to overall model evaluation typically range from 0 to 1, with higher values indicating better fit (Ullman & Bentler, 2003). The Root Mean Square Error of Approximation (RMSEA), a residual-based index, suggests that values larger than .10 reveal a poor fitting model (Browne & Cudeck, 1993)

After assessing overall fit, we then evaluate specific components of these models. With regard to the confirmatory factor model and the predictive model, the measurement component, defined as the item loadings within each respective factor, was scrutinized. If relations between indicators and their latent factors were statistically significant, this would suggest that items were representative of their corresponding constructs. With respect to the predictive model, the structural component, consisting of relationships between the latent factors, was then examined—to determine whether the theoretical factors of the TPB predicted as hypothesized.

### 3.3 Confirmatory Factor Model

Results from the confirmatory analysis are presented in Figure 1. The model was statistically significant,  $X^2(67, N = 247) = 123.50, p < .01$ , with a chi-square to degrees of freedom ratio of 1.84. Further, the model achieved high fit: CFI = .968, NNFI = .956, IFI = .968. The RMSEA was .059, with a 90% C.I. of .042 and .074. All item loadings were revealed to be statistically significant,  $p < .01$ . Considering that they are part of the same framework, the TPB's constructs were found to be interrelated, with the highest correlation between intentions and behavior ( $r = .83, p < .01$ ) and the weakest correlation between behavioral control and intentions ( $r = .33, p < .01$ ).

### 3.4 Predictive (Hypothesized) Model

Results support the Theory of Planned Behavior framework in characterizing and predicting alcohol perceptions and behavior in our sorority sample. The solution with standardized paths

is displayed in Figure 2. The chi-square test was shown to be statistically significant  $X^2(69, N = 247) = 125.21, p < .01$ , with a chi-square to degrees of freedom ratio of 1.81. The comparative indices were high and indicative of good fit: CFI = .968; NNFI = .958; IFI = .968. The RMSEA value of .058, with a 90% C.I. of .041 and .073, further corroborates that the predictive model successfully approximated the data.

Within the measurement component, all indicators were found to be reliably ( $p < .01$ ) associated with the latent factors. The structural component revealed that only attitudes ( $\beta = .39, p < .01$ ) and subjective norms ( $\beta = .52, p < .01$ ) predicted intentions. Behavior was predicted by both intentions ( $\beta = .76, p < .01$ ) and perceived behavioral control ( $\beta = .22, p < .01$ ). This model explained a substantial 44.7% of the variance in intentions and 73.4% of the variance in behavior. Inter-factor correlations were exhibited between attitudes and subjective norms ( $r = .43, p < .01$ ); subjective norms and perceived behavioral control ( $r = .45, p < .01$ ); and attitudes and perceived behavioral control ( $r = .68, p < .01$ ).

Although the hypothesized model fit the data well, perceived behavioral control was found to be unrelated to intentions. Thus, the model was re-estimated, exactly as before, but this time dropping the path from perceived behavioral control to intentions. This second model was demonstrated to be good-fitting,  $X^2(70, N = 247) = 126.84, p < .01$ ;  $X^2/df = 1.81$ ; CFI = .968, NNFI = .958; IFI = .968; and RMSEA = .057, with a 90% C.I. of .041 and .073. Because this second model is nested within the initially hypothesized model, a chi-square difference test was performed to ascertain if there is a statistically significant difference between these two models. Results show that the this test was not significant,  $X^2_{diff}(1, N = 247) = 1.63, p > .05$ . Such evidence supports that dropping the linkage from perceived behavioral control to intention will not degrade the hypothesized model.

#### 4. Discussion

This research examined the applicability of the Theory of Planned Behavior for understanding drinking behaviors among sorority females. The noted increase in drinking among females in college and the significant influence of the Greek system on heavy drinking provide rationale for this longitudinal study which offers insight for identifying factors associated with alcohol consumption. Findings suggest that our sample of sorority females do indeed drink more heavily than general college females. For example, recent research by LaBrie and colleagues (in press) on college females found 23.2% met the qualification for “binge drinker” (compared to 35.3% of our sorority sample) and 15.5% met the qualification for “frequent binge drinker” (compared to 20.3% of our sample). Findings suggest that Greek-affiliated females drink more than general college females.

Our findings suggest that there may be two main pathways predicting alcohol consumption among sorority members. Primarily, intentions to drink mediated the relationship between both attitudes and subjective norms on drinking behavior. Perceived behavioral control, however, had a direct path to drinking behavior, suggesting that the perception of difficulty in refraining from problematic drinking among our sample of sorority members influenced their drinking behaviors. Thus, while it is well documented that intentions predict behaviors, it appears that among Greek-affiliated sororities, where alcohol use has been found to be more prevalent and accepted by members, lower perceived control over the behavior does not predict the intention to drink but does influence actual alcohol consumption. Perceived control therefore has a direct effect on drinking and is not mediated by intentions.

To our knowledge, very few studies to date have examined sorority females independently from fraternities and no studies have applied the TPB to sorority drinking. To test the applicability of TPB in understanding sorority drinking, a latent structural equation model

revealed that intentions to drink over the next 30 days significantly predicted drinking behaviors (average drinks and maximum drinks per occasion) one month later. This key finding is consistent with research on TPB and college drinking that underscores the significant role of intentions on behavior (e.g., Bentler & Speckart, 1979; Conner, et al., 1999; Norman & Conner, 2006; Schlegel, et al., 1992). Thus, TPB is an effective and appropriate model for predicting sorority drinking in college. Yet, even with the longitudinal design, it is still possible that the relationship between intentions and behavior found among our sample reflects the stability of drinking over time. Future research is encouraged to examine the role of previous drinking within this model to clarify the strength of intentions on behavior.

An examination of the constructs of the TPB revealed that all three predictor variables—attitudes toward drinking, subjective norms, and perceived behavioral control—were significantly and positively correlated. These inter-factor correlations suggest that as attitudes toward drinking increase, so do subjective norms about drinking, as well as a perceived lack of control over drinking related problems. Furthermore, intentions to drink mediated the relationship between attitudes and norms on drinking behaviors. Perceived control defined as the inability to refrain from drinking, on the other hand, directly predicted drinking behaviors. Taken together, the predictive model accounted for 44.7% of the variance in intentions and 73.4% of the variance in behavior.

Interestingly, while some studies suggest that attitudes are better predictors of intentions to drink than are subjective norms (Trafimow, 1996), among our sample of sorority members, norms were a stronger predictor of intentions than attitudes and control. This may be due to variations in the operationalization of constructs, but more likely, this finding is due to the important role of peer influence among sorority members and the pressure for sorority women to fit in with their peer referent group. In fact, our findings support recent research that examined many predictors of alcohol use and found social norms to be among the greatest predictors of college student use (Neighbors, Lee, Lewis, Fossos, & Larimer, in press). Peer associations have been found to significantly predict drinking behaviors among college students (Durkin et al., 2005). Among sorority members, these peer associations may have an even stronger impact when coupled with the strong perception of alcohol use as highly acceptable among Greek-affiliated students. Thus, sorority women may be forming intentions to drink based not only on their personal attitude toward drinking but more importantly to match the perceived behavior of their sorority sisters.

In the current model, we specified PBC to be the inability to refrain from problematic drinking. While norms and attitudes significantly predicted intentions to drink, PBC did not predict intentions, yet did predict drinking behaviors 30 days later. This finding is logical considering the *intention* to engage in a behavior assumes a rational and planned decision. Experiencing difficulty in refraining from drinking or a low sense of control over the performance of a behavior suggests that the behavior is no longer a rational choice where intentions to act are formed. The significant direct path between PBC and drinking behavior indicates that perhaps among sorority women who have low perceived behavioral control, it does not predict their intentions, but it does directly predict their drinking behavior. Our finding supports similar evidence found by Schlegel and colleagues (1992), suggesting that among heavier drinkers, intentions and perceived control both influence drinking.

While this study contributes to the understanding of female drinking patterns, deemed necessary by the national rising trend in female drinking, all Greek-affiliated students are at-risk for heavy consumption. As such, examination of male fraternity members is also necessary. Further, this study examined drinking behaviors among a selection of sorority members from one midsized, private, Western university. The sorority system at larger universities may be different and as such, our results would need to be replicated in other contexts for greater

external validity. Also, the current study utilized retrospective, self-report measures to assess drinking behaviors. While retrospective data collection has its limitations, applying TPB necessitates using a longitudinal design in order to examine future intentions and then assess actual drinking behaviors during that timeframe. Studies applying TRA or TPB in the past have assessed intentions without a follow-up assessment of actual behaviors (see studies 1 & 2 of Trafimow, 1996; Williams & Hine, 2002) and many use a weekly timeframe between intentions and behavior (e.g., Armitage, Conner, Loach, & Willetts, 1999; Norman & Conner, 2006; see study 3 of Trafimow, 1996). Thus retrospective data was necessary and allowed for the prediction of behavior over an entire month to be examined. Moreover, students were assured of confidentiality and no penalties existed for reporting drinking behavior. Still, future studies may wish to examine female drinking patterns in vivo, examining actual drinking situations among sororities. Additionally, the study assessed attitudes toward drinking by using the DMQ (Cooper, 1994). While not the traditional approach to assessing attitudes, the DMQ is still an appropriate and beneficial scale to measure attitudes towards drinking because responses to items indicate that the participant endorses alcohol use positively, thereby providing a positive evaluation toward performing the behavior. The traditional approach to measuring attitudes within the TPB framework is to assess an overall evaluation of the behavior in question. Measures of the attitude construct include the belief that the behavioral performance is associated with certain outcomes. The DMQ assesses the reasons why students drink (e.g., to be sociable), suggesting that the student engages in that behavior because of its association with that outcome (e.g., being sociable). Higher scores on the DMQ refer to a more positive endorsement of drinking for that reason, suggesting an underlying positive evaluation of drinking because of its association with the desired outcome. Therefore, it is logical to use the DMQ as an assessment of a student's attitude toward drinking.

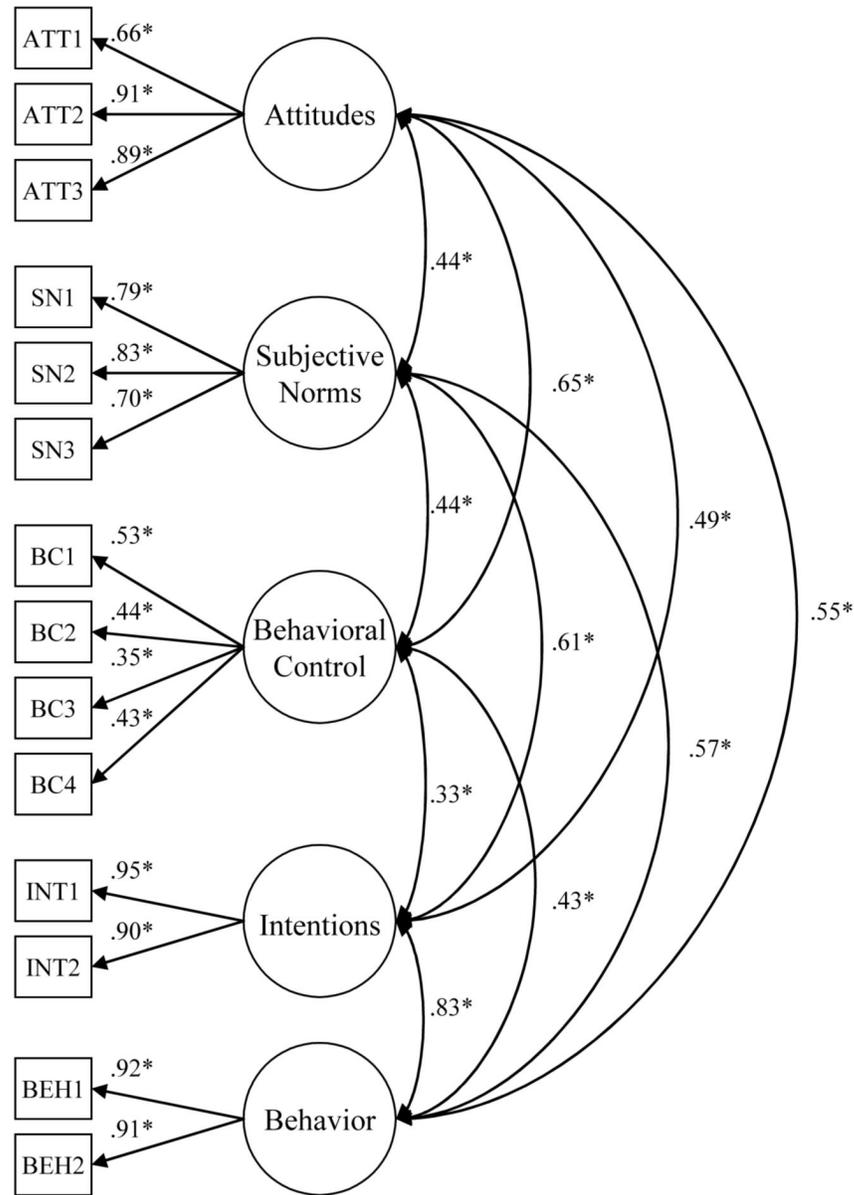
In conclusion, this study provides valuable information on drinking among college female students. While females are at increased risk for negative consequences, sorority members may be at even greater risk for excessive drinking due to the strong influence of the Greek system. This study establishes the TPB as an appropriate model for understanding factors that may predict drinking behaviors, especially female drinking within a social group. It appears as though among sorority members, drinking can be both a rational and planned decision, guided by intentions, but yet also not controlled by volition. Perhaps the culture of alcohol as acceptable among Greek-affiliated students allows sorority members to plan their drinking, but at the same time increases the perception that they have little control over the actual behavior. As both pathways appear to be significant in predicting alcohol consumption, interventions aimed at reducing drinking may wish to address both a healthy, mindful, and planned decision when it comes to drinking, as well as build skills to encourage control over the actual drinking situation. Specifically, interventions aimed at reducing heavy drinking among sororities would benefit from targeting the constructs of subjective norms and behavioral control. Effective interventions applying the social norms approach are already ongoing on many college campuses and challenge perceptions of peer alcohol consumption (Task Force on College Drinking, NIAAA, 2002). Such efforts may also consider targeting behavioral control, allowing women to realize that drinking is a choice in which they do have control over their drinking behavior. Activities that role play how to increase control and that encourage goal setting, may help women to form rational, planned decisions about their drinking behaviors. Increasing the perception of control may positively impact college campuses and reduce risk associated with drinking. Thus, by encouraging mindful decision-making and providing skills to control drinking behavior, a reduction in drinking and associated risk may occur.

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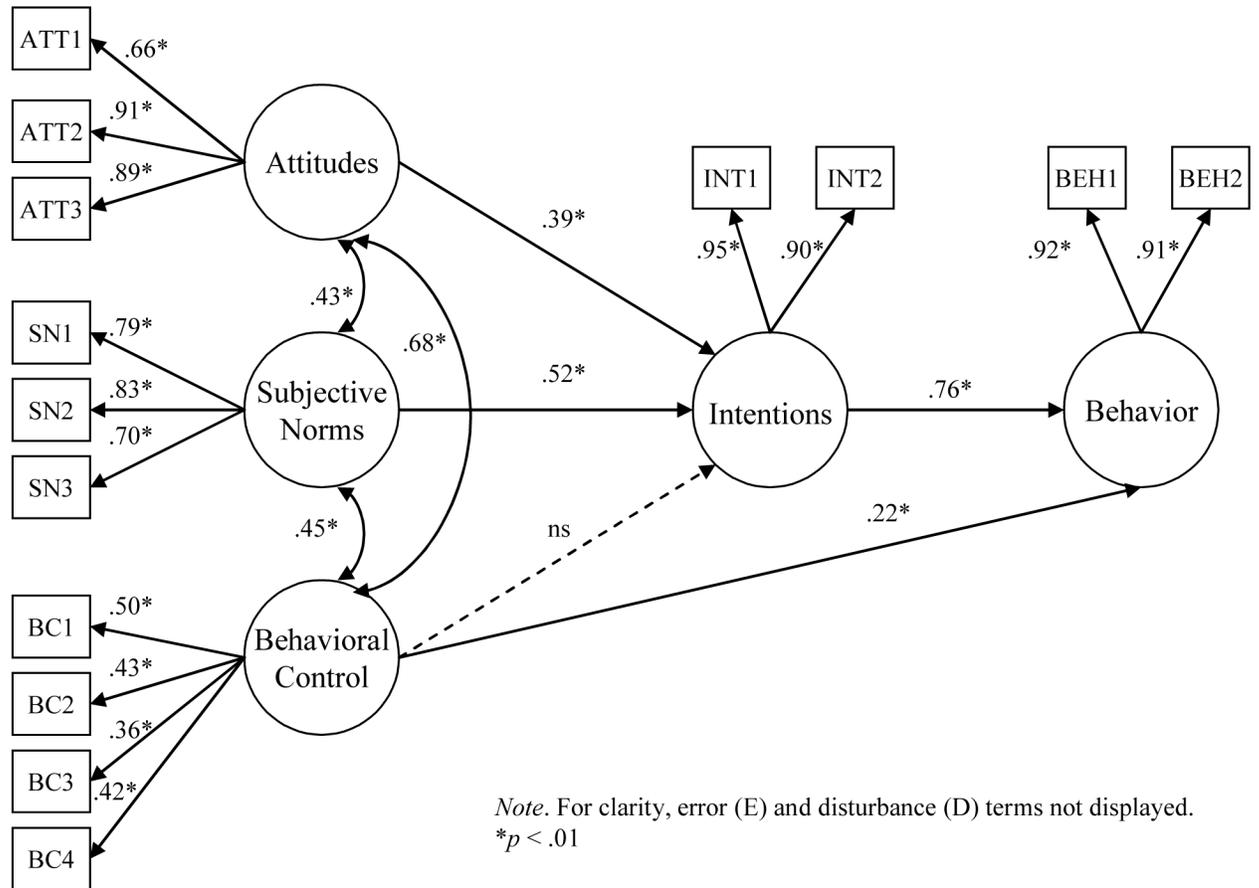
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Note. For clarity, error (E) terms not displayed.  
 \* $p < .01$

**Figure 1.** Confirmatory factor model on the Theory of Planned Behavior with a sample of undergraduate sorority members.



**Figure 2.** Predictive (hypothesized) model of Theory of Planned Behavior to predict alcohol consumption in sorority members.

**Table 1**  
Measured Variables: Correlations, Means, and Standard Deviations

Variable	ATT1	ATT2	ATT3	SN1	SN2	SN3	BC1	BC2	BC3	BC4	INT1	INT2	BEH1	BEH2
Coping motives	-													
Enhancement motives	.59													
Social motives	.61	.80												
Drinks per occasion (group)	.10	.33	.27											
Drinks per week (group)	.17	.41	.30	.64										
Max drinks per occasion (group)	.15	.27	.23	.55	.61									
More to get same effect	.25	.31	.32	.24	.31	.19								
Tried to control	.19	.22	.28	.13	.16	.09	.19							
Tried to cut down or quit	.22	.17	.18	.04	.13	.09	.14	.25						
Kept drinking	.19	.29	.22	.06	.13	.02	.26	.21	.10					
Drinks per occasion (intent)	.22	.46	.39	.53	.44	.36	.22	.13	.04	.11				
Max drinks per occasion (intent)	.21	.44	.35	.48	.41	.36	.27	.08	.05	.06	.85			
Drinks per occasion (past month)	.21	.50	.43	.47	.42	.32	.19	.14	.19	.12	.73	.66		
Max drinks per occasion (past month)	.19	.49	.43	.45	.41	.28	.24	.16	.17	.16	.69	.70	.83	
Mean	1.50	2.34	2.57	3.94	3.67	3.61	1.22	1.16	1.12	1.11	3.53	4.87	3.59	6.03
SD	0.63	1.11	1.15	1.13	1.31	1.31	0.45	0.44	0.35	0.33	1.98	2.98	2.02	3.53

Correlations above .12 are statistically significant at  $p < .05$ , two-tailed.

Correlations above .15 are statistically significant at  $p < .01$ , two-tailed.