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# Exploring Perceived Norms and Protective Strategies: Self-Consciousness and Gender as Moderators

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The University of Southern Mississippi

EXPLORING PERCEIVED NORMS AND PROTECTIVE STRATEGIES:  
SELF-CONSCIOUSNESS AND GENDER AS MODERATORS

by

Jeremy James Noble

Abstract of a Dissertation  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

December 2014

## ABSTRACT

### EXPLORING PERCEIVED NORMS AND PROTECTIVE STRATEGIES: SELF-CONSCIOUSNESS AND GENDER AS MODERATORS

by Jeremy James Noble

December 2014

College alcohol abuse has been a staple in the college environment over the past 30 years (Johnston, O'Malley, Bachman, & Schulenberg, 2011) resulting in numerous negative consequences (Hingson, Edwards, Heeren, & Rosenbloom, 2009). Protective behavioral strategies (PBS) reduce the negative consequences typically associated with alcohol use (Martens et al., 2004). A positive relationship exists between perceived norms of PBS use and PBS use (Benton, Downey, Glider, & Benton, 2008), and an individual's level of self-consciousness moderates the relationship between perceived norms and alcohol use (LaBrie, Hummer, & Neighbors, 2008). The relationship between perceived norms and PBS use under the conditions of self-consciousness has yet to be assessed. The current study aimed to assess to what extent perceived norms predicted PBS use with private self-consciousness, public self-consciousness, and social anxiety as moderators. Due to gender differences observed in these variables (Johnston et al., 2011; LaBrie, Pedersen, Neighbors, & Hummer, 2008), gender was also assessed as a moderator. Results revealed that perceived norms predicted an increase in PBS use. Private and public self-consciousness also predicted an increase in PBS use. A three-way interaction emerged between descriptive norms, private self-consciousness, and gender. Implications for college student intervention and prevention programs are discussed, as well as limitations of the study and directions for future research.

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A Dissertation  
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## TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGMENTS .....	iii
LIST OF TABLES.....	vi
LIST OF ILLUSTRATIONS.....	vii
CHAPTER	
I. INTRODUCTION .....	1
College Alcohol Use	
Negative Consequences	
Protective Behavioral Strategies	
Perceived Norms	
Self-Consciousness	
Purpose of Study	
II. METHODOLOGY .....	15
Participants	
Instruments	
Procedures and Data Collection	
Research Questions and Hypotheses	
Data Analytic Approach	
III. RESULTS .....	22
Descriptive Norms and Private Self-Consciousness	
Descriptive Norms and Public Self-Consciousness	
Descriptive Norms and Social Anxiety	
Injunctive Norms and Private Self-Consciousness	
Injunctive Norms and Public Self-Consciousness	
Injunctive Norms and Social Anxiety	
IV. DISCUSSION.....	34
Descriptive Norms and Private Self-Consciousness	
Descriptive Norms and Public Self-Consciousness	
Descriptive Norms and Social Anxiety	
Injunctive Norms and Private Self-Consciousness	

Injunctive Norms and Public Self-Consciousness  
Injunctive Norms and Social Anxiety  
Limitations  
Future Research  
Clinical Implications  
Conclusion

APPENDIXES .....50

REFERENCES .....53



## LIST OF TABLES

### Table

1. Intercorrelations and Descriptive Statistics.....	23
2. Descriptive Norms, Private Self-Consciousness, and Gender.....	25
3. Descriptive Norms, Public Self-Consciousness, and Gender.....	27
4. Descriptive Norms, Social Anxiety, and Gender.....	29
5. Injunctive Norms, Private Self-Consciousness, and Gender.....	30
6. Injunctive Norms, Public Self-Consciousness, and Gender.....	32
7. Injunctive Norms, Social Anxiety, and Gender.....	34

## LIST OF ILLUSTRATIONS

### Figure

1. Descriptive Norms, Private Self-Consciousness, Gender, and PBS.....26
2. Descriptive Norms, Public Self-Consciousness, and PBS..... 28
3. Injunctive Norms, Private Self-Consciousness, and PBS.....31
4. Injunctive Norms, Public Self-Consciousness, and PBS..... 33

## CHAPTER I

### INTRODUCTION

#### College Alcohol Use

College students report the highest levels of alcohol consumption in the United States (Johnston, O'Malley, Bachman, & Schulenberg, 2011; Substance Abuse Mental Health Services Administration, 2007). Eighty-two percent of college students report drinking alcohol at least once in their lifetime, while 65% report drinking within the past 30 days (Johnston et al., 2011). Although 44% of college students report being drunk in the past 30 days, only 29% of their non-college counterparts report the same (Johnston et al., 2011), suggesting differences in alcohol use between college and non-college peers. Johnston and colleagues (2011) found that college-bound 12<sup>th</sup> graders drank much less than their peers. However, upon attending college, they quickly surpassed their non-college peers in quantity and frequency of alcohol use. Other researchers have also observed this trend, finding freshman students to report significant increases in alcohol consumption from their senior year of high school to their first semester of college as well as from their first semester of college to their second semester of college (Fromme, Corbin, & Kruse, 2008; Timberlake et al., 2007). Based on these findings, it is clear that the college environment is related to a significant increase in alcohol use.

College students more frequently participate in heavy episodic drinking (HED), which is characterized by having five or more drinks for men or four or more drinks for women within a two-hour period (NIAAA, 2004). Thirty-seven percent of college students reported participating in HED within the past two weeks (Johnston et al., 2011). While 40-50% of college students report at least sometimes engaging in HED,

approximately 25% reported frequently participating in HED (e.g., three or more times in the past two weeks; Johnston et al., 2011; Wechsler & Nelson, 2008). Moreover, 13% of college students report having 10 or more drinks in a row, and 5% report having 15 or more in a row within the past two weeks (Johnston et al., 2011). Researchers have demonstrated that this pattern of excessive drinking has remained steady, even increasing in some cases, among the college population (Hingson, 2009).

Gender differences in alcohol consumption among the college population have been well documented (DeMartini & Carey, 2012; Johnston et al., 2011; Randolph, Torres, Gore-Felton, Lloyd, & McGarvey, 2009). Forty-four percent of college males report participation in HED in the past two weeks, while only 32% of college females report the same (Johnston et al., 2011). Male college students' participation in extreme HED (e.g., 10 or more drinks within a two-hour period) is also greater than female college students, in that 24% of males report having had 10 or more drinks in a row within the past two weeks compared to only 7% of college females (Johnston et al., 2011). Moreover, Johnston and colleagues (2011) found 10% of male students reported having 15 or more drinks in a row within the past two weeks compared to 1.7% of female students. Focusing specifically on at-risk drinkers, DeMartini and Carey (2012) found male at-risk drinkers drank significantly more alcohol weekly, daily, and during their heaviest drinking week; and they also experienced more negative consequences than female at-risk drinkers. Despite the fact that the gender gap related to college student alcohol use has narrowed in the past 30 years (Johnston et al., 2011), it appears that male college students continue to drink significantly more than female college students particularly in the area of HED. While alcohol use patterns differ greatly between

college men and women, alcohol consumption has been associated with a plethora of negative consequences across genders (Hingson, Heeren, Winter, & Wechsler, 2005; Wechsler & Nelson, 2008).

### Negative Consequences

Participation in HED is predictive of experiencing a number of associated problems for college students ranging from academic trouble to death (Hingson & Zha, 2009). As a result of alcohol consumption, 34.6% of college students report having done something they have later regretted, 30.4% report having forgotten where they were or what they did while drinking, 16.5% report having had unprotected sex, 14.9% report having physically injured themselves, and 3.6% report they have gotten arrested (ACHA-NCHA, 2007). Furthermore, 696,000 college students are attacked by intoxicated peers, 97,000 are victims of alcohol-related sexual assault, and approximately 1,825 students die as a result of their alcohol use every year (Hingson et al., 2005; Hingson, Edwards, Heeren, & Rosenbloom, 2009). Just as gender differences exist among college students' alcohol consumption, male college students report more automobile accidents, physical fights, and accidental injuries after drinking than female college students (Hingson et al. 2009). While some researchers have argued that HED and the associated negative consequences are simply restricted to an individual's time in college, Knight et al. (2002) found that students who participated in HED were 19 times more likely to develop alcohol dependence. Given these statistics, it appears college students' alcohol-related behaviors may pose serious short-term and long-term health concerns.

While the rate of alcohol consumption in the college population has remained steady over the past 30 years, the number of associated negative consequences has

increased (Hingson, 2010). Hingson (2010) found that the number of alcohol-related deaths within traditional college-aged students increased by 27% between 1998 and 2005. In the same time span, the percentage of college students who reported operating an automobile while drinking increased from 26.1% to 29.2% (Hingson, 2010). Implications from these findings denote the drastic increase in serious alcohol-related harm among the college population during the last two decades. For these reasons, researchers continue to explore methods for reducing the harm associated with alcohol consumption. One method that has shown much promise is the use of protective behavioral strategies (PBS).

#### Protective Behavioral Strategies

PBS are designed to reduce the harm associated with alcohol consumption and have received positive support for their efficacy in the literature (Martens et al., 2004). PBS can be described as a form of self-regulation that can be used by college students to protect themselves from negative consequences while consuming alcohol (Howard, Griffin, Boekeloo, Lake, & Bellows, 2007). Examples of PBS include determining not to exceed a set number of drinks, avoiding shots of liquor, and using a designated driver (Martens, Pedersen, LaBrie, Ferrier, & Cimini, 2007). Unlike many of the more stable predictors of alcohol-related problems (e.g., genetics, family environment), self-regulation is something that can be adjusted. Therefore, it seems of vital importance that researchers and practitioners focus on ways to increase college students' use of PBS in order to better protect them from alcohol-related harm.

Much research has been dedicated to assessing the relationship between PBS and negative alcohol consequences (e.g., Araas & Adams, 2008; Delva et al., 2004; Martens

et al., 2004). An inverse relationship has been established between increased PBS use and the amount of alcohol consumed, as well as the amount of negative consequences experienced (Benton et al., 2004; Martens et al., 2004). Accordingly, individuals who use the fewest PBS are 6.5 times more likely to experience negative consequences resulting from their alcohol use (Delva et al., 2004). Researchers have also identified PBS as a mediator of the relationship between positively reinforcing drinking motives (e.g., to increase sociability, to relieve stress) and both alcohol consumption and negative consequences (Martens, Ferrier, & Cimini, 2007) as well as the relationship between depressive symptoms and negative consequences (Martens et al., 2008). In other words, PBS account for a significant portion of the relationship between predictors of negative alcohol-related consequences and the consequences themselves. Discovering ways to alter this mediator (i.e., increase PBS use) may serve to protect college students by decreasing their experiences with negative consequences.

Researchers have also shown that PBS moderates the relationship between alcohol consumption and negative consequences, finding that alcohol consumption was most strongly related to negative consequences for college students who used the fewest PBS (Benton et al., 2004). Other researchers have demonstrated the moderating effects of PBS on the relationship between self-regulation and alcohol-related consequences (D'Lima, Pearson, & Kelley, 2012) as well as the relationship between HED and alcohol-related consequences (Borden et al., 2011). Similar to studies previously mentioned, it appears that PBS serve as both a mediator and moderator of alcohol-related harm and its antecedents. Therefore, it seems of vital importance that researchers focus on factors that influence PBS use. One such factor is gender.

Similar to other alcohol-related variables, gender differences also exist in relation to PBS use. Female college students have been observed to use PBS more often than male college students (Benton et al., 2004; Delva et al., 2004; LaBrie, Lac, Kenney, & Mirza, 2011), which may account for their fewer overall experiences with alcohol-related consequences (Wagoner et al., 2012). However, researchers have shown that as alcohol consumption increases, college women experience greater alcohol-related negative consequences than college men (Presley & Pimentel, 2006). For example, females reach levels of intoxication sooner than males due to metabolic differences (Perkins, 2002b). This quicker elevation in blood alcohol concentration increases a female college student's susceptibility to alcohol-related harm. Therefore, college women may be more motivated to use PBS given their higher susceptibility to negative consequences when participating in HED. Taken together, there may be differences in the application of PBS for male and female college students, and these differences may require further assessment in order to tailor future interventions appropriately.

Evidence for the value of PBS in mediating and moderating the relationship between several alcohol-related predictors of negative consequences has been established in the literature (e.g., Benton et al., 2004; Delva et al., 2004; Martens et al., 2004). However, a major gap in the literature is the limited knowledge on what factors influence one's use of PBS. Given that PBS are behaviors that are controllable, it seems vitally important that this gap be addressed. By exploring factors that affect an individual's use of PBS, researchers can better understand how to tailor interventions to maximize college-student protection from alcohol-related harm. One area that shows much promise in predicting PBS use is perceived norms (Benton, Downey, Glider, & Benton, 2008).



## Perceived Norms

Social influences have been recognized as some of the most robust predictors of alcohol consumption and PBS use (Benton et al., 2008; Borsari & Carey, 2003; Neighbors, Lee, Lewis, Fossos, & Larimer, 2007). College students' perceptions of their peers' behaviors and attitudes towards alcohol and PBS use, known as perceived norms, indirectly influence their own use of each (Benton et al., 2008; Borsari & Carey, 2003). Perceived norms can be defined as "self-instructions to do what is perceived to be correct by members of a culture" (Solomon & Harford, 1984, p. 460) and can be divided into two groups: descriptive norms (i.e., observable behavior) and injunctive norms (i.e., perceived attitudes of others). For example, a college student may develop certain descriptive norms based on observing the drinking patterns of peers at a party or hearing alcohol use talked about on campus. Moreover, he or she might develop injunctive norms on the notion that others are accepting of alcohol use based on what he or she observes. Neighbors, Lee et al. (2007) identified both types of perceived norms as distinctively associated with college student drinking. Furthermore, the relationship between perceived norms and alcohol use is more salient in male college students (LaBrie, Hummer, & Neighbors, 2008). Taken together, it appears that perceived norms are strong predictors of a college student's drinking patterns including his or her choice to use PBS.

Although perceived norms have been shown to be significant predictors of alcohol use among college students, considerable discrepancies exist between perceived and actual behavior (Borsari & Carey, 2003). Accordingly, this discrepancy results in students overestimating how much their peers are drinking and underestimating how

many of their peers participate in healthier drinking habits such as PBS use (Benton et al., 2008, Borsari & Carey, 2003; Perkins, 2002a). DeMartini, Carey, Lao, and Luciano (2011) found that college students report greater acceptability of PBS use and less acceptability of alcohol related consequences for themselves than their peers, indicating that they perceive their peers as more accepting of hazardous alcohol use and less accepting of healthy drinking behaviors such as PBS. Benton and colleagues (2008) demonstrated that college students underestimate the frequency with which their peers use PBS, thus reporting that their own use of PBS exceeds others. Given these findings, it appears that college students' perceived norms might be related to an underutilization of PBS in order to match the perceived behaviors and attitudes of their peers.

Researchers have clearly demonstrated that the college student population is a susceptible group for alcohol-related harm (Hingson, 2009). Further, researchers have shown that perceived norms, both descriptive and injunctive, strongly influence drinking patterns, especially for men (Neighbors, Lee et al., 2007). Certain intrapersonal factors have also been shown to greatly influence an individual's drinking patterns (Borsari, Murphy & Barnett, 2007; Zielger-Hill, Madson & Ricedorf, 2012) as well as their development of various perceived norms (Neighbors, Lee et al., 2007). One factor highlighted is an individual's self-consciousness.

#### Self-Consciousness

Self-consciousness is defined as "the consistent tendency of persons to direct attention inward or outward" (Fenigstein, Scheier, & Buss, 1975, p. 522). More specifically, Fenigstein et al. (1975) divided self-consciousness into three factors: a) private self-consciousness, b) public self-consciousness, and c) social anxiety.

Accordingly, private self-consciousness pertains to someone's reflections and inner thoughts, including motives, attitudes, feelings, and expectancies, while public self-consciousness refers to a person's perception of him or herself as a social object including his or her appearance and behavior (Fenigstein et al., 1975). Social anxiety encompasses factors from both private and public self-consciousness, in that there is an expressive component seen by others, related to public self-consciousness, and a feeling component known only to the person experiencing the anxiety, related to private self-consciousness (Hull, 1981, p. 128). Researchers have found that individuals' drinking patterns may be contingent on their levels of private self-consciousness, public self-consciousness, or social anxiety (Hull, 1981; Neighbors, Fossos et al., 2007).

A high level of private self-consciousness may serve as a protective factor against alcohol-related harm (Rogosch, Chassin, & Sher, 1990). More specifically, individuals who report having higher levels of private self-consciousness are said to be less influenced by environmental factors such as peer pressure and to possess more insight into their own behavioral patterns and cognitions (LaBrie, Pedersen et al., 2008); therefore, these individuals may have a more sound grasp on their own motives to drink as well as what they would expect to happen when drinking. Bartholow, Sher, and Strathman (2000) found that those with high private self-consciousness demonstrated the strongest relationship between expectancies and alcohol consumption. In other words, those individuals with high private self-consciousness are more self-aware and, thus, may have greater congruence between their expectancies and actual use of alcohol. Moreover, Hull (1981) theorized that alcohol reduces an individual's self-consciousness. While this may have a negatively reinforcing effect on those with negative affect, diminished self-

consciousness may be undesirable for those who are more privately self-conscious (Hull, 1981). Given the findings from these studies, it seems that those who report higher levels of private self-consciousness may use more PBS, drink less, and experience fewer negative consequences due to their proficient insight and disinterest in reducing cognizance.

Contrary to findings on private self-consciousness, individuals who report higher levels of public self-consciousness report higher levels of alcohol-related negative consequences (LaBrie, Pedersen et al., 2008). Since public self-consciousness is related to a tendency to conform to others' requests and social influences likely play a major role in a college student's alcohol use (Borsari & Carey, 2001), those with higher levels of public self-consciousness may be more prone to drink because of the positive consequences of alcohol such as increased sociability or peer acceptance (Froming & Carver, 1981; LaBrie, Pedersen et al., 2008). Thus, students with higher levels of public self-consciousness have been found to experience more alcohol-related negative consequences than those who report lower levels of public self-consciousness (LaBrie, Pedersen et al., 2008). Given these findings, it seems that higher levels of public self-consciousness may play a significant role in an individual's drinking related behaviors particularly his or her use of PBS.

Divergent findings regarding the effects of social anxiety on alcohol consumption have been presented in the literature. Hull (1981) hypothesized that individuals who identify as socially anxious may use alcohol to avoid negative self-conscious affect. Grant and colleagues (2005) found that 48% of individuals with a lifetime social anxiety disorder diagnosis also meet the criteria for an alcohol use disorder. Similarly,

researchers have found a positive correlation between social anxiety and hazardous alcohol use (Buckner, Eggleston, & Schmidt, 2006; Gilles, Turk, & Fresco, 2006; Lewis & O'Neill, 2000; Stewart, Morris, Mellings, & Komar, 2006). These findings highlight the significant relationship between social anxiety and alcohol behaviors which may strongly dictate a college student's alcohol-related behaviors considering the 15-20% prevalence of comorbid social anxiety and alcohol-related problems in the college student population (Tran, Anthenelli, Smith, Corcoran, & Rofey, 2004).

While many have found social anxiety to increase hazardous alcohol consumption, others have demonstrated that social anxiety has led to decreases in hazardous alcohol use (Eggleston, Woolaway-Bickel, & Schmidt, 2004; Ham, 2009; Ham & Hope, 2005; 2006; Ham, Zamboanga, Bacon, & Garcia, 2009). Christiansen, Vik, and Jarchow (2002) hypothesized that social anxiety may act as a protective factor against negative alcohol-related consequences due to the notion that socially anxious college students might avoid most social situations where HED most often occurs such as a party, bar, or other event. Nevertheless, LaBrie, Hummer, and Neighbors (2008) asserted that this variation in the findings of the effects of social anxiety on alcohol consumption is due to the varying experiences of alcohol that these individuals have had. In other words, once individuals with social anxiety discover that alcohol can be used to alleviate negative affect, their participation in hazardous use, such as HED, increases. In fact, LaBrie, Pedersen, and colleagues (2008) found that while social anxiety initially served to reduce alcohol consumption, social anxiety interacted with heavy drinking to predict an increase in negative alcohol-related consequences. Collectively, based on these studies, it appears that social anxiety paired with HED is a significant predictor of

alcohol-related problems, which is theoretically indicative of the underutilization of PBS (Martens et al., 2004).

While a plethora of studies have demonstrated gender differences with alcohol use patterns, LaBrie, Pedersen, and colleagues (2008) found that gender did not moderate the relationship between the three factors of self-consciousness and alcohol use.

However, Neighbors, Fossos et al. (2007) found that male college students with higher social anxiety also possessed a stronger relationship between perceived norms and alcohol consumption than female college students. This finding may be a product of social norms related to the gender roles associated with alcohol. More specifically, HED is perceived as more positive for male college students than for female college students (LaBrie, Hummer et al., 2008; Prentice & Miller, 1993), which may allow for more acceptable use by men when using it to treat negative affect. Other researchers have also demonstrated the greater role that drinking plays in the development of the male social identity in comparison to the female social identity within the college environment (Neighbors, Walker, & Larimer, 2003; Prentice & Miller, 1993). While the effects of private self-consciousness, public self-consciousness, and social anxiety on college alcohol use may not be moderated by gender, the interaction of these factors with perceived norms and their ability to predict PBS use may significantly differ across genders. This would be expected given the influence of perceived social and gender norms related to drinking behavior for men and women.

#### Purpose of the Study

Researchers have demonstrated that excessive alcohol consumption, such as participation in HED, is predictive of negative consequences (Hingson & Zha, 2009).

Researchers have also established that PBS mediate and moderate the relationship between alcohol consumption and negative consequences (Borden et al., 2011; Martens et al., 2004). Therefore, in an effort to increase college students' ability to protect themselves while drinking, additional focus should be placed on exploring factors that predict PBS use. While LaBrie, Hummer, and Neighbors (2008) found self-consciousness to moderate the relationship between perceived norms and alcohol consumption and DeMartini et al. (2011) demonstrated that perceived norms strongly predict PBS use, the moderating effects of self-consciousness on the relationship between perceived norms and PBS use remain unknown. Given that those who are more privately self-conscious are less likely to be susceptible to social influences (Foster & Neighbors, 2013), it was hypothesized that the relationship between perceived norms of PBS use and PBS use will be strongest for those with lower levels of private self-consciousness. Conversely, individuals who are more publicly self-conscious and are more socially anxious are more likely to be influenced by perceived norms (Borsari & Carey, 2001; Hull, 1981; LaBrie, Hummer et al., 2008). Therefore, it is hypothesized that the relationship between perceived norms of PBS use and PBS use will be strongest for those with higher levels of public self-consciousness as well as for those high in social anxiety. Moreover, due to findings that suggest that male college students are more susceptible to social influences (Benton et al., 2008), it is suspected that the relationship between perceived norms will be strongest for males than it will be for females. That being said, the purpose of this study was to assess to what extent the three factors of self-consciousness (private self-consciousness, public self-consciousness, and social anxiety)

qualify the relationship between perceived norms (descriptive and injunctive) and PBS use. Thus, this project will attempt to answer the following questions:

1. To what extent is the association between descriptive norms of PBS and PBS use qualified by an individual's self-consciousness (private self-consciousness, public self-consciousness, and social anxiety) and gender?

2. To what extent is the association between injunctive norms about PBS and PBS use qualified by an individual's self-consciousness (private self-consciousness, public self-consciousness, and social anxiety) and gender?



## CHAPTER II

### METHODOLOGY

#### Participants

Participants were undergraduate college students from a major university in the southeastern United States. The original sample size was 1,725. However, all data underwent a screening process in which participants who reported no use of alcohol within the past 30 days ( $N = 4$ ), were not between the ages of 18 and 25, or did not complete 75% of the measures ( $N = 1096$ ) were omitted from subsequent analyses. As a result, the final sample size was 626 (144 = male, 482 = female). In light of the current literature pertaining to perceived norms and PBS, a minimum sample size of  $N = 146$  was warranted in order to detect a medium effect (e.g., LaBrie, Hummer et al., 2008; LaBrie, Pedersen et al., 2008) and achieve a desired power of 0.95 (Cohen, 1992). The mean age was 19.49 ( $SD = 1.69$ ). The majority of participants were Caucasian (63%), with 33% African American, 1% Hispanic, and 3% Other. The majority of participants were also freshmen (49%), with 24% sophomores, 15% juniors, and 12% seniors. The average number of weekly drinks was 7.89 ( $SD = 9.46$ ), with the majority of participants categorized as moderate drinkers (i.e., 4-11 drinks;  $N = 252$ ) followed by light drinkers (i.e., 3 drinks or less;  $N = 239$ ) and heavy drinkers (i.e., more than 12 drinks;  $N = 133$ ).

#### Instruments

##### *Demographic Questionnaire*

Participants completed a demographic questionnaire, which included information about gender, ethnicity, age, year in school, enrollment status, and employment status.

*Daily Drinking Questionnaire (DDQ)*

The purpose of the DDQ is to measure the quantity and frequency of a participant's alcohol use. The DDQ asks participants to report their drinking patterns during a typical week (i.e., number of drinks they consumed and time spent drinking) (Collins, Parks, & Marlatt, 1985). Participants are then classified into one of three categories outlined by Collins and colleagues (1985): light (3 drinks or less drinks/week), moderate (4-11 drinks per week), and heavy drinkers (more than 12 drinks per week).

In order to assess convergent validity, Collins et al. (1985) compared the DDQ to the Drinking Practices Questionnaire (DPQ; Cahalan, Cisin, & Crossley, 1969) and found the measures to be significantly correlated,  $r(52) = .50$ ,  $p = .001$ .

*Protective Behavioral Strategies Scale-Revised (PBSS-R)*

The PBSS-R is an 18-item scale designed to assess the degree to which individuals engage in certain protective strategies that may decrease the likelihood of experiencing negative alcohol-related consequences (Madson, Arnau, & Lambert, in press.). The PBSS-R is a modification of the 15-item PBSS (Martens et al., 2007). The PBSS-R increases internal consistency of the PBSS, particularly the Serious Harm Reduction (SHR) subscale, to an adequate level (Madson et al., in press). Further, the PBSS-R is invariant across genders (Madson et al., in press). Participants are asked to endorse the degree to which they engage in a list of protective strategies when using alcohol on a 6-point Likert-type scale ranging from 1 (never) to 6 (always). Example behaviors include (a) alternate alcoholic and nonalcoholic drinks, (b) drink slowly, rather than gulp or chug, and (c) make sure you go home with a friend. The PBSS-R is scored

by summing responses to obtain three subscale scores and a total score. Total scores range from 18 to 108, with higher scores indicating greater use of PBS and lower scores indicating lesser use of PBS.

Internal consistencies for the PBSS-R range from .89 to .91, and the PBSS-R is invariant across gender (Madson et al., in press). Construct validity for the PBSS-R has also been supported by findings that all subscales negatively correlate with alcohol consumption and negative consequences ranging from  $r = -0.39$  to  $-0.49$  (Madson et al., in press). Internal consistency for the PBSS-R was .96 for this sample.

#### *Self-Consciousness Scale (SCS)*

The SCS is a 23-item scale that measures respondents' levels of private self-consciousness, public self-consciousness, and social anxiety (Fenigstein et al., 1975). Participants are asked to rate how much each item is characteristic of them on a Likert-type scale ranging from 0 (extremely uncharacteristic) to 4 (extremely characteristic) (Fenigstein et al., 1975). For the subscale measuring private self-consciousness, item examples include (a) "I'm always trying to figure myself out," (b) "Generally, I'm not very aware of myself," (c) "I reflect about myself a lot," and (d) "I'm often the subject of my own fantasies." For the subscale measuring public self-consciousness, item examples include (a) "I'm concerned about my style of doing things," (b) "I'm concerned about the way I present myself," (c) "I'm self-conscious about the way I look," and (d) "I usually worry about making a good impression." Item examples for the subscale measuring social anxiety include (a) "It takes me time to overcome my shyness in new situations," (b) "I have trouble working when someone is watching me," (c) "I get embarrassed very easily," and (d) "I don't find it hard to talk to strangers."

A factor analysis performed by Fenigstein et al. (1975) revealed a three-factor model of the SCS consisting of private self-consciousness, public self-consciousness, and social anxiety. Researchers have also demonstrated construct validity of the SCS in a number of contexts (Carver & Glass, 1976; Carver & Scheier, 1978; Turner, Scheier, Carver & Ickes, 1978). Turner and colleagues (1978) found the private self-consciousness subscale of the SCS to be significantly correlated with the Guilford-Zimmerman Thoughtfulness Scale ( $r = .48$ ) and the Paivio Imagery Scale ( $r = .30$ ), supporting the construct validity of this subscale. Carver and Glass (1976) assessed the discriminant validity of the SCS and found it to be relatively independent of measures assessing need for achievement, test anxiety, emotionality, sociability, impulsivity, and activity level. Finally, LaBrie, Hummer, and Neighbors (2008) found each subscale to have adequate reliability: private self-consciousness ( $\alpha = .71$ ), public self-consciousness ( $\alpha = .81$ ), and social anxiety ( $\alpha = .78$ ). The SCS has been used as the primary measure for measuring the self-consciousness trait among the college population in a number of recent studies (Foster & Neighbors, 2013; LaBrie, Hummer et al., 2008; LaBrie, Pedersen et al., 2008). Internal consistency for the SCS for this sample was .89.

*Protective Behavioral Strategies Scale-Descriptive Norms (PBSS-DN)*

The PBSS-DN is a modified version of the PBSS-R (Madson et al., in press). This modification consisted of changing the PBSS-R instructions as outlined by Benton et al. (2008) and DeMartini et al. (2011). Participants were asked to report their estimation of the typical PBS use of their peers. As with the traditional PBSS, the PBSS-DN asks participants to indicate the degree to which their friends engage in the protective strategies when using alcohol on a 6-point Likert-type scale ranging from 1 (never) to 6

(always). The PBSS-DN significantly correlated with the PBSS-R at  $r = .68, p < .001$ . Internal consistency was also sufficient ( $\alpha = .95$ ).

#### *Protective Behavioral Strategies Scale-Injunctive Norms (PBSS-IN)*

The PBSS-IN is a modified version of the PBSS-R (Madson et al., in press). Just as with the PBSS-DN, modification of the PBSS-R will consist of changing the scale instructions and response options as outlined by Benton et al. (2008) and DeMartini et al. (2011). Participants were asked to report how acceptable they believe their friends view PBS use on a 6-point Likert-type scale ranging from 1 (not at all acceptable) to 6 (most acceptable). Using preliminary data, the PBSS-IN significantly correlated with the PBSS-R at  $r = .73, p < .001$ . Internal consistency was also sufficient ( $\alpha = .96$ ).

#### Procedures and Data Collection

Participants were recruited through the Department of Psychology's research website (<http://usm.sona-systems.com>). Participants received a brief overview of the study and were given the option to participate. After reading the informed consent and agreeing to participate, students completed the online survey. Surveys were administered using Psychsurveys (<http://psychsurveys.com>). In order to account for fatigue and measurement effects, random presentation of questionnaires and counterbalancing were used.

The study was described on the consent form (see Appendix A) as part of a larger data collection that explores college students' drinking patterns, PBS use, and negative alcohol-related consequences via retrospective data. The consent form indicated that participation in the study will be worth 1 research credit and will take approximately 60 minutes to complete. The form also disclosed that participants may withdraw from the

study at any time without penalty and that their participation in the study is voluntary. Consent was provided through electronic signature using university identification number prior to taking the questionnaire. The researcher's contact information was provided to participants. IRB approval for this study was obtained (see Appendix B).

### Research Questions and Hypotheses

1. To what extent is the association between descriptive norms of PBS and PBS use qualified by an individual's self-consciousness (private self-consciousness, public self-consciousness, and social anxiety) and gender?

H<sub>1</sub> The relationship between descriptive norms and PBS use will be the strongest among males with low private self-consciousness, and it will be weakest for females with high private self-consciousness.

H<sub>2</sub> The relationship between descriptive norms and PBS use will be the strongest among males with high public self-consciousness, and it will be weakest for females with low public self-consciousness.

H<sub>3</sub> The relationship between descriptive norms and PBS use will be the strongest among males with high social anxiety, and it will be weakest for females with low social anxiety.

2. To what extent is the association between injunctive norms about PBS and PBS use qualified by an individual's self-consciousness (private self-consciousness, public self-consciousness, and social anxiety) and gender?

H<sub>4</sub> The relationship between injunctive norms and PBS use will be the strongest among males with low private self-consciousness, and it will be weakest for females with high private self-consciousness.

H<sub>5</sub> The relationship between injunctive norms and PBS use will be the strongest among males with high public self-consciousness, and it will be weakest for females with low public self-consciousness.

H<sub>6</sub> The relationship between injunctive norms and PBS use will be the strongest among males with high social anxiety, and it will be weakest for females with low social anxiety.

#### Data Analytic Approach

In order to address the research questions, a moderation analysis was performed. Moderation analysis, also known as conditional effects, is typically used when one variable's (x) effect on another (y) is contingent on the magnitude of a third variable (Preacher & Hayes, 2011). Using SPSS, a series of hierarchical multiple regressions were conducted to assess the effects of perceived norms (i.e., descriptive norms, injunctive norms) on PBS use under the conditions of self-consciousness (i.e., private self-consciousness, public self-consciousness, social anxiety) as well as gender (i.e., male, female). For each analysis, the main effect terms (e.g., descriptive norms, private self-consciousness, gender [1 = *male*, 0 = *female*]) were entered on Step 1. Step 2 consisted of two-way interaction variables (i.e., descriptive norms x private self-consciousness, descriptive norms x gender, private self-consciousness x gender). Step 3 consisted of the three-way interaction variable (i.e., descriptive norms x private self-consciousness x gender). Steps 1-3 were repeated for all hypotheses. All continuous independent variables were centered. Finally, simple slopes tests were conducted following each analysis in order to interpret the interactions (Aiken & West, 1991). Tables 2–7 contain the results from these analyses.

## CHAPTER III

## RESULTS

Means, standard deviations, and intercorrelations for the measures are presented in Table 1. Descriptive norms were associated with higher injunctive norms ( $r = .75, p < .001$ ) and more PBS use ( $r = .68, p < .001$ ). Injunctive norms regarding high acceptability among peers' PBS use were associated with more PBS use ( $r = .72, p < .001$ ) and higher levels of private self-consciousness ( $r = .14, p < .001$ ). Greater PBS use was associated with higher levels of private self-consciousness ( $r = .18, p < .001$ ) and higher levels of public self-consciousness ( $r = .08, p = .04$ ). Higher private self-consciousness was associated with higher public self-consciousness ( $r = .72, p < .001$ ) and higher social anxiety ( $r = .26, p < .001$ ). Higher public self-consciousness was associated with higher social anxiety ( $r = .54, p < .001$ ).

Table 1

*Intercorrelations and Descriptive Statistics*

Variable	1	2	3	4	5	6
1. PBSS-DN	—					
2. PBSS-IN	.75**	—				
3. PBSS	.68**	.72**	—			
4. Private SC	.04	.16**	.14**	—		
5. Public SC	-.05	.07	.08*	.72**	—	
6. Social Anxiety	-.02	.05	.00	.26**	.54**	—
<i>Mean</i>	73.50	75.65	77.51	23.57	15.78	10.38
<i>Standard Deviation</i>	21.03	21.63	22.02	5.95	5.59	4.61

Note. PBSS-DN = Protective Behavioral Strategies- Descriptive Norms; PBSS-IN = Protective Behavioral Strategies- Injunctive Norms; PBSS = Protective Behavioral Strategies; Private SC = Private Self-Consciousness; Public SC = Public Self-Consciousness.

\* $p < .05$ ; \*\* $p < .01$



The same three protective strategies emerged as the most endorsed for the PBSS, PBSS-DN, and PBSS-IN: “use a designated driver” (59% endorsed *Always* on the PBSS, 44% on the PBSS-DN, and 56% on the PBSS-IN), “always know what you are drinking” (49% endorsed *Always* on the PBSS, 41% on the PBSS-DN, and 46% on the PBSS-IN), and “avoid mixing alcohol with prescription drugs” (58% endorsed *Always* on the PBSS, 51% on the PBSS-DN, 55% on the PBSS-IN). The highest endorsed items of private self-consciousness were “generally, I’m not very aware of myself” (25% endorsed *Extremely Uncharacteristic*), “I never scrutinize myself” (21.2% endorsed *Extremely Uncharacteristic*), and “I’m aware of the way my mind works when I work through a problem” (14.9% endorsed *Extremely Characteristic*). The highest endorsed items of public self-consciousness were “I’m concerned about the way I present myself” (14.6% endorsed *Extremely Characteristic*), “I usually worry about making a good impression” (16.3% endorsed *Extremely Characteristic*), and “I’m usually aware of my appearance” (19.1% endorsed *Extremely Characteristic*). The highest endorsed items of social anxiety were “It takes me time to overcome my shyness in new situations” (8.7% endorsed *Extremely Characteristic*), “I have trouble working when someone is watching me” (6.9% endorsed *Extremely Characteristic*), and “I don’t find it hard to talk to strangers” (9.7% endorsed *Extremely Uncharacteristic*).

#### Descriptive Norms and Private Self-Consciousness

The first analysis tested Hypothesis 1: private self-consciousness and gender would moderate the relationship between descriptive norms and PBS use. This hypothesis was partially supported. A main effect was observed where descriptive norms significantly predicted an increase in PBS use ( $\beta = .71, t = 21.01, p < .001$ ). A main

effect was also found for private self-consciousness, in that private self-consciousness predicted an increase in PBS use ( $\beta = .57, t = 4.74, p < .001$ ). There was a significant three-way interaction between descriptive norms, private self-consciousness, and gender ( $\beta = -.02, t = -1.96, p = .05$ ). In order to interpret the three-way interaction, the data were split by gender and the analyses were rerun. Predicted values can be found in Table 2.

Table 2

*Descriptive Norms, Private Self-Consciousness, and Gender*

Predictor variable	<i>B</i>	SE <i>B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.49	.49***
Descriptive Norms	.68	.03	.71***		
Priv SC	.16	.11	.57***		
Male	-.01	1.52	-.51		
<u>Step 2:</u>				.50	.01
DN x Priv SC	-.06	.00	-.01*		
Priv SC x Male	.00	.26	.01		
DN x Male	-.04	.08	-.09		
<u>Step 3:</u>				.50	.00*
DN x Priv SC x Male	-.06	.01	-.02*		

Note. Priv SC = Private Self-Consciousness; DN = Descriptive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

For males, there was a significant interaction between descriptive norms and private self-consciousness that predicted a decrease in PBS use ( $\beta = -.03, t = -2.46, p = .02$ ). In regards to simple slopes testing, the slope of the line representing the association between descriptive norms and PBS use was positive for male college students who were high in private self-consciousness ( $\beta = .46, t = 4.34, p < .001$ ) as well as for those who

were low in private self-consciousness ( $\beta = .78, t = 8.51, p < .001$ ). A simple slopes test revealed that males low in private self-consciousness used more PBS than males high in private self-consciousness (see Figure 1). Among female college students, there was no significant interaction between private self-consciousness and descriptive norms ( $\beta = -.01, t = -1.12, p = .24$ ). Similar to male college students, a positive association between descriptive norms and PBS use emerged for females with both high ( $\beta = .69, t = 14.63, p < .001$ ) and low private self-consciousness ( $\beta = .75, t = 18.27, p < .001$ ). Based on these findings, it appears that private self-consciousness moderated the relationship between descriptive norms and PBS use among male college students and not among female college students. Thus, hypothesis 1 is partially supported.

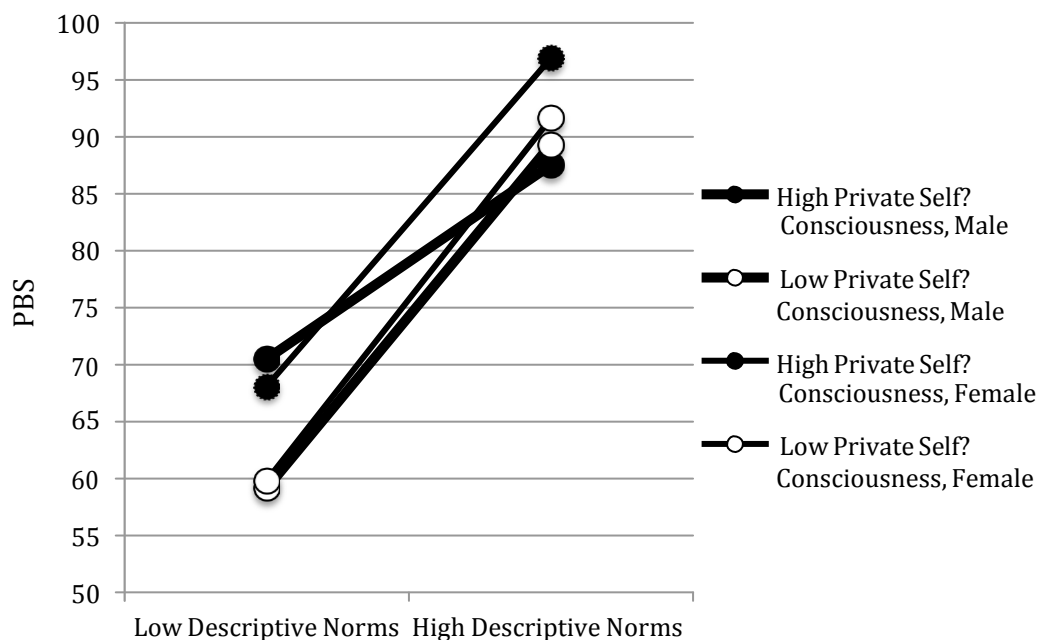


Figure 1. Descriptive Norms, Private Self-Consciousness, Gender, and PBS.

#### Descriptive Norms and Public Self-Consciousness

The second analysis tested Hypothesis 2: public self-consciousness and gender would moderate the relationship between descriptive norms and PBS use. This hypothesis

was not supported. A significant main effect was found for descriptive norms ( $\beta = .70, t = 22.42, p < .001$ ) and public self-consciousness ( $\beta = .41, t = 3.47, p < .001$ ). A significant interaction emerged for public self-consciousness and descriptive norms ( $\beta = -.01, t = -2.55, p = .02$ ). However, no three-way interaction between descriptive norms, public self-consciousness, and gender was observed. Predicted values can be found in Table 3.

Table 3

*Descriptive Norms, Public Self-Consciousness, and Gender*

Predictor variable	<i>B</i>	SE <i>B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.48	.48***
Descriptive Norms	.69	.03	.72***		
Pub SC	.12	.12	.46***		
Male	-.01	1.54	-.51		
<u>Step 2:</u>				.49	.01
DN x Pub SC	-.07	.01	-.01*		
Pub SC x Male	.00	.29	.03		
DN x Male	-.04	.08	-.10		
<u>Step 3:</u>				.49	.00
DN x Pub SC x Male	-.04	.01	-.01		

Note. Pub SC = Public Self-Consciousness; DN = Descriptive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Since no three-way interaction emerged, simple slopes testing was run for the entire sample. As seen in Figure 2, descriptive norms predicted an increase for PBS use for those individual with high public self-consciousness ( $\beta = .65, t = 15.47, p < .001$ ) as well as for those with low public self-consciousness ( $\beta = .77, t = 20.94, p < .001$ ). While

gender was not a moderator among the associations between descriptive norms, public self-consciousness, and PBS use, public self-consciousness did emerge as a moderator for the entire sample. Given these findings, it appears that the associations between descriptive norms and PBS use were moderated by public self-consciousness regardless of gender.

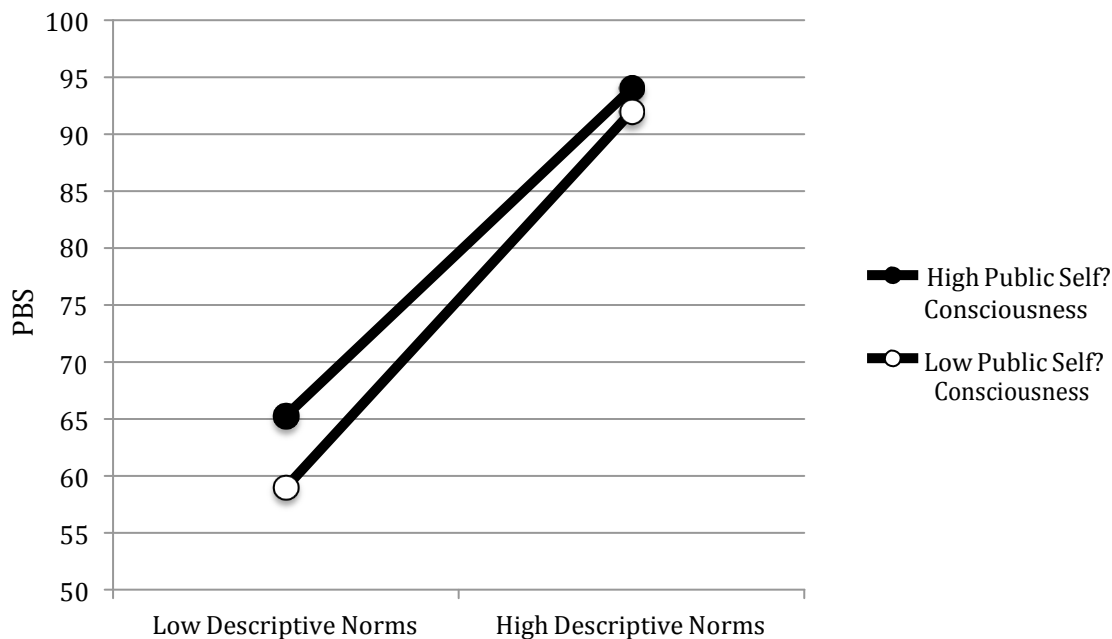


Figure 2. Descriptive Norms, Public Self-Consciousness, and PBS.

#### Descriptive Norms and Social Anxiety

The third analysis tested Hypothesis 3: social anxiety and gender would moderate the relationship between descriptive norms and PBS use. This hypothesis was not supported. There was a main effect for descriptive norms ( $\beta = .73, t = 20.76, p < .001$ ), but no main effect was found for social anxiety ( $\beta = .07, t = .47, p = .64$ ). There were also no significant interactions between descriptive norms and social anxiety ( $\beta = .00, t = -.61, p = .54$ ). Finally, no three-way interaction emerged between descriptive norms, social anxiety, and gender ( $\beta = -.01, t = -.61, p = .54$ ). Given these findings, it appears

that neither social anxiety nor gender moderates the relationship between descriptive norms and PBS use. Thus, Hypothesis 3 was not supported. Predicted values can be found in Table 4.

Table 4

*Descriptive Norms, Social Anxiety, and Gender*

Predictor variable	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.47	.47***
Descriptive Norms	.68	.03	.71***		
Social Anxiety	.01	.14	.07		
Male	-.02	1.55	-1.11		
<u>Step 2:</u>				.47	.00
DN x Social Anxiety	-.02	.01	.00		
Social Anxiety x Male	-.01	.36	-.12		
DN x Male	-.03	.08	-.08		
<u>Step 3:</u>				.47	.00
DN x Soc Anx x Male	-.02	.02	-.01		

Note. Soc Anx = Social Anxiety; DN = Descriptive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

### Injunctive Norms and Private Self-Consciousness

The fourth analysis tested Hypothesis 4: private self-consciousness and gender would moderate the relationship between injunctive norms and PBS use. The hypothesis was partially supported. There was a main effect for injunctive norms ( $\beta = .72$ ,  $t = 24.72$ ,  $p < .001$ ) and private self-consciousness ( $\beta = .23$ ,  $t = 2.25$ ,  $p = .02$ ). A significant interaction was found between injunctive norms and private self-consciousness ( $\beta = -.01$ ,

$t = -2.31, p = .02$ ). However, no three-way interaction between injunctive norms, private self-consciousness, and gender was observed. See Table 5 for predicted values.

Table 5

*Injunctive Norms, Private Self-Consciousness, and Gender*

Predictor variable	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.54	.54***
Injunctive Norms	.72	.03	.73***		
Priv SC	.07	.10	.24*		
Male	-.02	1.44	-1.20		
<u>Step 2:</u>				.54	.00
IN x Priv SC	-.06	.00	-.01*		
Priv SC x Male	-.01	.25	.07		
IN x Male	-.01	.07	-.03		
<u>Step 3:</u>				.54	.00
IN x Priv SC x Male	-.01	.01	.00		

Note. Priv SC = Private Self-Consciousness; IN = Injunctive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Since no three-way interaction emerged, simple slopes testing was run for the entire sample. Injunctive norms predicted an increase in PBS use for those with both high private self-consciousness ( $\beta = .67, t = 16.53, p < .001$ ) and low private self-consciousness ( $\beta = .78, t = 23.23, p < .001$ ). While a three-way interaction was not found among injunctive norms, private self-consciousness, and gender, it appears that the relationship between injunctive norms and PBS use was stronger for individuals low in private self-consciousness (see Figure 3). Hypothesis four was partially supported, in that the relationship between injunctive norms and PBS use was strongest among

individuals low in private self-consciousness. However, there were no significant gender differences observed, thus, the hypothesis that the relationship between injunctive norms and PBS use would be strongest in males is not supported. Based on these findings, it seems the association between injunctive norms and PBS use was moderated by private self-consciousness.

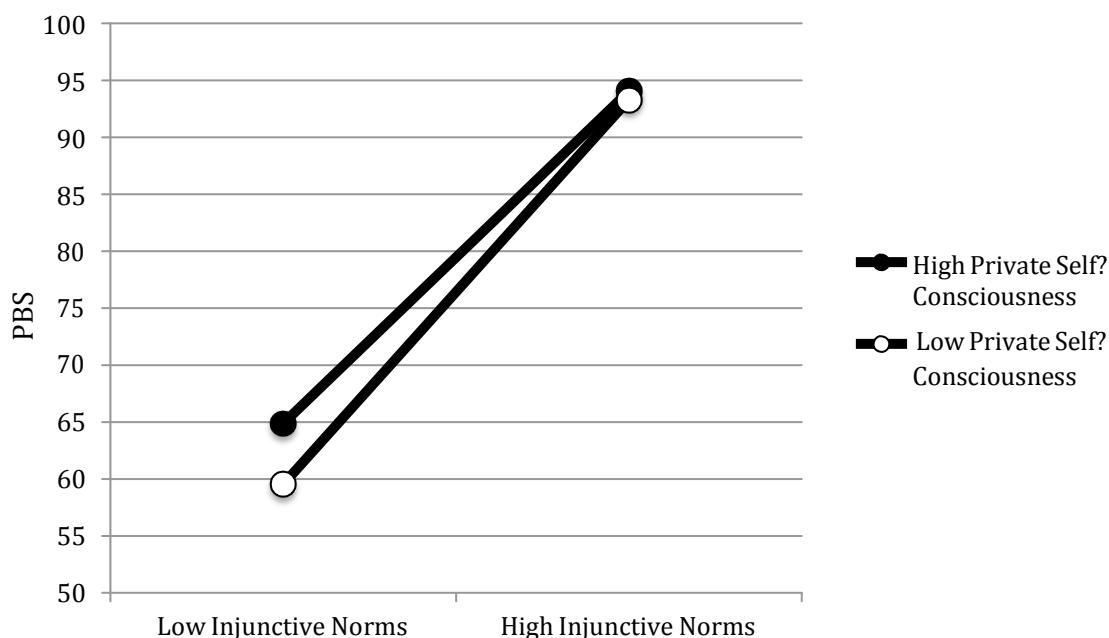


Figure 3. Injunctive Norms, Private Self-Consciousness, and PBS.

#### Injunctive Norms and Public Self-Consciousness

The fifth analysis tested Hypothesis 5: public self-consciousness and gender would moderate the relationship between injunctive norms and PBS use. This hypothesis was not supported. A main effect was found for injunctive norms ( $\beta = .73, t = 25.29, p < .001$ ), but no significant main effect was found for public self-consciousness. There was a significant interaction between injunctive norms and public self-consciousness ( $\beta = -.01, t = -1.96, p = .05$ ). No three-way interaction emerged between public self-consciousness, injunctive norms, and gender. Predicted values are presented in Table 6.



Table 6

*Injunctive Norms, Public Self-Consciousness, and Gender*

Predictor variable	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.54	.54***
Injunctive Norms	.73	.03	.74***		
Pub SC	.03	.12	.13		
Male	-.02	1.45	-1.26		
<u>Step 2:</u>				.54	.00
IN x Pub SC	-.06	.00	-.01*		
Pub SC x Male	-.02	.27	-.16		
IN x Male	-.01	.07	-.03		
<u>Step 3:</u>				.54	.00
IN x Pub SC x Male	.02	.01	.01		

Note. Pub SC = Public Self-Consciousness; IN = Injunctive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Since no three-way interaction was found, simple slopes testing was run for the entire sample. As seen in Figure 4, injunctive norms predicted an increase in PBS use for those with both high public self-consciousness ( $\beta = .67, t = 17.12, p < .001$ ) and low public self-consciousness ( $\beta = .78, t = 23.65, p < .001$ ). Similar to private self-consciousness, the relationship between injunctive norms and PBS use appeared to be strongest for individuals with low public self-consciousness. Given these results, it seems the association between injunctive norms and PBS use was moderated by public self-consciousness regardless of gender.

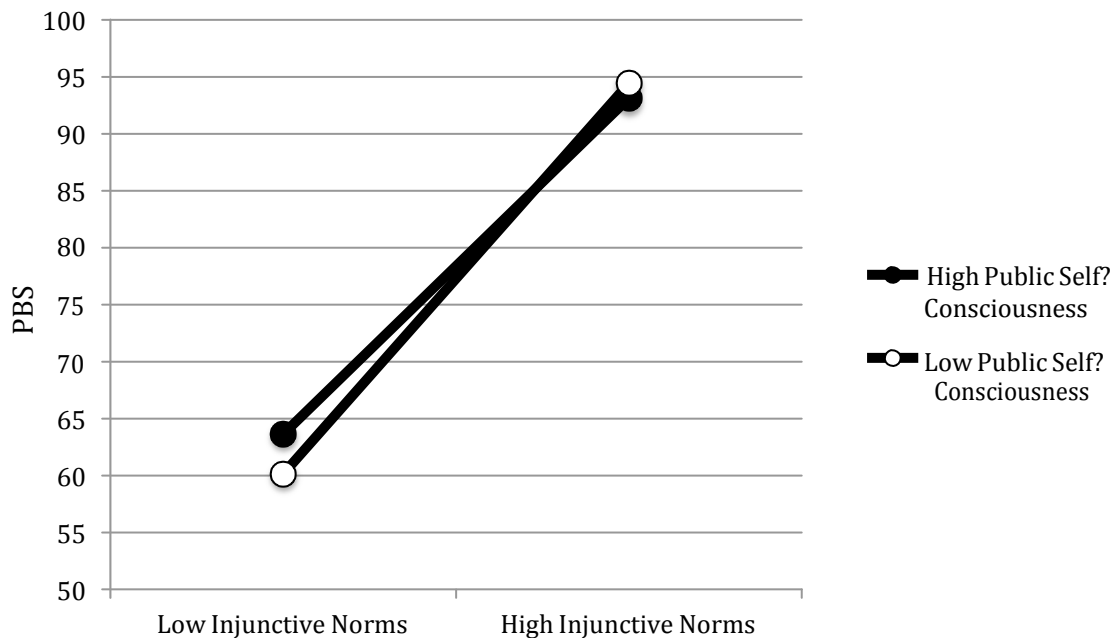


Figure 4. Injunctive Norms, Public Self-Consciousness, and PBS.

#### Injunctive Norms and Social Anxiety

The sixth analysis tested Hypothesis 6: social anxiety and gender would moderate the relationship between injunctive norms and PBS use. This hypothesis was not supported. A main effect emerged where injunctive norms predicted an increase in PBS use ( $\beta = .74, t = 26.16, p < .001$ ), but social anxiety did not predict PBS use (see Table 7). No interactions were found between injunctive norms, social anxiety, and gender. Contrary to what was hypothesized, neither social anxiety nor gender moderated the relationship between injunctive norms and PBS use.

Table 7

*Injunctive Norms, Social Anxiety, and Gender*

Predictor variable	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
<u>Step 1:</u>				.54	.54***
Injunctive Norms	.73	.03	.74***		
Social Anxiety	-.04	.13	-.17		
Male	-.03	1.44	-1.43		
<u>Step 2:</u>				.54	.00
IN x Social Anxiety	-.02	.01	-.01		
Social Anxiety x Male	-.02	.33	-.18		
IN x Male	-.01	.07	-.02		
<u>Step 3:</u>				.54	.00
IN x Soc Anx x Male	.02	.01	.01		

Note. Soc Anx = Social Anxiety; IN = Injunctive Norms. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

## CHAPTER IV

### DISCUSSION

Researchers have demonstrated the influences that perceived norms have had on alcohol use behaviors among college student drinkers (Benton et al., 2008; Borsari & Carey, 2003). While college students demonstrate a tendency to try to match what they perceive as their peers' alcohol use behaviors, LaBrie, Hummer, and Neighbors (2008) found that self-consciousness moderates this relationship. Given the alarming rates of alcohol-related negative consequences that are present in the college student population, researchers have placed much emphasis in discovering ways to protect this population from alcohol-related harm. Fortunately, PBS are a means of doing just that. Due to the role that PBS play in reducing alcohol-related harm, it seems vital that an emphasis be placed on exploring factors that influence the relationship between perceived norms and PBS use. Therefore, the purpose of this study was to assess whether self-consciousness (private self-consciousness, public self-consciousness, and social anxiety) and gender moderated the relationship between perceived norms (descriptive and injunctive) and PBS use.

#### Descriptive Norms and Private Self-Consciousness

The hypothesis that private self-consciousness and gender would moderate the relationship between descriptive norms and PBS use such that this relationship would be strongest among male college students lowest in private self-consciousness was partially supported. The associations between descriptive norms and PBS use were contingent on the level of private self-consciousness and gender. Male college students who were high in private self-consciousness and possessed low descriptive norms used more PBS than

male college students who were low in private self-consciousness and possessed low descriptive norms. This means that male students who were more self-aware and who believed their peers were using the fewest PBS used more PBS themselves than those who were less self-aware. Moreover, male college students who were more privately self-conscious and possessed high descriptive norms used less PBS than male college students low in private self-consciousness who possessed high descriptive norms. In other words, those male students who are more privately self-conscious seem to be less influenced by their perception of peer behaviors when it comes to their own use of PBS. These results are in line with findings from Foster and Neighbors (2013) that highlight the buffering role that private self-consciousness plays in decreasing the influence of social factors, descriptive norms in this case, on alcohol use behaviors. However, this pattern was not observed in female college students. Females high in private self-consciousness used more PBS than females low in private self-consciousness regardless of the level of descriptive norms. While these differences in male and female college students' self-consciousness are consistent with findings from Park, Sher, and Krull (2006) who found gender to moderate the relationship between private self-consciousness and drunkenness, these findings are contrary to results from LaBrie, Pedersen et al. (2008), where they found no interaction between gender and private self-consciousness in relation to alcohol consumption or negative consequences. These findings are also contrary to those found by LaBrie, Hummer, and Neighbors (2008), who did not find a significant interaction between gender, descriptive norms, and private self-consciousness. Female college students are more likely than male college students to participate in social distancing (Agostinelli, Grube, & Morgan, 2003), which implies that individuals consider

themselves different from others (Weinstein & Klein, 1995). More specifically, people desire to think of themselves as superior to others especially when it comes to behaviors they can control such as PBS (Dunning, 2005). At first glance, it seems logical that this social distancing in females would result in the decreased influence of perceived norms on behavior. However, if the reason females participate in social distancing is for superiority purposes, it would make sense that female college students would be more affected by their perception of their peers' positive behaviors (i.e., PBS use) rather than negative behaviors (i.e., HED). Female students may be more motivated to adhere to positive social standards than male students. Not only that, but they may be more motivated to participate in more positive behaviors than their peers. This drive would only be perpetuated by higher private self-consciousness since females who are more self-aware would be more attune to their own motives and desires to avoid feelings of inadequacy. Taken together, the heightened desire for moral superiority among female college students may have resulted in the positive association between descriptive norms and PBS use regardless of private self-consciousness, and might best explain why no interaction between descriptive norms and private self-consciousness emerged.

Another potential conclusion from these gender-related mixed findings is that gender may not be as strong a moderator as originally thought with regards to private self-consciousness, or perhaps other demographic variables are complicating the interpretation of gender within these results. One potential influential variable that has yet to be studied is race. In LaBrie, Pedersen et al. (2008) and in LaBrie, Hummer et al. (2008), each sample consisted of only 3% African American and 13% Hispanic. The current study consisted of 33% African American and 1% Hispanic. Madson, Zeigler-

Hill, and Ricedorf (in press) found significant differences in the utilization of PBS across racial groups, and Zeigler-Hill, Wallace, and Myers (2012) found significant differences in reported self-esteem between African American and Caucasian non-Hispanic individuals. Self-esteem, by nature, falls under the umbrella of private self-consciousness. Given these and other significant differences between African American and Caucasian non-Hispanic college students with regards to intrapersonal factors and PBS use (Madson et al., in press; Skidmore, Murphy, Martens, & Dennhardt, 2012; Zeigler-Hill et al., 2012), the different findings in the current study may be influenced by the large African American representation in the sample. Therefore, the exploration of race among the variables of this study might prove more valuable than that of gender.

Another explanation for the different findings in the current study might be related to university organization membership. In LaBrie, Pedersen et al. (2008) and LaBrie, Hummer et al. (2008), all participants were from university-affiliated organizations, while the current study used participants from the general college undergraduate population. It is possible that several intrapersonal differences exist between college students who participate in extracurricular organizations and those who do not (Chauvin, 2012; Theall et al., 2009). For example, college students who participant in university organizations such as fraternities, sororities, student government associations, theater clubs, and campus-affiliated religious groups, to name a few, are typically required to participate in social activities as part of their membership and may even be more social in nature given their decision to join these groups compared to those college students who are not members of organizations. These differences in social environment and motives may reflect differences in individuals' levels of private self-

consciousness and perceived norms. These intrapersonal and interpersonal differences could explain the different findings in the current study compared to prior studies (e.g., LaBrie, Hummer et al., 2008; LaBrie, Pedersen et al., 2008).

Consistent with previous research (e.g., Borsari & Carey, 2003), descriptive norms significantly predicted an increase in PBS use. This supports the idea that college students' own alcohol use behaviors are influenced by their perception of their peers' alcohol use behaviors. This is consistent with findings from LaBrie, Hummer et al. (2008) that demonstrated descriptive norms to predict alcohol use behaviors (e.g., alcohol consumption). Higher levels of private self-consciousness also predicted an increase in PBS use. This implies that individuals who are more self-aware and have a tendency to reflect more on their inner thoughts, motives, and expectancies related to drinking behaviors are more likely to use strategies to protect themselves when drinking. These findings are also logical given results from LaBrie, Pedersen et al. (2008) who identified those high in private self-consciousness as drinking less. In other words, private self-consciousness is negatively associated with alcohol consumption (LaBrie, Pedersen et al., 2008) and alcohol consumption is negatively associated with PBS use (Martens et al., 2004); therefore, it makes sense that private self-consciousness would be positively associated with PBS use.

#### Descriptive Norms and Public Self-Consciousness

The hypothesis that public self-consciousness and gender would moderate the relationship between descriptive norms and PBS use such that this relationship would be strongest among male college students high in public self-consciousness was not supported. This finding was surprising considering results from LaBrie, Pedersen et al.



(2008) that demonstrated that public self-consciousness predicted an increase in alcohol-related negative consequences, which are typically associated with less PBS use (Martens et al., 2004). On the contrary, an increased awareness of one's self in society was associated with more PBS use in the current study. This positive relationship between public self-consciousness and PBS use might be explained by an increased awareness of social standards. Individuals who are more publicly self-conscious are much more aware of how they are viewed by others and desire to be viewed positively (Blanton & Christie, 2003). Further, college students rate PBS as acceptable behaviors (DeMartini et al., 2011). Therefore, students who are more publicly self-conscious would likely use more PBS in order to adhere to social standards.

The moderating effects of public self-consciousness on the relationship between descriptive norms and PBS use were puzzling. Contrary to what was hypothesized, higher levels of public self-consciousness were associated with a slight decrease in the relationship between descriptive norms and PBS use for both genders. This means that the PBS use of college students who were more aware of how they behave with respect to normative social behaviors were less influenced by their perception of their peers' use of PBS. While these findings are different from those presented by LaBrie, Hummer et al. (2008), Foster and Neighbors (2013) found public self-consciousness played a similar role in the associations between factors that predict drinking behaviors and the drinking behaviors themselves. They asserted that public self-consciousness is associated with an increased awareness of the social stigma related to hazardous drinking, or lack of PBS use in this case, and that individuals higher in public self-consciousness might desire to avoid being labeled as immature or irresponsible with regards to their alcohol use

behaviors (Foster & Neighbors, 2013). Taken together, it seems that those higher in public self-consciousness, like those higher in private self-consciousness, are less influenced by descriptive norms of PBS use when it comes to their own use of PBS. It is important to note that among individuals who had low descriptive norms, high public self-consciousness was associated with greater PBS use than low public self-consciousness. In other words, a heightened awareness of one's self as a social object was associated with more PBS use even if one perceived his or her peers as using minimal PBS. However, when descriptive norms were high, PBS use did not vary between high and low public self-consciousness. Ultimately, it seems public self-consciousness may serve as a protective factor in the context of PBS by increasing college students' use of PBS regardless of their perception of their peers' use of PBS.

As with private self-consciousness, some possible explanations exist for why public self-consciousness was positively associated with PBS use in the current study and also positively associated with negative consequences in previous studies (e.g., LaBrie, Hummer et al., 2008; LaBrie, Pedersen et al., 2008). As Foster and Neighbors (2013) argued, those higher in public self-consciousness may be more aware of how their behaviors fit or do not fit with societal norms. This increased awareness may enhance their sensitivity to recognizing the potential negative ramifications of hazardous alcohol use. In other words, those higher in public self-consciousness may experience negative affect related to their counter-normative social behaviors (e.g., underage drinking) much more readily than those lower in public self-consciousness. This heightened awareness of global societal norms might override the effects of perceived drinking norms on alcohol use behaviors and, therefore, decrease the influence of descriptive norms on PBS

use. Additionally, those who are higher in public self-consciousness are more likely to identify with socially favorable behaviors such as PBS use. Foster and Neighbors (2013) pointed to deviance regulation theory (Blanton & Christie, 2003) that states that individuals are more likely to participate in behaviors that will stick to their identity in a positive way (e.g., PBS use) rather than a negative way (e.g., hazardous drinking). Based on this theory, it seems individuals higher in public self-consciousness may be more likely to participate in PBS use than those lower in public self-consciousness.

A final explanation for the different findings of the current study with regards to public self-consciousness might be a result of the demographic variables of the current sample. As previously stated, racial and group differences in particular, between the current study and its predecessors may be responsible for some of the differences found. A number of researchers have pointed out differences pertaining to outward awareness such as self-esteem and self-consciousness among the African American population (e.g., Thompson & Chambers, 2000; Zeigler-Hill et al., 2012). It is possible that a number of related racial factors such as acculturation, racism, microaggressions, and oppression might influence an African American college student's evaluation of his or her own PBS use as well as his or her peers' use of PBS. Taken together, it seems different findings in the current study may be attributed to the relatively large number of African Americans represented in the sample and future studies might examine the moderating effect of race.

#### Descriptive Norms and Social Anxiety

The hypothesis that social anxiety and gender would moderate the relationship between descriptive norms and PBS use such that the relationship would be strongest among male college students highest in social anxiety was not supported. Given the

findings from previous studies that have shown social anxiety to be associated with less alcohol consumption but related to more negative consequences when paired with heavy alcohol use (LaBrie, Pedersen et al., 2008), it seemed logical that social anxiety would be negatively associated with PBS use. However, this finding might be explained by the drinking patterns of those who are socially anxious. College students who are socially anxious are atypical drinkers (Lewis et al., 2008), drinking to cope with anxiety in social situations when they are actually in social situations, which is rare. Typically, college students in social settings drink to improve social outcomes (Kuntsche, Knibbe, Gmel, & Engels, 2005). Given this speculation, it seems that the lack of association between social anxiety, descriptive norms, and PBS use may be a result of the lack of applicability of PBS. In other words, those with social anxiety may not visit bars or attend parties thus having little need to use a designated driver, avoid drinking games, or leave the bar/party at a pre-determined time.

#### Injunctive Norms and Private Self-Consciousness

The hypothesis that private self-consciousness and gender would moderate the relationship between injunctive norms and PBS use was partially supported. Those students who believed their peers view PBS favorably tended to use more PBS themselves. This is in line with previous research that found injunctive norms about PBS use to predict PBS use (Borsari & Carey, 2003). Contrary to findings from LaBrie, Hummer et al. (2008), gender did not emerge as a moderator of the associations between injunctive norms, private self-consciousness, and PBS. This lends support to the notion that perceived norms, self-consciousness, and PBS might operate similarly across gender.

There was a two-way interaction found between injunctive norms and private self-consciousness for the whole sample. The strength of the relationship between a college student's perception of his or her peers' attitudes towards PBS use and his or her own PBS use varied significantly based on his or her level of private self-consciousness. PBS use was lowest among individuals who were less apt to turn their attention inward and who believed their peers were unaccepting of PBS use. Paired with findings from the first analysis, it seems that the PBS use of individuals who are more privately self-conscious is less influenced by perceived norms, both descriptive and injunctive. Taken together, private self-consciousness appears to be a protective factor resulting in more PBS use and a decrease in the influence of perceived norms.

#### Injunctive Norms and Public Self-Consciousness

The hypothesis that public self-consciousness and gender would moderate the relationship between injunctive norms and PBS use such that the relationship would be strongest among males highest in public self-consciousness was not supported. While a slight interaction emerged for injunctive norms and public self-consciousness among the whole sample, the relationship between injunctive norms and PBS appeared strongest for those with low public self-consciousness regardless of gender. Similar to the relationship between descriptive norms, public self-consciousness, and PBS use, this finding supports the idea that higher levels of public self-consciousness are associated with less susceptibility to peer influences. In other words, the PBS use of those who are more likely to view themselves as social objects is less affected by how acceptable they believe their peers view PBS. This is in line with findings from Foster and Neighbors (2013), who found higher levels of public self-consciousness to be associated with a weaker

relationship between social motives and alcohol consumption. Based on these findings, it seems that public self-consciousness, like private self-consciousness, serves to reduce the influence that perceived norms has on PBS use.

### Injunctive Norms and Social Anxiety

The hypothesis that social anxiety and gender would moderate the relationship between injunctive norms and PBS such that the relationship will be strongest among males high in social anxiety was not supported. As with Hypothesis 3, social anxiety was not associated with PBS use. This finding was contrary to results from LaBrie, Pedersen et al. (2008), who found a three-way interaction between injunctive norms, social anxiety, and gender. As stated previously, this discrepancy might be explained by the lack of applicability of PBS for socially anxious individuals and demographic differences in the current sample compared to those in the literature. More specifically, PBS may not apply to college students who are socially anxious given their atypical drinking patterns (Lewis et al., 2008). Further, members of student organizations, such as those that make up the samples used by both LaBrie, Pedersen et al. (2008) and LaBrie, Hummer et al. (2008), may differ significantly from those in the general college student population in terms of their level of social anxiety, social habits (i.e., organization-related events, larger circle social network), and alcohol use behaviors. Therefore, contrary findings of the current study may be a result of different demographic factors.

### Limitations

Although the results of this study are promising, some limitations are present. First, 77% of the sample was female (N = 482). A number of researchers have demonstrated significant differences between men and women in regards to perceived

norms, self-consciousness, and PBS use (DeMartini et al., 2011, LaBrie, Pedersen et al. 2008). Given that gender was a moderator in this study, unequal groups can lead to decreased power and limit the ability to detect a significant effect (Aiken & West, 1991). Therefore, gender-related results should be interpreted with caution. Second, data were obtained from one university in the southeastern United States. Researchers have demonstrated the regional differences that exist in regards to alcohol use behaviors (Johnston et al., 2011). Given these differences, the participants in this study may drink less and have reported greater use of PBS than those from other parts of the country. It is also important to note that religiosity is highly concentrated in this region of the country. The southeastern United States is known as *the Bible belt* due to the high percentage of Christians that reside there. Religious beliefs play an influential role in college students' alcohol use behaviors (Dulin, Hill, & Ellingson, 2006) and may have affected the results of this study. While participants who denied drinking alcohol within the past 30 days were omitted from this study, the majority of participants were categorized as moderate or light drinkers. Since there is a strong negative association between PBS and alcohol consumption (Martens et al., 2004), it is likely that alcohol consumption may have played a role in the outcome of this study. Therefore, future studies using similar variables may consider controlling for alcohol consumption. This study was a cross-sectional design, thus data was obtained at one assessment point rather than over multiple points of time. This type of design limits the researcher's ability to make causal inferences.

Another limitation may relate to measurement. The PBSS-DN and the PBSS-IN were created for the purpose of this study. While similar methods have been used in other studies involving perceived norms (e.g., Benton et al., 2008; DeMartini et al.,

2011), readers should interpret the results with caution given the minimal validity data on these measures. It is also important to note that the subscale used to measure social anxiety is not the mainstream measure used in the current college alcohol use literature. In fact, researchers have recently omitted the social anxiety subscale when using the SCS (e.g., Foster & Neighbors, 2013). Future researchers are encouraged to use other measures to assess social anxiety such as the Social Phobia Scale (SPS; Mattick & Clarke, 1998) and the Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998).

### Future Research

In light of these results, future researchers should continue to focus on factors that influence PBS use. Given the number of studies that have demonstrated the protective role that PBS play in preventing alcohol-related harm (e.g., Benton et al., 2004; Delva et al., 2004; Martens et al., 2004), it seems only necessary that future research continue to explore ways to increase their implementation among college students. Findings from this study highlight the importance of self-awareness in college alcohol behaviors. With that said, it seems important that researchers further explore both private and public self-consciousness (the trait) or self-awareness (the state) as protective factors in alcohol use behaviors. For example, future researchers might explore how private and public self-consciousness predict greater use of PBS through mediating variables such as drinking motives, expectancies, or physiological sensations. Given the differences found in the current study and previous similar studies (e.g., LaBrie, Hummer et al., 2008), future research might benefit from exploring the relationships between these two factors of self-consciousness and the moderating role of organizational membership. Future researchers might also benefit from exploring the influences of self-consciousness on the various



aspects of PBS (e.g., controlled consumption, serious harm reduction). Another potentially fruitful route might include the differences in the associations between perceived norms and positive alcohol use behaviors versus negative alcohol use behaviors. For example, the associations between perceived norms, self-consciousness, and gender may or may not differ significantly when predicting positive alcohol use behaviors, such as PBS use, than when predicting negative alcohol use behaviors, such as negative alcohol-related consequences and HED. Finally, due to the demographic differences in the current sample compared to prior studies (e.g., Foster & Neighbors, 2013; LaBrie, Hummer et al., 2008; LaBrie, Pedersen et al., 2008), as well as the significant differences related to alcohol use behaviors and intrapersonal factors found across race (e.g., Zeigler-Hill et al., 2012), future researchers should explore racial differences in regards to self-consciousness and alcohol use behaviors via invariance testing or other means of model comparisons between groups.

#### Clinical Implications

Given the findings presented in the current study, some clinical implications are warranted. First, clinicians might benefit from assessing an individual's level of private or public self-consciousness via screening tools in order to determine the effectiveness of norm-based interventions or other therapeutic discussions that involve perceived norms. For example, a college student low in private self-consciousness would greatly benefit from an intervention that highlights peer norms of PBS use. On the same note, this type of intervention, while still effective, would have less of an effect on male college students high in private self-consciousness. Similarly, those who are more publicly self-conscious would not benefit as much from norm-based interventions as those who are less publicly

self-conscious. Therefore, primary focus of treatment for these individuals may be better served elsewhere. Nevertheless, perceived norms predicted an increase in PBS use regardless of the moderator. This finding seems to lend support for the use of norm-based interventions as effective treatment techniques for alcohol interventions. Taken together, it seems that alcohol intervention programs that focus on consciousness raising and normative feedback, such as the *Brief Alcohol Screening and Intervention for College Students* (BASICS) program (Dimeff, Baer, Kivlahan, & Marlatt, 1999), would be especially beneficial at increasing a college student's PBS use given their focus on increasing private and public self-awareness and presenting normative data, all of which were found in the current study to increase PBS use.

### Conclusion

In conclusion, this study aimed to identify the relationship between perceived norms, self-consciousness, gender, and PBS use among college students. While researchers have previously demonstrated the moderating effects of self-consciousness and gender on the relationship between perceived norms and alcohol consumption (LaBrie, Hummer et al., 2008), these influences had not yet been explored for PBS use. Results replicated previous findings and indicated that both descriptive and injunctive norms significantly predicted an increase in PBS use. Similarly, both private and public self-consciousness predicted an increase in PBS use. Results also indicated a three-way interaction between private self-consciousness, descriptive norms, and gender. Results from this study contribute to the college alcohol literature by highlighting factors that influence PBS use, thus better informing alcohol interventions. Future researchers and clinicians are encouraged to continue to explore ways of increasing PBS use in the

college population in an effort to lessen the degree to which this group suffers from alcohol-related harm.

## APPENDIX A

### INFORMED CONSENT

Consent is hereby given to participate in the study titled: Personality F12

**PURPOSE:** The present study is designated to examine the association between personality and daily experiences. Results will be used to guide later research on personality.

**DESCRIPTION OF STUDY:** Participation will consist of completing several brief questionnaires via the Internet. The completion of these initial questionnaires should take approximately 30-45 minutes and participants will receive 1 credit. Questionnaires completed via the Internet will concern your feelings, attitudes, behaviors, and experiences. You will only receive credit for completing the survey and answering honestly.

**BENEFITS:** Participants are not expected to directly benefit from your participation. However, it is hoped that this study will contribute to our understanding of personality.

**RISKS:** No foreseeable risks, beyond those present in routine daily life, are anticipated in this study. If participants find they are distressed by completing these questionnaires, they should notify the researcher immediately.

**CONFIDENTIALITY:** You will place your name on the informed consent form and the Internet-based questionnaires. At the conclusion of data collection for this study, all identifying information will be deleted. Data gathered from the present study will be stored in a secure location for six years, at which time it will be destroyed. Findings will be presented in aggregate form with no identifying information to ensure confidentiality.

**PARTICIPANT ASSURANCE:** Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice. Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to Dr. Mike Madson at (601) 266-4546 (or e-mail at michael.madson@usm.edu). This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human participants follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820. A copy of this form will be given to the participant.

If you become distressed as a result of your participation in this study, then you should contact an agency on-campus or in the surrounding community that may be able to provide services for you. A partial list of available resources is provided below:

University of Southern Mississippi Counseling Center (601) 266-4829  
Pine Belt Mental Healthcare (601) 544-4641  
Pine Grove Recovery Center (800) 821-7399  
Forrest General Psychology Services (601) 288-4900  
Lifeway Counseling Service Incorporated (601) 268-3159  
Behavioral Health Center (601) 268-5026 Hope Center (601) 264-0890

If you experience distress as a result of your participation in this study, please notify Dr. Michael Madson ([michael.madson@usm.edu](mailto:michael.madson@usm.edu)).

## APPENDIX B

## INSTITUTIONAL REVIEW BOARD



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**INSTITUTIONAL REVIEW BOARD**

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.6820 | Fax: 601.266.4377 | [www.usm.edu/irb](http://www.usm.edu/irb)**NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

The risks to subjects are minimized. The risks to subjects are reasonable in relation to the anticipated benefits. The selection of subjects is equitable. Informed consent is adequate and appropriately documented. Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects. Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data. Appropriate additional safeguards have been included to protect vulnerable subjects. Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form". If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

**PROTOCOL NUMBER:****PROJECT TITLE: Protective Behavioral Strategies, Perceived Norms, and Self-Consciousness****PROJECT TYPE: Dissertation****PRINCIPAL INVESTIGATOR(S): Jeremy J. Noble****COLLEGE/DIVISION: College of Education & Psychology****DEPARTMENT: Psychology****FUNDING AGENCY/SPONSOR: N/A****HSPRC COMMITTEE ACTION: Expedited Review Approval****PERIOD OF APPROVAL: 01/09/2013 to 01/08/2014****Lawrence A. Hosman, Ph.D.  
Institutional Review Board**

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