

Running head: MOTIVES AND PERSONALITY ON PBS USE

Influence of Motives and Personality on Protective Behavioural Strategies and Heavy Episodic
Drinking in Undergraduate Students

Bethany Cain

Lakehead University

Supervisors: Ms. Suzanne E. Chomycz, MA, Lakehead University;
and Christopher J. Mushquash, PhD, Lakehead University, Northern Ontario School of Medicine

Acknowledgements

First, I would like to express gratitude to my supervisor Dr. Christopher Mushquash for the continued insight and guidance throughout the writing process, and for his patience and encouragement. I also wish to thank the Substance Use Research Group project team for their assistance with data collection, data entry, feedback at all stages and moral support. I feel very blessed to have had the opportunity to work with this team. In alphabetical order: Ms. Victoria Ewen, Ms. Daphne Haggarty, Ms. Alexandra Kruse, Ms. Aislin Mushquash, and Ms. Nicole Poirier. A special thank you also goes out to Ms. Suzanne Chomycz for her selfless nature in supervision. Finally, I would like to thank my family and friends who helped at all stages and offered great advice and inspiration.

Abstract

The association between drinking motives and personality with protective behavioural strategies (PBS) was explored, including whether individuals with different drinking motives or personality profiles were more or less likely to utilize protective behavioural strategies. The final sample consisted of 137 undergraduate students (81% females, $M = 22.15$ years old, $SD = 2.76$). Hierarchical regression analyses were conducted to examine how protective behavioural strategies are associated with motives for alcohol use and with personality. Individuals who had greater Enhancement and Coping motives for drinking used protective strategies less frequently. Social motives were not significantly correlated with the mean of protective factors, but were associated with less frequent use of strategies related to reducing risky drinking patterns (Manner of Drinking subscale). Similarly Enhancement and both Coping motives also predicted lower levels of strategies within the Manner of Drinking subscale. Additionally, Coping Depression was related to less PBS use as it relates to limiting the serious harms associated with drinking (Serious Harm Reduction subscale). Conformity did not significantly predict an increase or decrease in PBS use within any of the subscales. No personality profiles significantly predicted overall PBS use. Impulsivity significantly predicted a decrease in Serious Harm Reduction strategies, while Sensation Seeking predicted less Manner of Drinking strategies. Anxiety Sensitivity was unique in that it significantly predicted an increase in Stopping/Limiting Drinking behaviours. Finally, Hopelessness was not related to any PBS subscales. These findings are significant as they may assist in understanding undergraduates at greatest risk of negative alcohol-related consequences and inform protective behavioural strategies-based interventions tailored to personality traits and motives for drinking.

Keywords: youth adults, personality, protective behavioural strategies

Influence of Motives and Personality on Protective Behavioural Strategies and Heavy Episodic Drinking in Undergraduate Students

Approximately 80% of Ontarians report using alcohol, and over 15% report harmful or hazardous levels of use (CAMH, 2008). Within the university population this number is even higher with over 84% of Ontario college and university students reporting having used alcohol at least once in the past year (Adlaf, Demers, & Gliksman, 2004). Almost 19% of students who drink report engaging in heavy episodic drinking (HED), defined as the consumption of five or more drinks for men and 4 or more drinks for women, on one occasion (Wechsler, Nelson, & Weitzman, 2000; CAMH, 2008). Heavy episodic drinking has been linked to numerous alcohol-related problems with a wide range of severity (Clapp, Shellington, & Segars, 2000; Hingston, Edwards, Heeren, & Rosenbloom, 2009a; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002; Wechsler, Nelson, & Weitzman, 2000).

The Center for Addiction and Mental Health (2008) states that of those who report drinking alcohol, nearly half (45.1%) experience harmful consequences from their drinking. Similarly, in a study using over 6,000 undergraduate students from all across Canada it was found that 32% of undergraduates reported hazardous or harmful patterns of drinking as defined by the World Health Organization's Alcohol Use Disorders Identification Test (AUDIT) screener (Adlaf et al., 2004). The most commonly reported harms faced by students were experiencing a hangover (53.4%), memory loss (25.4%), regrets (24.5%) and missing classes due to a hangover (18.8%). Additionally, unplanned sexual relations were experienced by just over 14% of students, driving after drinking too much by 7.4%, engaging in unsafe sex by 6.0% and driving while drinking by 3.8% (Adlaf et al., 2004). This risk is even greater among those under the legal drinking age, as it has been found that earlier age of drinking onset is associated with

higher rates of unintentional injury towards self or other people through aspects such as motor vehicle crash involvement, unintentional injuries, and physical fights (Hingston et al., 2009a; Hingston & Zha, 2009b). Additionally, engaging in HED can increase the risk of negative consequences in other individuals, (i.e., secondary alcohol-related harms). Adlaf et al. (2004) found that over one-third of students had experienced study or sleep interruptions from other students' drinking. Some other common factors leading to secondary alcohol-related harm included serious arguments or quarrels, being pushed or assaulted and experiencing sexual harassment (Adlaf et al., 2004). Similarly, Wechsler et al., (2002) found in their sample, that over half had experienced an interruption in their study or sleep, and a third had been insulted or humiliated. These findings indicate that heavy episodic drinking represents an important problem among students.

Individual Risk Factors for Heavy Episodic Drinking

Researchers have identified individual-level risk factors associated with engaging in heavy episodic drinking. At least four distinct personality profiles may place individuals at a higher risk for both HED and drinking related problems: Anxiety Sensitivity, Sensation Seeking, Impulsivity, and Hopelessness (Conrod, Stewart, Pihl, & Dangier, 2000). Anxiety Sensitivity describes a fear of anxiety and physical arousal related sensations that lead to various negative outcomes (Conrod et al., 2000). This personality style is associated with sensitivity to the anxiety-reducing effects of alcohol, and a desire to self-medicate negative emotions (Pihl & Paterson, 1995). Sensation Seeking is associated with a desire to seek out new experiences without the inhibitory control of threat (Pihl & Peterson, 1995). Sensation Seekers drink to experience the intoxicating effects of alcohol (Conrod et al., 2000). Impulsivity refers to a desire for immediate reward, and involves an inability to delay responses (Conrod et al., 2000; Pihl &

Peterson, 1995). Finally, Hopelessness is associated with a tendency to experience depressive cognitions and is associated with a desire to alleviate depression and pain (Conrod et al., 2000).

Certain motives for drinking have also been studied and are structured on two dimensions including valence (positive or negative reinforcement) and source (internal or external). The valence and source dimensions are further crossed to create a four-factor model that is responsible for the outcomes that people expect to reach from drinking (Cooper, 1994; Cox & Klinger, 1990). Individuals may drink either to gain a positive outcome (positive reinforcement) or to avoid a negative outcome (negative reinforcement). The reward may also be a change in affect (internal) or a change in one's environment (external). It is according to these dimensions that four motives are formed: Social, Enhancement, Conformity, and Coping. The first of these, Social, involves drinking to achieve social rewards (e.g., to better enjoy a party) and is defined as a positive, external reason for drinking. It is seen as the least harmful of the four and involves drinking in social and celebratory situations (Cooper, 1994). The second motive, Enhancement, is also a positive reinforcement motive, however in this case the source of the reinforcement is internal. Enhancement motives involves drinking to enhance internal positive moods (e.g., to have fun or to get drunk) and is often linked to drinking in environments where heavier drinking is condoned such as in bars (Cooper, 1994; Schelleman-Offermans, Kuntsche & Knibbe, 2011). Conformity, the third motive for drinking, refers to drinking to avoid social rejection (e.g., to fit in with a peer group) and focuses on reducing rejection from the external environment (negative reinforcement). Finally, the motive of Coping refers to drinking to cope with negative emotions (e.g., to forget about your problems). It is a negative, internal motive which results in reducing negative affect. Those that drink with a motive to cope often drink alone (Cooper, 1994). More recently, it has been suggested that the Coping motive can be further divided into anxiety and

depression subtypes, therefore establishing a five-factor motive model which includes Coping-Anxiety, and Coping-Depression (Grant, Stewart & Mohr, 2009; Grant, Stewart, O'Connor, Blackwell, & Conrod, 2007). Coping-Anxiety motives are defined as drinking to cope with anxious feelings whereas Coping-Depression motives are defined as drinking to cope with negative mood (Grant et al., 2009).

Overall, it has been found that these motive dimensions are characterized by unique patterns of drinking. Social motives, the most common motives for alcohol use, have been found to be associated with moderate drinking rates, but not with problem-drinking or related consequences (Cooper, 1994). Enhancement motives are associated with heavy drinking rates, and have been found to be the strongest independent predictor of both frequency and consumption (Cooper, 1994). It has also been found that the related consequences of drinking (for those who drink for Enhancement reasons) are entirely due to the association with alcohol use and are therefore completely accounted for by the higher level of consumption (Cooper, 1994; Merrill & Read, 2010). The Coping motives for drinking, on the other hand, have been found to both directly and indirectly predict drinking problems, and they are also associated with heavy drinking rates (Cooper, 1994; Merrill & Read, 2010; Schelleman-Offermans et al., 2011). Additionally, Coping motives have been directly related to academic/occupational problems, risky behaviour and self-care problems, some of which are independent of alcohol use (Merrill & Read, 2010). Finally, Conformity motives have been found to be negatively related to both quantity and frequency of alcohol consumption (Merrill & Read, 2010). Cooper (1994), however, found that although Conformity motives are not related to heavy alcohol use, they are associated with alcohol-related problems.

Similarly, personality profiles have been demonstrated to be differentially related to motives for drinking. Anxiety Sensitivity is associated with Conformity and Coping motives for drinking as well as with negative alcohol-related consequences (Conrod, Pihl, Stewart, & Dongier, 2000). Impulsivity has been associated with all four motives for heavy episodic drinking as well as alcohol-related consequences. It has also been linked to an earlier onset of alcohol problems (Conrod et al., 2000). Hopelessness, like Anxiety Sensitivity, is related to both Coping and Conformity motives (Stewart, Peterson, & Pihl, 1995). Finally, Sensation Seeking is associated with high levels of drinking and Enhancement motives (Conrod et al., 2000; Woicik, Stewart, Pihl, & Conrod, 2009). Additionally, the five-factor motive model dividing the Coping motive into anxiety and depression subtypes has been shown to fit the data better than the original four-factor motive model proposed by Cooper (1994) as the two motives appear to be related to different drinking outcomes. Coping Anxiety motives (Anxiety Sensitivity) have been shown to be directly related to potential alcohol-related problems; while Coping Depression motives (Hopelessness) results in alcohol-related problems primarily through higher levels of drinking and therefore the relationship is indirect (Grant et al., 2007).

Protective Behavioural Strategies

A limitation of many of the protective factors identified in the literature is that they are either very difficult or impossible to change through intervention (Martens, Kari, Damann, Page, Mowry, & Cimini, 2004). Therefore, research has begun to examine possible strategies that an individual can engage in while drinking. The use of protective behavioural strategies (PBS), defined as active strategies and behaviours that individuals can engage in while drinking alcohol in order to limit the negative alcohol-related consequences, is promising because, unlike other factors (i.e., sex, religiosity, or family history of alcohol use) that are difficult to change, PBS

can be modified. This provides the potential for protective behavioural strategies to become an active component in alcohol-related clinical and educational interventions (Martens et al., 2004; Martens, Ferrier, & Cimini, 2007b). Protective behavioural strategies are designed to be used by undergraduate students who consume alcohol, therefore compared to other types of protective factors, PBS focus more on reducing alcohol-related consequences rather than on necessarily stopping the drinking itself (Martens et al., 2004). Some examples of specific protective behavioural strategies that have been identified in prior research include avoiding drinking games, stopping drinking at a predetermined time, and knowing where one's drink has been at all times (Martens, Ferrier, Sheehy, Corbett, Anderson, & Simmons, 2005).

Although higher rates of alcohol consumption are associated with alcohol-related problems, there is still substantial variance in alcohol-related problems, and this remains unexplained when using alcohol use alone as a predictor (Borden, Martens, McBride, Sheline, Bloch, & Dude, 2011). Therefore, PBS provides a form of protection against the drinking related consequences despite heavy rates of drinking. It has been consistently shown that a greater use of protective behavioural strategies is associated with less alcohol use and fewer alcohol-related problems (Benton, Downey, Glider, & Benton, 2008; Martens et al., 2005; Martens, Pederson, LaBrie, Ferrier, & Cimini, 2007c; Ray, Turrisi, Abar, & Peters, 2009). In addition, PBS use has also been shown to moderate the relationship between binge drinking and alcohol-related problems, such that there is a weaker association between alcohol use and alcohol-related problems with the presence of PBS (Borden et al., 2011). Engaging in the behaviours of PBS may limit the likelihood of experiencing alcohol-related problems as a result of alcohol use, a relationship which has been shown to be the strongest among those who report minimal use of protective behavioural strategies (Benton et al, 2008; Borden et al, 2011).

Personality and Motives Related to the use of Protective Behavioural Strategies

The relationship between the motives for drinking and use of PBS is complex, and limited in its study. Martens, Ferrier and Cimini. (2007b) found that protective behaviours partially mediated Enhancement and Social motives. Individuals who were motivated to consume alcohol for positively-reinforcing reasons engaged in fewer PBS, which was associated with higher levels of alcohol consumption and greater frequency of alcohol-related problems (Martens et al., 2007b). Patrick, Lee and Larimer (2011) similarly found that these two motives were associated with less frequent use of PBS after controlling for the number of drinks per week, suggesting that individuals who drink for Social and Enhancement reasons will not engage in PBS as it takes away from the drinking experience. Therefore, Enhancement and Social motives appear to be inversely related to protective strategies (Patrick et al., 2011). Conformity motivated drinkers have been shown to use protective strategies more frequently and to be more likely to use protective strategies to reduce their blood alcohol content (Patrick et al., 2011). This argues that although Conformity motivated students feel pressured to conform to the drinking norms of their peers, the main motivation is not to feel the effects of being drunk, but instead to appear as if they have been drinking.

Research on the relationship between Coping motives and PBS has shown mixed findings. A study by Martens and colleagues (2007b) found that Coping motives were not related to protective behaviours. In their study PBS did not mediate the relationship between negatively reinforcing motives and alcohol use or alcohol-related problems, and they stated that this was due to the lack of a direct relationship between such motives and protective behaviours (Martens et al., 2007b). However, a subsequent study by Martens et al., (2008) found a negative relationship between Coping motives and PBS use, such that depressive symptoms were directly

associated with alcohol-related negative consequences but not with alcohol use. The study also found that PBS partially mediated this relationship. It was argued that people with elevated depressive symptoms are less likely to utilize PBS as they may lack the proper motivation or resources required for the cognitive and behavioural nature of the PBS (Martens et al., 2008). Furthermore, many of the PBS that are assessed are generally used in social situations, and thus may not be applicable to those engaging in drinking to cope (Martens et al., 2008). Patrick et al. (2011) found that Coping motives, although not significantly correlated with the mean of protective factors, were associated with less frequent use of individual strategies related to avoiding consequences from drinking (e.g. choosing not to drink, having a designated driver, and keeping track of drinks). This was the case after controlling for the number of drinks. Therefore, they argue, there is a significant negative association between Coping motives and some protective strategies (Patrick et al., 2011).

There has been some evidence suggesting that motives for drinking in part determine which protective strategies individual are likely to use (Patrick et al., 2011). For example, Coping motives have been shown to be associated with a less frequent use of strategies related to limiting the potentially serious alcohol-related harms (Patrick et al., 2011). Additionally, both Enhancement and Social motives have been shown to correlate with less frequent endorsement of items related to reducing the positive experience of drinking (e.g.. pacing drinks and avoiding drinking games). Conformity motives are unique in that they are correlated with more frequently engaging in certain protective behavioural strategies, namely those related to reducing how much alcohol is consumed (e.g. setting limits in advance, eating before and/or during drinking, and pacing drinks; Patrick et al., 2011). Therefore, it appears there are differences in the types of strategies used (and not used) depending on one's motive for drinking.

Limitations in Research

Concerning the relationship between PBS and personality profiles, the literature has been extremely sparse. There have been no studies evaluating PBS as they relate to either Hopelessness or Anxiety Sensitivity. However studies looking at depression as it relates to PBS use have found that those high in depressive symptoms are much less likely to engage in PBS and are more likely to experience alcohol-related consequences. It is argued that they may lack the resources or motivation to activate these strategies and are therefore less likely to engage in behaviours that limit such consequences (Martens et al., 2008). Additionally, LaBrie, Kenney, Lac, Garcia, and Ferraiolo (2009) have found that mental health moderates the impact of protective strategies on drinking as well as consequences such that protective behaviours are particularly effective in reducing alcohol consumption and related risks among participants who report lower mental health. Therefore, PBS may be particularly beneficial to individuals who lack the necessary emotional regulation to consume alcohol responsibly (LaBrie et al., 2009). Overall, there appears to be a decrease in PBS use in those high in Anxiety Sensitivity and Hopelessness; however this conclusion cannot be assured as the relationship has not been evaluated specifically.

No studies have looked at PBS as they relate to the personality profile of Impulsivity directly, however many studies have evaluated how PBS use relates to one's ability to self-regulate. For example, Palmer, Corbin and Crouce (2010a) examined the relationship between early alcohol exposure and later levels of alcohol use and alcohol-related negative consequences, while taking into account impulsivity as an underlying risk factor for both of these outcomes. They found that an earlier age of onset was associated with less frequent use of alcohol-specific protective strategies, which in turn was associated with drinking- and alcohol-related problems and that this

was the case even after controlling for Impulsivity (Palmer et al., 2010a). They also found that participants who were highly impulsive engaged in fewer alcohol specific protective strategies, suggesting that such people have impaired behavioural regulation skills, and are not able to effectively plan and make decisions before drinking (Palmer et al., 2010a). The final personality profile, Sensation Seeking, has not been studied as it relates to PBS use.

Although there has been some research on the relationship between motives and PBS use, this area is also limited. Largely, there have been inconsistent results when it comes to the relation of PBS with Coping motives. Additionally, there have been very few studies investigating differences between the Coping Anxiety motives versus the Coping Depression motives as they relate to PBS use. Another major limitation with regards to linking motives with PBS use is the fact that there has only been one study that has evaluated how PBS relate to Conformity motives (ie, Patrick et al., 2011), and none which have used the Protective Behavioral Strategies Scale (PBSS) in studying PBS as they relate to Conformity. Therefore, these results may not be replicable in the current study.

Additionally, research on the differences in the types of specific strategies used based on motives has been fairly limited and it has yet to be evaluated using the subscales within the PBSS. Martens, Martin, Littlefield, Murphy and Cimini (2011) evaluated the three specific subscales of the PBSS: Manner of Drinking subscale (MOD), Serious Harm Reduction subscale (SHR), and Stopping/ Limiting Drinking subscale (SLD). In doing so they found that increases on items within the MOD subscale (i.e. items that focus on reducing specific risky alcohol consumption strategies) were associated with less alcohol use, and increases on the SHR subscale (items relating to avoiding negative alcohol-related consequences) were associated with fewer alcohol-related problems (Martens et al., 2011). Patrick et al., (2011) indirectly touched

upon this trend by examining differences in specific PBS items based on the different motives. They found in their study that those drinking for positively reinforcing reasons were less likely to engage in strategies related to limiting one's involvement in heavy drinking whereas those drinking for coping reasons were less likely to engage in strategies related to avoiding consequences (Patrick et al., 2011). Therefore this evidence suggests that those drinking to enhance, or for social reasons, are less likely to engage in strategies that would fall within the Manner of Drinking Subscale, whereas coping motivated drinkers are less likely to engage in strategies that would fall within the Serious Harm Reduction subscale. This view is limited, however, in that no study has actually evaluated the relationship between the various motives and specific subscale items of the Protective Behavioral Strategies Scale (PBSS).

There has also been partial support for the motive of Conformity being linked to items related to the Stopping/Limiting Drinking subscale. LaBrie et al., (2011) found that, when it comes to the PBS of Stopping/Limiting Drinking (i.e., items related to drinking reduction strategies that involve planning one's evening in advance or more general alcohol reduction techniques) the Asian population scored higher than the Caucasian population. They also found that Asians scored higher than Caucasians on the motives of Coping and Conformity. These two findings are certainly not sufficient to conclude that Conformity (or Coping) is tied to Stopping/Limiting Drinking, but it does invite future study. Another line of evidence for this conclusion comes from findings by Patrick et al. (2011) who reported that those drinking to conform were more motivated to decrease their blood alcohol content (a characteristic of the Stopping/Limiting Drinking subscale). However, Martens et al. (2011) found that increases on the Stopping/Limiting Drinking subscale was not associated with less alcohol use or fewer alcohol-related problems.

The Current Study

The current study aims to extend the previous findings which link PBS with different motives while using the Protective Behavioral Strategies Scale (Martens et al., 2005). Specific motives will be tested for their relationship with the three distinct subscales (i.e. Manner of Drinking, Stopping/Limiting Drinking, and Serious Harm Reduction). Additionally there will be a focus on evaluating how the personality profiles are related to overall levels of PBS use as well as distinct subscale scores. It will also be important to discern the differences between the Coping Anxiety motives and the Coping Depression motives as they have been linked to different outcomes after controlling for number of drinks. It is hypothesized that the relationship between the PBS and the four motives will confirm previous findings, however it is expected there will also be differences in endorsement rates within the distinct subscales such that (1) A higher score on Enhancement motives will be associated with a lower overall PBS score as well as with a lower Manner Of Drinking score, (2) A higher score on the Social motives will be associated with a lower overall PBS score, (3) A higher score on the Coping motives will be associated with a lower overall PBS score as well as a lower Serious Harm Reduction score, and (4) A higher Conformity score will be associated with a higher PBS score as a whole as well as a higher Stopping/Limiting Drinking score.

In dividing the coping motive into coping-anxiety versus coping-depression it is hypothesized that (1) A higher score on the Coping Anxiety motive will be associated with a lower overall PBS score as well as a lower Serious Harm Reduction score, while (2) A higher score on the Coping Depression motive will be associated with a lower overall PBS score as well as a lower score on the Manner of Drinking subscale. This is hypothesized as it has been shown that Coping Depression motives predict greater alcohol-related problems through higher

consumption and therefore this group is less likely to engage in strategies that limit their alcohol consumption. Those drinking for Coping Anxiety, on the other hand, will show high levels of alcohol-related problems and will, therefore, be less likely to engage in strategies that limit the alcohol-related consequences.

It is further hypothesized that within the personality profiles (1) A higher score on Impulsivity will be associated with a lower overall PBS score, (2) A higher score on Sensation Seeking will be associated with a lower overall PBS score as well as a lower Manner Of Drinking score, (3) A higher score on Anxiety Sensitivity will be associated with a lower overall PBS score as well as a lower Serious Harm Reduction score, and finally (4) A higher score on Hopelessness will be associated with a lower overall PBS score as well as a lower Manner of Drinking score. Impulsivity is linked to all motives for drinking and therefore should result in an overall reduction in PBS scores, without being specific to one distinct subscale. Sensation Seeking is linked to Enhancement and therefore is hypothesized to lead to higher levels of alcohol consumption and lower levels of MOD scores. Anxiety Sensitivity and Hopelessness are differentially related to alcohol-related consequences with the latter being related to consequences primarily through higher levels of drinking, and therefore lower scores on the Manner of Drinking subscale.

Method

Participants

Participants in the study consisted of 137 undergraduate students aged 18 to 57 with a mean age of 22.15 ($SD = 2.76$). Of this sample, 110 (81%) were female, and 26 (19%) were male. The majority of the participants (83.2%) were Caucasian with 4.4 % identifying as First Nations, 2.9% identified as Asian, 2.2% identified as African-American, and 7.3% as other

ethnicities. The majority (47.4%) were in their first year (21.2% second year, 13.9% third year, 13.9% fourth year, 1.5% fifth year). Of the 137 who completed the questionnaire, 132 (96.4%) met eligibility criteria (i.e. reported having had consumed alcohol at least once). The average age of first drink was 14.82 ($SD = 2.76$) with 78.8% of the participants reporting consuming alcohol for the first time between the ages of 13 to 17.

Procedures

Recruitment occurred through the use of posters which were distributed throughout the Lakehead University campus. In addition, undergraduate Psychology classes (as well as various first year undergraduate classes within other disciplines) were informed of the study through in class presentations, and/or through an email. The study was also advertised through the SONA Systems “Experiment Management System.” Interested participants were invited to attend an in lab session where informed consent was obtained and all details of the study were provided. After reading a description of the study and indicating consent, participants completed a self-report questionnaire containing items pertaining to basic demographic information, personality, and motivational measures, as well as questions related to behaviours (e.g. alcohol use, and PBS). The questionnaire consisted of a paper-and-pencil format, with an average completion time for the questionnaires ranging from 40-60 minutes. Upon completion of the study, a debriefing form was provided. As compensation, participants within the study were provided with either a bonus mark in their Psychology courses, or they were entered into a draw to win \$100 if they were ineligible for the bonus marks. Students were also provided with the option of choosing to be entered into the draw regardless of being eligible for bonus marks. This study was approved by the Research Ethics Board.

Measures

Demographics. A basic demographic questionnaire was administered to acquire information pertaining to age, sex, ethnicity/race, physical and emotional health characteristics, as well as academic, occupational and financial information (Stewart & Devine, 2000).

Alcohol consumption measures.

Alcohol Use (National Institute on Alcohol Abuse and Alcoholism, 2003). Participants responded to items related to whether one has ever drunk alcohol in one's life, the age at which one first drank alcohol, frequency of consumption ("How often do you normally drink alcohol?") responding either per week, per month, or per year, and amount of consumption ("How much do you normally drink when you drink?") where they responded on the maximum, average, and minimum number of drinks per occasion. The participants were informed that one drink is the equivalent of one bottle of beer, one cooler, one small [4-ounce] glass of wine, or one shot / mixed drink containing an ounce of hard liquor.

Heavy Episodic Drinking Severity (HED-S; Mushquash et al., 2012). Drinking severity was examined using a single item, "What is the greatest number of drinks you consumed in a 2-hour period during the past 7 days?" in which they were able to write a number in a space provided.

Heavy Episodic Drinking Frequency (HED-F; National Institute on Alcohol Abuse and Alcoholism, 2003). The frequency of consumption was measured using two sex-based measures in which participants were asked "During the past 7 days, how often did you have 4 or more drinks (women) [or 5 or more drinks (men)] containing any kind of alcohol within a 2-hour period?". The participants then had choices which ranged from "0 times" to "11 or more times".

Substance Use Risk Profile Scale (SURPS; Woicik et al., 2009). The Substance Use Risk Profile Scale was used to establish the degree of Anxiety Sensitivity and Hopelessness

within the current sample. The SURPS consists of 23 items related to the four personality profiles, and the items are answered on a four point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). For the current analysis, only Hopelessness and Anxiety Sensitivity were assessed using the SURPS. Hopelessness (7 items) involves items such as “I feel I am a failure”, and Anxiety Sensitivity (5 items) includes, “It frightens me when I feel my heart beat change”. The SURPS has been found to have adequate to good internal consistency, and good convergent and discriminant validity (Woicik et al., 2009). Additionally, the scale has shown good test-retest reliability over a 6-week period as well as good structural, concurrent, and predictive validity (Woicik et al., 2009; Krank, Stewart, O'Connor, Woicik, Wall, & Conrod, 2011).

Barrat Impulsivity Scale- Brief (BIS-B; Patton, Stanford, & Barratt, 1995).

Impulsivity was measured using the Barratt Impulsivity Scale- Brief. This questionnaire contains nine statements related to ones level of impulsiveness (e.g., “I do things without thinking,” “I have racing thoughts,” and “I make up my mind quickly”) and is rated on a 4-point Likert-type scale with anchors from rarely/never, to almost always/always. The original BIS scale has been found to have acceptable internal consistency for applied use (Patton et al., 1995). Additionally, the BIS-B has shown similar indices of construct validity as those of previous scales while using a fraction of the items (Steinberg, Sharp, Stanford, & Tharp, 2013). Furthermore, the BIS-B has shown evidence of construct validity across three different samples and diverse age ranges (Steinberg et al., 2013).

Brief Sensation Seeking Scale (BSSS; Hoyle, Stephenson, Palmgreen, Lorch & Donohew, 2002). The BSSS is an 8 item measure used to assess for ones level of Sensation Seeking (e.g. “I get restless when I spend too much time at home”). Items are measured on a five

point Likert-type scale ranging from strongly disagree to strongly agree. This scale has shown good internal consistency and has been argued to be a viable measure of sensation seeking for adolescents and young adults. Comparisons across sex, grade, and ethnic categories suggest that the measure should work equally well for respondents regardless of sex, age, or ethnicity (Hoyle et al., 2002).

Modified Drinking Motives Questionnaire revised (M-DMQ-R; Blackwell & Conrod, 2003). The M-DMQ-R is a 28 item measure that calculates the degree to which participants fall into five motives for drinking. It is based on an earlier version (DMQ-R; Cooper, 1994) that was designed to measure four distinct drinking motives (Coping, Enhancement, Social, and Coping motives), but further subdivides Coping into Coping-Anxiety and Coping-Depression. The participants respond on a five point Likert-type scale ranging from 1 (*almost never/never*) to 5 (*almost always/always*) on the degree to which they had drunk for a series of different reasons. Sample items include “as a way to celebrate”, and “to relax”. Five items are used for the social, enhancement and conformity dimensions, four items for the coping-anxiety dimension, and nine items make up the coping-depression dimension. The Modified DMQ-R subscales have been shown to have good to excellent test–retest reliabilities in an undergraduate sample of relatively frequent drinkers (Grant et al., 2007). Furthermore, each of the five types of drinking motives prospectively predicts a distinct pattern of alcohol use and alcohol-related problems among these relatively frequent drinkers (Grant et al., 2007).

Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). Negative alcohol related consequences were assessed using the 23-item Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). Participants were asked whether they experienced any of the alcohol-related problems (e.g. “Not able to do your homework or study for a test”) in the past 3 years.

Participants responded by using a 4-point Likert-type scale, ranging from 0 (*none*) to 3 (*more than five times*). The RAPI has been shown to be a valid measure of alcohol-related problems and has demonstrated good convergent and discriminant validity as well as good internal consistency (White & Labouvie, 1989).

Protective Behavioral Strategies Scale (PBSS; Martens et al., 2005). PBS use was assessed using the Protective Behavioral Strategies Scale (PBSS) (Martens et al., 2005), which asks participants about their use of specific protective strategies (e.g. “Determine not to exceed a set number of drinks”, “Make sure you go home with a friend”, or “Put extra ice in your drink”). The scale consists of three subscales: Manner of Drinking (MOD: 7 items), which focuses on reducing specific risky alcohol consumption strategies, Stopping/Limiting Drinking (SLD: 5 items), which focuses on drinking reduction strategies that involve planning one’s evening in advance or more general alcohol reduction techniques, and Serious Harm Reduction (SHR: 3 items), which focuses on strategies designed to limit potentially serious alcohol-related harms. The items are answered on a Likert-type scale with scores ranging from 1 (*never*) to 5 (*always*). The factor structure of the PBSS has been supported using confirmatory factor analysis (Martens et al., 2007c). Additionally, Pearson, Kite and Henson (2012) demonstrated that the PBSS had stronger concurrent validity with alcohol problems measures than other measures of PBS, and was deemed, as assessed in their study, to be a superior measure of PBS (Pearson, Kite & Henson, 2012). Additionally, all PBSS subscales have been shown to be negatively correlated with several alcohol use measures and alcohol-related problems (Martens et al., 2005; Martens et al., 2007c).

Data Analysis

In order to investigate any associations between motives and personality (in relation to PBS and in relation to various drinking-related measures), Pearson product-moment correlation coefficients were examined. In addition, various single and multiple regressions were performed in order to analyze the proportion of variance PBS use accounted for by various motives and personality profiles. Finally, a hierarchical regression was executed in order to examine the contribution of motives/personality in the prediction of overall protective behavioural strategy use while controlling for sex.

Results

On average, students reported sometimes using protective strategies with an average score of 43.69 out of a possible maximum of 75 ($SD = 11.02$). Means and standard deviations of each subscale are shown in Table 2. Only 25.6% of the sample had engaged in HED within the past week (19.7% engaged in HED 1 time, 2.9% 2 times, and 2.2% 3 times). Additionally, 35.6% reported drinking at least once a week with a mean number of drinks per week = 1.63, ($SD = 1.39$). When considering all students, the average drinks per week fell to an average of .93 drinks per week ($SD = 1.07$). Students in the sample reported drinking a mean of 4.16 ($SD = 2.55$) drinks per drinking occasion and an average RAPI score of 11.74 ($SD = 11.35$). The results indicated that males drink at an earlier age than females, $t(131) = .19, p < .05$, and that males have a higher minimum, average and maximum consumption ($r = -.38, p < .01$; $r = -.26, p < .01$; $r = -.24, p < .05$). However, there was no significant sex difference in frequency of heavy episodic drinking episodes over the past week, $t(130) = .23, p = .82$. Additionally, age, and year of university were not significantly correlated with frequency or amount of use.

Bivariate Correlations

Bivariate correlations were computed between the MDMQ-R motives for drinking (i.e., Social, Enhancement, Coping Anxiety, Coping Depression and Conformity) and four personality profiles: Impulsivity, Sensation Seeking, Anxiety Sensitivity, and Hopelessness; Table 1). As hypothesized, Enhancement motives were positively correlated with Sensation Seeking ($r = .223$, $p < .05$), Conformity was positively correlated with Anxiety Sensitivity ($r = .230$, $p < .01$), and both Coping motives were positively correlated with Hopelessness (see Table 1). However, Enhancement did not correlate with Impulsivity. Additionally, neither coping motives correlated with Anxiety Sensitivity which is contrary to what was hypothesized. Finally, Social motives for drinking positively correlated with Impulsivity and Sensation Seeking, and negatively correlated with Hopelessness (Table 1).

Additionally, bivariate correlations were also computed between sex, drinks per week, average number of drinks per occasion, RAPI scores, and each of the PBS subscales (i.e., Serious Harm Reduction, Manner of Drinking, Stopping/ Limiting Drinking) as well as the overall PBS score (see Table 2). Consistent with previous research, females engaged in greater protective behavioural strategies. This was the case for PBS total as well as all subscales apart from Manner of Drinking. No drinking related measures were correlated with PBS total; however the MOD subscale correlated with times drinks per week ($r = -.213$, $p < .05$) such that an increase in drinks per week was associated with a lower MOD score. RAPI scores were also shown to correlate with times drinks per week ($r = .262$, $p < .01$) with a higher number of drinks per week relating to greater alcohol-related problems. Contrary to previous literature, RAPI scores were not shown to be significantly correlated with protective behavioural strategy use apart from low MOD scores being correlated with higher alcohol-related problems ($r = -.278$, $p < .01$).

Hierarchical Regression

In order to determine if personality and motives for drinking predict PBS use, separate hierarchical regressions were computed for PBS total with sex entered in Step 1 and the MDMQ- entered as a block in Step 2, or personality respectively. Sex was controlled in all regression analyses given established sex differences in the various personality constructs, heavy drinking behaviour and PBS use. The results are shown in Table 3. After controlling for sex motives significantly predicted PBS total, $R^2 = .175$, $F(6, 74) = 2.617$, $p < .05$, with Enhancement as a significant predictor ($\beta = -.377$, $t = -2.416$, $p = .018$). Personality was not shown to account for a significant amount of the variance in overall PBS use.

Motives Predicting Protective Behavioural Strategy Use

The first research question concerned whether drinking motives were associated with frequency of using of protective behavioural strategies. Individuals who had greater Enhancement, and Coping motives for drinking used protective strategies less frequently (see Table 4). In dividing PBS into subscales, various differences emerged. Enhancement and Social motives for drinking were both related to a lower overall MOD subscale score such that those drinking for a change in internal affect or within celebratory/social situations tended to engage in fewer strategies related to reducing the risky drinking behaviours. Similarly, Coping Anxiety as well as Coping Depression was related to lower MOD subscale scores at $p < .05$. Finally Coping Depression was related to less PBS use as it relates to limiting the serious harms associated with drinking. Conformity did not significantly predict an increase or decrease in PBS use within any of the subscales.

Personality Predicting Protective Behavioural Strategy Use

The four personality factors were also examined in terms of predicting PBS use by means of simple linear regressions. Results of the various personality factors predicting PBS use are

displayed in Table 5. No personality profiles significantly predicted overall PBS use. Impulsivity significantly predicted a decrease in Serious Harm Reduction strategies, while Sensation Seeking predicted less Manner of Drinking strategies. Anxiety Sensitivity was unique in that it significantly predicted an increase in Stopping/Limiting Drinking behaviours. Finally, Hopelessness was not related to any of the PBS subscales.

Discussion

The purpose of the present study was to determine whether various personality profiles and motives for drinking are differentially related to the amount and types of PBS used. Prior to examining the relationship between motives for drinking and personality on PBS use, a bivariate correlation was computed to examine the relationship of personality profiles with motives. Previous research has shown that certain personality traits differentially predict motives for alcohol use (e.g. Martens et al., 2011; Woicik et al., 2009). It was important to evaluate whether the relationships between personality risk factors and risky motives for alcohol use would show similar patterns as found in previous literature as this could have implications on examining its role with PBS. Overall, the current study shared some similarities with previous research, while other findings were inconsistent with the literature. The first personality profile, Impulsivity, was predicted to relate to all five motives for drinking given that it has been shown to be related to the four original motives for drinking, and involves a desire for immediate reward, and an inability to delay responses (a characteristic typical of heavy alcohol consumption). In the current study, however, Impulsivity was shown to only relate to Social and Coping Depression motives for drinking. It is possible that the current sample consisted of a low impulsivity group given the fact that it was predominantly females and Impulsivity is a trait that is often higher in males (Woicik et al., 2009).

The second personality profile, Sensation Seeking, correlated with Enhancement motives as expected and also correlated strongly with social motives for drinking. These findings confirm previous literature and further support the link of these two measures within the present sample. Hopelessness was shown to correlate with both Coping Anxiety and Coping Depression motives, while Anxiety Sensitivity was shown to correlate with Conformity. Previous literature has supported a link between Coping motives for drinking with both Hopelessness and Anxiety Sensitivity. In dividing the Coping motive into the two distinct subtypes, it was hypothesized that Coping Anxiety and Conformity would be linked with higher levels of Anxiety Sensitivity. This was shown to be the case only for Conformity. Additionally, Hopelessness was hypothesized to correlate with higher Coping Depression motives as well as with Conformity. Instead, Hopelessness correlated with both Coping motives (Coping Anxiety and Coping Depression), as well as negatively correlating with Social motives for drinking. It is surprising that Social motives for drinking positively correlated with Impulsivity and Sensation Seeking, and negatively correlated with Hopelessness as it is often seen as the least maladaptive reason for drinking and therefore does not correlate with the four personality profiles. It is reasonable to assume that because Social motives for drinking are so common, those engaging in more risky drinking patterns likely also have higher levels of social drinking. It is also interesting to note that those drinking for Social reasons scored lower on Hopelessness. This is in line with previous research suggesting that those high in depressive cognition are more likely to drink alone (Martens et al., 2007b).

Overall, females were shown to engage in more protective behavioural strategies. This was shown to be especially evident within the Serious Harm Reduction subscale with a significance level at the $p < .01$ level. The Serious Harm Reduction subscale was also the most

commonly endorsed type of PBS within the current sample with a mean score of 12.65 ($SD = 3.08$) out of a total maximum of 15. The other two subscales had an average endorsement rate at under 55% of the maximum possible score. The majority of studies suggest that women are more likely to use protective strategies than men (LaBrie, Lac, Kenney, & Mirza, 2011; Lewis, Rees, Logan, Kaysen, & Kilmer, 2010; Walters, Roudsari, Vader, & Harris, 2007). It has been argued that part of this difference can be attributed to the fact that female students tend to be more aware of the need for self-protection and hence more likely to use protective behaviours when drinking (Benton et al, 2008). Women are at an increased risk of experiencing assault and sexual abuse, and so many use protective factors that prevent them from engaging in heavier levels of drinking and experiencing negative consequences (Lee, Geisner, Patrick & Neighbors, 2010; Nguyen, Walters, Wyatt & DeJong, 2011; Palmer, McMahon, Rounsaville & Ball, 2010b). Research has also shown that items related to Serious Harm Reduction are most common among both men and women as these methods do not counter their typical drinking style (Linden, Lau-Barraco & Milletich, 2013; Walters, Roudsari, Vader & Harris, 2007). In addition, they often involve strategies that one can engage in prior to the drinking event and therefore they are not required to put more cognitive effort into drinking differently than they normally would drink (e.g. having a designated driver; Benton et al., 2008; Linden et al., 2013; Sutfin, Light, Wagoner, McCoy, Thompson, Rhodes, & Spitler, 2009). The distribution of PBS within the current sample confirms what has been shown in previous literature.

In the current sample, a very low level of alcohol-related problems was reported on the RAPI ($M = 11.74$, $SD = 11.35$). Considering that this scale allows for a maximum score of 75, it appears that the present sample does not experience a high proportion of alcohol-related problems. It is possible that this is a result of having a high female sample. It is also possible that

this is a result of using a highly educated (undergraduate) sample. It is likely that those who have experienced serious consequences from drinking are less likely to choose to participate in additional tasks such as a study of this nature. The current sample also reported consuming an average of .93 drinks per week ($SD = 1.07$) which, again, points towards a low risk group. In the current sample, protective behavioural strategies were not shown to correlate with alcohol-related problems apart from the fact that higher scores on strategies related to reducing risky drinking patterns (Manner of Drinking) were associated with lower levels of alcohol-related consequences. It is likely that the low RAPI scores may have contributed to a floor effect which therefore led to a lack of a relationship between protective behavioural strategies with RAPI scores.

Motives for drinking may in part determine which protective strategies individual are likely to use. In the current sample, motives for drinking accounted for a significant proportion of the variance in overall PBS use, even after controlling for sex. This is important as there have been mixed findings surrounding the relationship between the negative motives for drinking (Coping, Conformity) and with PBS use (Martens et al., 2007b; 2008; Patrick et al., 2011). Additionally, no studies, until this one, had explicitly evaluated the link of Conformity motivated drinking with PBS use using the Protective Behavioral Strategies Scale. This further confirms the link between the motives for drinking and the use of protective behavioural strategies while now including all five motives for drinking.

Furthermore, in dividing the motives for drinking into separate analyses with protective strategies, additional hypotheses were confirmed. It was hypothesized that a higher score on Enhancement motives would be associated with a lower overall PBS score as well as a lower Manner of Drinking score. Consistent with previous research and with the hypothesis of the

current study, Enhancement was inversely related to lower overall protective strategies (Martens et al., 2007b; Patrick, Lee, & Larimer, 2011). In addition, greater Enhancement motives for drinking predicted less Manner of Drinking strategies as hypothesized. Therefore, those drinking to enhance internal positive moods (e.g., to have fun or get drunk) are less likely to use protective behavioural strategies overall, and this is the case especially for items related to reducing the risky drinking patterns. Enhancement motives for drinking are often linked to heavy drinking rates with research showing that the alcohol-related problems are completely accounted for by the higher level of consumption (Cooper, 1994; Merrill & Read, 2010). Therefore, it makes sense that they would be less likely to engage in strategies related to reducing their risky drinking patterns (e.g. pacing drinks and avoiding drinking games).

Although it was hypothesized that a higher score on the Social motives would be associated with a lower overall PBS score, this was not the case in the present sample. Previous research has consistently shown that individuals who are motivated to consume alcohol for positively reinforcing reasons engage in fewer PBS, which is then associated with higher amounts of alcohol consumed and a greater frequency of alcohol-related problems (Martens et al., 2007b; Patrick et al., 2011). However, Social motives did correlate with lower levels of Manner of Drinking strategies. Again this may suggest that those high in Social motives for drinking may also engage in other more risky motives for drinking and therefore are less likely to use strategies which avoid risky drinking patterns.

It was further hypothesized that in dividing the Coping motive into Coping Anxiety versus Coping Depression, a higher score on the Coping Anxiety motive would be associated with a lower overall PBS score as well as a lower Serious Harm Reduction score, while a higher score on the Coping Depression motive would be associated with a lower overall PBS score as well as

a lower score on the Manner of Drinking subscale. Both coping motives predicted lower levels of overall PBS use. Moreover, Coping Depression motives did in fact predict lower levels of Manner of Drinking subscale scores. However, in addition to this, Coping Anxiety motives also predicted lower levels of Manner of Drinking subscale scores instead of lower Serious Harm reduction strategies, and Coping Depression motives instead predicted lower levels of Serious Harm Reduction strategies. This is surprising as those drinking for Coping Anxiety motives tend to show high levels of alcohol-related problems while Coping Depression motives predict greater alcohol-related problems through higher consumption (Grant, Stewart & Mohr, 2009). It will be important to replicate the current study within a broader sample to see if this relationship still exists.

Finally, Conformity motives for drinking were hypothesized to be associated with a higher PBS score as a whole as well as a higher Stopping/Limiting Drinking score based on research by Patrick et al., (2011). In the current sample, Conformity did not predict a change in PBS use within any of the subscales. This may be representative of the fact that the current sample did not tap into Conformity motivated drinkers as it looked at an undergraduate sample. Research has shown that Conformity motivated drinkers drink to avoid social rejection (e.g., to fit in with a peer group) which is not usually representative of an older population (Cooper, 1994). It is important to note that this is the first study to directly examine the relationship of Conformity with PBS using the Protective Behavioral Strategies Scale. Although the results were not statistically significant, Conformity did have a positive relationship with the Stopping/Limiting Drinking subscale, and not with any other subscales. It is possible that this relationship would have existed if using a younger sample.

The relationship of protective behavioural strategies with personality was also evaluated. Overall, personality, as a whole, did not account for a significant proportion of the variance in total protective behavioural strategy use. No previous studies had directly examined the role of any of these four personality profiles on ones use of protective behavioural strategy use. Therefore, this finding may simply suggest that personality, as a whole does not significantly predict a change in ones use of strategies. Despite this, significant results did emerge when examining the subscales of the Protective Behavioral Strategies Scale.

Impulsivity was predicted to be related to a lower overall level of protective behavioural strategies. Research has shown that respondents with higher self-regulation tend to experience fewer negative alcohol-related consequences, at least in part, because they use more PBS (D'Lima, Pearson & Kelley, 2012; Quinn, & Fromme, 2010). Palmer et al., (2010a) similarly found that participants who were highly impulsive engaged in fewer alcohol specific protective strategies, suggesting that they have impaired behavioural regulation skills, and are not able to effectively plan and make decisions before drinking. In the current sample, Impulsivity did not predict a change in overall PBS use. Instead Impulsivity predicted lower levels of Serious Harm Reduction strategies. Items within the SHR subscale relate to reducing the harms associated with drinking and often involve items that one chooses to engage in prior to the drinking event. If one is high in Impulsivity it is likely that they are less apt to make decisions to use a designated driver, or have a friend let them know that they have had enough to drink as these items require forethought prior to consuming the alcohol. Pearson, Kite and Henson (2012b) however found that, although good self-control predicted increased use of protective behavioural strategies, poor regulation was unrelated to use of protective behavioural strategies, but had direct effects on alcohol use and alcohol problems. This suggests that Impulsivity may not predict a decrease in

overall PBS, but may be related to distinct types of strategies: items related to reducing the harms associated with drinking.

A higher score on sensation seeking was hypothesized to be associated with a lower overall PBS score as well as a lower Manner of Drinking score. This hypothesis was partially supported with a higher level of Sensation Seeking being associated with lower levels of Manner of Drinking strategies. Sensation Seeking involves a desire to seek out new experiences without the inhibitory control of threat (Pihl & Peterson, 1995). It makes logical sense that those drinking to experience the intoxicating effects of alcohol would be less likely to engage in strategies that limit the pleasurable nature of drinking.

It was also hypothesized that a higher score on Anxiety Sensitivity would be associated with a lower overall PBS score as well as a lower Serious Harm Reduction score. Anxiety Sensitivity has been shown to be associated with alcohol-related problems even after alcohol consumption is accounted for (Grant et al., 2007). As explained by Linden et al., (2013), those higher in anxiety may have a distinct drinking style that puts them at greater risk for experiencing negative consequences, which may make it more difficult for them to use certain strategies that counter their typical drinking patterns. This relationship was not shown to be the case within the present sample, and instead, Anxiety Sensitivity significantly predicted an increase in Stopping/Limiting Drinking strategies. This suggests that those high in Anxiety Sensitivity may in fact be prone to limiting the amount of alcohol actually consumed. Research has shown that low mental health is associated with a decrease in overall PBS use (Martens et al., 2008). Additionally, a recent study by Linden and colleagues (2013) found that anxiety was negatively associated with PBS use overall. They also found that higher anxiety was associated with a decreased ability for drinkers to engage in serious harm reduction and monitor their

manner of drinking (Linden et al., 2013). Anxiety was not, however, related to limiting their drinking. Similarly, Martens et al., (2008) found depression to be negatively related to all PBSS subscales, although depressive symptoms had the weakest association with the Limiting/Stopping Drinking subscale. These findings contradict the current study and may suggest that the current sample was somehow demographically different from the samples within the previous studies. It is also possible that the lack of a relationship may be representative of using personality measures that did not accurately tap the construct intended to be measured.

The final hypothesis for the current sample was that a higher score on Hopelessness would be associated with a lower overall PBS score as well as a lower Manner of Drinking score. Overall, Hopelessness did not predict any change in PBS use. Hopelessness has been linked to alcohol-related problems primarily through higher levels of drinking (Grant et al., 2007). Therefore, it may be that the current sample did not engage in high levels of heavy episodic drinking and therefore the harms did not surface.

Limitations and Future Directions

In addition to the limitations already mentioned, some more general limitations must also be noted. For instance, the present sample consisted of 81 percent females. This is important as there is a significant sex difference in heavy episodic drinking with males consistently showing higher rates of drinking as well as consequences related to their drinking (Labrie, Lac, Kenney & Mirza, 2011; McCabe, 2002). Additionally, a majority of studies suggest that women are more likely to use protective strategies compared to men (LaBrie, Lac, Kenney, & Mirza, 2011; Walters, Roudsari, Vader, & Harris, 2007). This is an important limitation as it potentially precludes generalizability to male drinkers. It also may explain the current sample being such a low risk group.

Additionally, the current sample was 83.2 percent Caucasian with only 4.4 % identifying as First Nations, 2.9% identified as Asian, 2.2% identified as African-American, and 7.3% as other ethnicities. Research has shown that Caucasians are more likely to report higher drinking motives aimed at enhancing positive mood, whereas Asians are more likely to report higher coping and conformity motives (LaBrie et al., 2011). Additionally, PBS use has been shown to vary by ethnicity such that Asians are more likely to use strategies to cease or limit drinking, whereas Caucasians are more likely to use strategies that minimize serious harm. Similarly Lawrence, Abel and Hall (2010) found racial differences in drinking patterns with European Americans students reporting a higher incidence of “drunk” episodes and a greater use of specific pre-drinking behaviours such as protective strategies than their non-European American peers. It is important to note this limitation and recognize that the current results may not generalize to a wider population. This will be an important area for future research.

Additionally, the data was obtained by self-report, although participants were assured anonymity. Related to this, the fact that many items within the study dealt with sensitive matters could have influenced responses. Although participants were informed that their data was confidential and anonymous, there is still the potential for response bias given that the study was based out of a small university campus. Additionally, there were issues with missing data resulting in PBS total having a lower response rate ($N = 86$) when compared to the subscales. This is bound to happen as there is greater room for error with more variables; however, it is an important point to consider when accounting for lower PBS totals than expected.

It is also important to realize that the cross-sectional nature of the data allows for only concurrent and not prospective analyses of the relationships among study variables. Thus, inferences regarding causal relationships between motives/ personality, PBS, and alcohol-related

problems cannot be made. Prior studies have consistently shown that greater PBS use is directly associated with fewer alcohol-related problems (e.g., Benton et al., 2008; Borden et al., 2011; Ray et al., 2009) however this was not the case in the present sample. One cannot truly know whether this is a result of a low consequences/ high PBS group, or if the students simply represent a subsample of students low in alcohol-related problems regardless of strategy use. It is also likely that some students may engage in both risk and protective types of behaviours within the same occasion. For example, one could engage in drinking games at the start of the evening, but then set limits on their drinking for the remainder of the night and/or make sure to walk home with a friend (Ray et al., 2012). It is also possible that students engage in mainly protective behaviours one night and engage in mainly risk behaviours on another. It will be important to consider a broader sample, while using a longitudinal design. It may also be beneficial to conduct a study in which students report on their strategy use on each occasion rather than asking for an average.

A final area for future direction will be to replicate the current research while using the Protective Behavioural Strategies Scale-Revised (Madson, Arnau & Lambert, 2013). This is a scale that was published after the current methodology had already been implemented. The revised PBS scale consists of two subscales: Controlled Consumption (Limiting/Stopping Drinking and the Manner of Drinking into one factor) and Serious Harm Reduction. Madson et al., (2013) argued that combining the LSD and MOD subscales might provide a more parsimonious assessment of PBS use as both original subscales represent a control of one's drinking behavior. In addition they added "Avoid getting in a car with someone who has been drinking," "Avoid mixing alcohol with prescription drugs whether prescribed for you or not," and "Always know what you are drinking," into the Serious Harm Reduction subscale. This

combined scale yielded highly reliable data in the current study and was shown to best fit the data. Additionally, the factor structure of the measure was invariant across White non-Hispanic and African American men and women (Madson et al., 2013). It is possible that the new subscales will fit the data better. Therefore, future research may aim to examine the current hypotheses in relation to the revised subscales.

Implications

The results of this study are important as they may assist in understanding undergraduates at greatest risk of negative alcohol-related consequences and inform protective behavioural strategy-based interventions tailored to personality traits and motives for drinking. Students often overestimate the frequency with which other college students experience negative alcohol-related consequences and perceive others to evaluate consequences as less negative than is in fact the case (Benton et al., 2008; DeMartini, Carey, Lao, & Luciano, 2011; Lee et al., 2010; Lewis, Rees, & Lee, 2009). Therefore combining treatment aimed at highlighting the prevalence of alcohol-related problems and the potential benefits of using protective behavioural strategies is promising. There has already been support for the use of brief intervention whereby students reported decreased alcohol use, more accurate perceptions of other students' drinking, and increased use of protective behavioural strategies (Martens et al., 2007a). The results of the current study provide the potential of tailoring individualized interventions while still allowing the students to consume alcohol. This may involve focusing on reinforcing protective behaviours that students already use frequently when falling into certain motives for drinking or personality profiles, or it may involve focusing on encouraging students to engage in actions used less often (Ray et al., 2012). Utilizing the information of the current study, alongside the previous literature, one can seek to identify those protective behavioural strategies that are the least

commonly endorsed for those with various motives for drinking and personality profiles, with a view to inform future intervention development efforts specifically targeted for this group.

References

- Adlaf, Edward M., Demers, Andrée, and Gliksman, Louis (Eds.). (2004). *Canadian Campus Survey*. Toronto: Centre for Addiction and Mental Health.
- Benton, S. L., Downey, R. G., Glider, P. J., & Benton, S. A. (2008). College students' norm perception predicts reported use of protective behavioural strategies for alcohol consumption. *Journal of Studies on Alcohol and Drugs*, *69*, 859-865.
- Blackwell, E., & Conrod, P. J. (2003). *A five-dimensional measure of drinking motives*. Unpublished manuscript, Department of Psychology, University of British Columbia.
- Borden, L. A., Martens, M. P., McBride, M. A., Sheline, K. T., Bloch, K. K., & Dude, K. (2011). The role of college students' use of protective behavioural strategies in the relation between binge drinking and alcohol-related problems. *Psychology of Addictive Behaviours*, *25*(2), 346-351. doi: 10.1037/a0022678
- Centre for Addiction and Mental Health. (2008). *Alcohol, other drugs, and related harms in Ontario: A scan of the environment*. Toronto, Ontario: Author.
- Clapp, J. D., Shillington, A. M., & Segars, L. B. (2000). Deconstructing contexts of binge drinking among college students. *American Journal of Drug and Alcohol Abuse*, *26*, 139-154. doi:10.1081/ADA-100100596
- Clapp, J. D., & Shellington, A. M. (2001). Environmental predictors of heavy episodic drinking. *American Journal of Drug and Alcohol Abuse*, *27*(2), 301-313.
- Conrod, P. J., Stewart, S. H., Pihl, R. O., Côté, S., Fontaine, V., & Dongier, M. (2000). Efficacy of brief coping skills interventions that match different personality profiles of female substance abusers. *Psychology of Addictive Behaviours*, *14*, 231-242. doi:10.1037/0893-164X.14.3.231

- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment, 6*(2), 117-128.
- Cox, M., & Klinger, E. (1990). Incentive motivation, affective change, and alcohol use: A model. In M. Cox (Ed.), *Why people drink* (pp. 291-311). New York: Gardner Press.
- DeMartini, K. S., Carey, K. B., Lao, K., & Luciano, M. (2011). Injunctive norms for a alcohol-related consequences and protective behavioural strategies: Effects of gender and year in school. *Addictive Behaviours, 36*, 347-353. doi:10.1016/j.addbeh.2010.12.009
- D'Lima, G. M., Pearson, M. R., & Kelley, M. L. (2012). Protective behavioural strategies as a mediator and moderator of the relationship between self-regulation and alcohol-related consequences in first year college students. *Psychology of Addictive Behaviours, 26*(2), 330-337. doi: 10.1037/a0026942
- Grant, V. V., Stewart, S. H., & Mohr, C. D. (2009). Coping-anxiety and coping-depression motives predict different daily mood-drinking relationships. *Psychology of Addictive Behaviours, 23*(2), 226–237. doi: 10.1037/a0015006
- Grant, V. V., Stewart, S. H., O'Connor, R. M., Blackwell, E., & Conrod, P. J. (2007). Psychometric evaluation of the five-factor Modified Drinking Motives Questionnaire-Revised in undergraduates. *Addictive Behaviours, 32*, 2611-2632. doi:10.1016/j.addbeh.2007.07.004
- Hingston, R. W., Edwards, E. M., Heeren, T., & Rosenbloom, D. (2009a). Age of drinking onset and injuries, motor vehicle crashes, and physical fights after drinking and when not drinking. *Alcoholism: Clinical and Experimental Research, 33*(5), 783-790. doi: 10.1111/j.1530-0277.2009.00896.x
- Hingston, R. W., & Zha, W. (2009b). Age of drinking onset, alcohol use disorders, frequent

- heavy drinking, and unintentionally injuring oneself and others after drinking. *Pediatrics*, *123*(6), 1477–1484. doi:10.1542/peds.2008-2176
- Hoyle, R. H., Stephenson, M. T., Palmgreen, P., Lorch, E. P., & Donohew, R. L. (2002). Reliability and validity of a brief measure of sensation seeking. *Personality and Individual Differences*, *32*, 401–414..
- Krank, M., Stewart, S. H., O'Connor, R., Woicik, P. B., Wall, A., & Conrod, P. J. (2011). Structural, concurrent, and predictive validity of the Substance Use Risk Profile Scale in early adolescence. *Addictive Behaviours*, *36*, 37-46. doi: 10.1016/j.addbeh.2010.08.010
- LaBrie, J. W., Kenney, S. R., Lac, A., Garcia, J. A., Ferraiolo, P. (2009). Mental and social health impacts the use of protective behavioural strategies in reducing risky drinking and alcohol consequences. *Journal of College Student Development*, *50*(1), 35-49. doi: 10.1353/csd.0.0050
- LaBrie, J. W., Lac, A., Kenney, S. R., Mirza, T. (2011). Protective behavioural strategies mediate the effect of drinking motives on alcohol use among heavy drinking college students: Gender and race differences. *Addictive Behaviours*, *36*, 354-361. doi:10.1016/j.addbeh.2010.12.013
- Lawrence, s. A., Abel, E. M., & Hall, T. (2010). Protective strategies and alcohol use among college students: Ethnic and gender differences. *Journal of Ethnicity in Substance Abuse*, *9*, 284-300. doi: 10.1080/15332640.2010.522894
- Lee, C.M., Geisner, I. M., Patrick, M. E., & Neighbors, C. (2010). The social norms of alcohol-related negative consequences. *Psychology of Addictive Behaviours*, *24*(2), 342-348. doi: 10.1037/a0018020

- Lewis, M. A., Patrick, M. E., Lee, C. M., Kaysen, D. L., Mittman, A. & Neighbors, C. (2012). Use of protective behavioural strategies and their association to 21st birthday alcohol consumption and related negative consequences: A between- and within-person evaluation. *Psychology of Addictive Behaviours*, 26(2), 179–186. doi: 10.1037/a0023797
- Lewis, M. A., Rees, M., & Lee, C. M. (2009). Gender specific normative perceptions of alcohol-related protective behavioural strategies. *Psychology of Addictive Behaviours*, 23(3), 539-545. doi: 10.1037/a0015176
- Lewis, M. A., Rees, M., Logan, D. E., Kaysen, D. L., & Kilmer, J. R. (2010). Use of drinking protective behavioural strategies in association to sex-related alcohol negative consequences: The mediating role of alcohol consumption. *Psychology of Addictive Behaviours* 24(2), 229–238. doi: 10.1037/a0018361
- Linden, A. N., Lau-Barraco, C., & Millettich, R. J. (2013). The role of protective behavioural strategies and anxiety in problematic drinking among college students. *Journal of Studies on Alcohol and Drugs*, 74, 413-422.
- Madson, M. B., Arnau, R. C., & Lambert, S. J. (2013). Development and psychometric evaluation of the revised protective behavioural strategies scale. *Psychological Assessment*. Advance online publication. doi: 10.1037/a0031788
- Martens, M. P., Cimini, M. D., Barr, A. R., Rivero, E. M., Vellis, P.A., Desemone, G. A., & Horner, K. J. (2007a). Implementing a screening and brief intervention for high-risk drinking in university-based health and mental health care settings: Reductions in alcohol use and correlates of success. *Addictive Behaviours*, 32, 2563–2572. doi:10.1016/j.addbeh.2007.05.005
- Martens, M. P., Ferrier, A. G., & Cimini, M. D. (2007b). Do protective behavioural strategies

- mediate the relationship between drinking motives and alcohol use in college students?
Journal of Studies on Alcohol and Drugs, 68, 106-114.
- Martens, M. P., Ferrier, A. G., Sheehy, M. J., Corbett, K., Anderson, D. A., & Simmons, A. (2005). Development of the protective behavioural strategies survey. *Journal of Studies on Alcohol*, 66, 698-705.
- Martens, M. P., Kari, T. K., Damann, K. M., Page, J. C., Mowry, E. S., & Cimini, M. D. (2004). Protective behavioural strategies when drinking alcohol and their relationship to negative alcohol-related consequences in college students. *Psychology of Addictive Behaviours*, 18(4), 390-393. doi: 10.1037/0893-164X.18.4.390
- Martens, M. P., Martin, J. L., Hatchett, E. S., Fowler, R. M., Fleming, K. M., Karakashian, M. A., & Cimini, M. D. (2008). Protective behavioural strategies and the relationship between depressive symptoms and alcohol-related negative consequences among college students. *Journal of Counseling Psychology*, 55(4), 535-541.
- Martens, M. P., Martin, J. L., Littlefield, A. K., Murphy, J. G., & Cimini, M. D. (2011). Changes in protective behavioural strategies and alcohol use among college students. *Drugs and Alcohol Dependence*, 118, 504-507. doi:10.1016/j.drugalcdep.2011.04.020
- Martens, M. P., Pederson, E. R., LaBrie, J. W., Ferrier, a. G., & Comini, M. D. (2007c). Measuring alcohol-related protective behavioural strategies among college students: Further examination of the protective behavioural strategies scale. *Psychology of Addictive Behaviours*, 21(3), 307-315. doi: 10.1037/0893-164X.21.3.307
- McCabe, E. E. (2002). Gender differences in collegiate risk factors in heavy episodic drinking. *Journal of Studies on Alcohol*, 63, 49-56.
- Merril, J. E., & Read, J. P. (2010). Motivational pathways to unique types of alcohol

- consequences. *Psychology of Addictive Behaviours*, 24(4), 705-711. doi: 10.1037/a0020135
- Nguyen, N., Walters, S. T., Wyatt, T. M., & DeJong, W. (2011). Use and correlates of protective drinking behaviours during the transition to college: Analysis of a national sample. *Addictive Behaviours*, 36, 1008–1014. doi:10.1016/j.addbeh.2011.06.002
- Palmer, R. S., Corbin, W. R., & Cronce, J. M. (2010a). Protective strategies: A mediator of risk associated with age of drinking onset. *Addictive Behaviours*, 35, 486-491. doi: 10.1016/j.addbeh.2009.12.028
- Palmer, R. S., McMahon, T. J., Rounsaville, B. J., & Ball, S. A. (2010b). Coercive sexual experiences, protective behavioural strategies, alcohol expectancies and consumption among male and female college students. *Journal of Interpersonal Violence*, 25(9), 1563-1578. doi: 10.1177/0886260509354581
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the barratt impulsiveness scale. *Journal of Clinical Psychology*, 51(6), 768-774. doi: 10.1002/1097-4679(199511)51:6<768::AID-JCLP2270510607>3.0.CO;2-1
- Patrick, M. E., Lee, C. M., & Larimer, M. E. (2011). Drinking motives, protective behavioural strategies, and experienced consequences: Identifying students at risk, *Addictive Behaviours*, 36, 270–273. doi:10.1016/j.addbeh.2010.11.007
- Pearson, M. R., Kite, B. A., & Henson, J. M. (2012a). Predictive effects of good self-control and poor regulation on alcohol-related outcomes: Do protective behavioural strategies mediate?. *Psychology of Addictive Behaviours*. Advance online publication. doi:10.1037/a0028818
- Pearson, M. R., Kite, B. A., & Henson, J. M. (2012b). The assessment of protective behavioural

- strategies: Comparing prediction and factor structures across measures. *Psychology of Addictive Behaviours*. Advance online publication. doi: 10.1037/a0028187
- Pihl, R. O., & Peterson, J. B. (1995). Alcoholism: The role of different motivational systems. *Journal of Psychiatry and Neuroscience, 20*(5), 372-296.
- Quinn, P. D., & Fromme, K. (2010). Self-regulation as a protective factor against risky drinking and sexual behaviour. *Psychology of Addictive Behaviours, 24*(3), 376-385.
- Ray, A. E., Stapleton, J. L., Turrisi, R., & Pihlioni, E. (2012). Patterns of drinking-related protective and risk behaviours in college student drinkers. *Addictive Behaviours, 37*, 449-455.
- Ray, A. E., Turrisi, R., Abar, B., & Peters, K. E. (2009). Social-cognitive correlates of protective drinking behaviours and alcohol-related consequences in college students. *Addictive Behaviours, 34*, 911-917.
- Schelleman-Offermans, K., Kuntsche, E., & Knibbel, R. A. (2011). Associations between drinking motives and changes in adolescents' alcohol consumption: A full cross-lagged panel study. *Addiction, 106*, 1270–1278. doi:10.1111/j.1360-0443.2011.03423.
- Steinberg, L., Sharp, C., Stanford, M. S., Tharp, A. T. (2013). New tricks for an old measure: The development of the barratt impulsiveness scale–brief (BIS-brief). *Psychological Assessment, 25*(1), 216-226.
- Stewart, S.H., Peterson, J.B., & Pihl, R.O. (1995). Anxiety sensitivity index scores predict self-reported alcohol consumption rates in university women. *Journal of Anxiety Disorders, 9*, 283-292.
- Sutfin, E. L., Light, L. S., Wagoner, K. G., McCoy, T. P., Thompson, M. P., Rhodes, S. D., &

- Spitler, H. D. (2009). Protective behaviours and high-risk drinking among entering college freshmen. *American Journal of Health and Behaviour*, 33(5), 610-619.
- Walters, S. T., Roudsari, B. S., Vader, A. M., & T. R. Roudsari. (2007). Correlates of protective behaviour utilization among heavy-drinking college students. *Addictive Behaviours*, 32, 2633-2644. doi:10.1016/j.addbeh.2007.06.022
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health college alcohol surveys: 1993-2001. *Journal of American College Health* 50(5), 203-217.
- Wechsler, H., Nelson, T. F., & Weitzman, E. R. (2000). From knowledge to action: How Harvard's College Alcohol Study can help your campus design a campaign against student alcohol abuse. *Change*, 32(1), 38-43.
- White, H. R., & Labouvie, E. W., (1989). Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol*, 50(1), 30-37.
- White, H. R., McMorris, B. J., Catalano, R. F., Fleming, C. B., Haggerty, K. P., & Abbott, R. D. (2006). Increases in alcohol and marijuana use during the transition out of high school into emerging adulthood: The effects of leaving home, going to college, and high school protective factors. *Journal on Studies of Alcohol*, 67, 810-822.
- Woicik, P. A., Stewart, S. H., Pihl, R. O., & Conrod, P. J. (2009). The Substance Use Risk Profile Scale: A scale measuring traits linked to reinforcement-specific substance use profiles. *Addictive Behaviours*, 34, 1042-1055. doi:10.1016/j.addbeh.2009.07.001

Table 1: Bivariate correlations between personality and drinking motives (N = 130).

	Drinking Motives				
	Social	Enhancement	Coping-Anxiety	Coping-Depression	Conformity
Impulsivity	.19*	.06	.14	.23**	.01
Sensation Seeking	.25**	.22*	.09	.11	.09
Hopelessness	-.23*	.01	.21*	.37**	.08
Anxiety Sensitivity	.14	.12	.14	.16	.23**
M (SD)	3.06(.80)	2.38(.90)	1.86(.83)	1.39(.60)	1.40(.55)

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

Table 2: Bivariate correlations between PBS and sex, drinking related measures, and RAPI

	Sex N=136	Per week N=128	Average drinks N=101	RAPI N=131	M(SD)
PBS Total N=86	.23*	.02	-.04	-.12	43.69 (11.02)
SHR N=129	.28**	-.07	-.11	-.08	12.65 (3.08)
MOD N=89	.03	-.21*	-.20	-.28**	13.53 (4.89)
SLD N=130	.21*	.14	.05	.03	17.96(5.74)
M(SD)		.93 (1.07)	4.35(5.09)	11.74 (11.35)	

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

Note. SHR = Serious Harm Reduction subscale; MOD= Manner of Drinking subscale; SLD=Stopping/Limiting Drinking subscale; Per week= average drinks per week; Average drinks=average drinks per drinking occasion; RAPI = Rutger's Alcohol Problem Index.

Table 3: Hierarchical Regression Predicting PBS Use Based on Motives and Personality

Predictors	R^2	Adj. R^2	β	ΔR^2	ΔF	df
Step 1: Sex	.049	.037	.167	.049	4.100*	1, 79
Step 2 Motives	.175	.108		.126	2.617*	6, 74
Social Enhancement			.207			
Coping-Anxiety			-.377*			
Coping-Depression			-.010			
Conformity			-.149			
Conformity			.140			
Step 1: Sex	.051	.039	.220*	.051	4.344*	1, 81
Step 2 Personality	.092	.033		.041	1.562	5, 77
Hopelessness			-.119			
Anxiety Sensitivity			.190			
Sensation Seeking			-.049			
Impulsivity			.002			

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

Table 4: Simple Linear Regression Analyses Predicting PBS Use based on Motives

Predictors	R ²	Adj. R ²	β	F	df
PBS Total					
Social	.000	.012	-.013	.014	1, 83
Enhancement	.078	.067	-.279*	6.989	1, 83
Coping-Anxiety	.059	.048	-.243*	5.208	1, 83
Coping-Depression	.057	.045	-.238*	4.970	1, 83
Conformity	.002	-.010	-.043	.150	1, 83
Serious Harm Reduction					
Social	.027	.020	.166	3.551	1, 126
Enhancement	.007	-.001	-.082	.852	1, 126
Coping-Anxiety	.012	.004	-.109	1.515	1, 126
Coping-Depression	.037	.029	-.193*	4.860	1, 126
Conformity	.001	-.007	-.033	.141	1, 126
Manner of Drinking					
Social	.088	.077	-.297**	8.29	1, 86
Enhancement	.252	.244	-.502***	29.02	1, 86
Coping-Anxiety	.055	.044	-.234*	4.999	1, 86
Coping-Depression	.046	.035	-.215*	4.161	1, 86
Conformity	.020	.009	-.143	1.786	1, 86
Stopping/Limiting Drinking					
Social	.007	-.001	.081	.841	1, 127
Enhancement	.003	-.005	-.052	.339	1, 127
Coping-Anxiety	.009	.002	-.097	1.210	1, 127
Coping-Depression	.006	-.001	-.081	.830	1, 127
Conformity	.001	-.007	.032	.132	1, 127

* $p < .05$ ** $p < .01$ *** $p < .001$.

Table 5: Simple Linear Regression Analyses Predicting PBS Use based on Personality

Predictors	R ²	Adj. R ²	β	F	df
PBS Total					
AS (SURPS)	.031	.020	.177	2.699	1, 83
HOP (SURPS)	.003	-.009	-.055	.251	1, 83
IMP (BIS-B)	.013	.001	-.115	1.109	1, 83
SS (BSSS)	.003	-.009	-.051	.216	1, 84
Serious Harm Reduction					
AS (SURPS)	.024	.016	.154	3.051	1, 126
HOP (SURPS)	.001	-.007	-.032	.127	1, 125
IMP (BIS-B)	.037	.029	-.191*	4.790	1, 126
SS (BSSS)	.000	-.008	.017	.036	1, 127
Manner of Drinking					
AS (SURPS)	.001	-.011	.027	.063	1, 86
HOP (SURPS)	.001	-.011	-.033	.095	1, 86
IMP (BIS-B)	.004	-.008	-.060	.309	1, 86
SS (BSSS)	.084	.074	-.291**	8.025	1, 87
Stopping/Limiting Drinking					
AS (SURPS)	.030	.023	.174*	3.966	1, 127
HOP (SURPS)	.002	-.006	-.048	.295	1, 126
IMP (BIS-B)	.010	.003	-.102	1.335	1, 127
SS (BSSS)	.007	-.001	.083	.880	1, 128

* $p < .05$ ** $p < .01$ *** $p < .001$.

Note. AS = Anxiety Sensitivity, HOP = Hopelessness, IMP = Impulsivity, SS = Sensation Seeking