

A BRIEF VALUES-BASED INTERVENTION TO REDUCE ALCOHOL-RELATED
HARM AMONG COLLEGE STUDENTS

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A BRIEF VALUES-BASED INTERVENTION TO REDUCE ALCOHOL-RELATED HARM AMONG COLLEGE STUDENTS

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Alcohol use is a common occurrence among college students and the negative consequences associated with this use can be severe. Over 1,500 students are estimated to die every year due to alcohol-related injuries, including automobile fatalities, falls, drownings, suicides, homicides, and alcohol poisoning events. Although numerous empirically supported interventions exist, they primarily focus on addressing students' beliefs about normal drinking behaviors and reducing the quantity students are drinking. To supplement these interventions, there has been a shift to focus intervention efforts on "what students" are doing when they are drinking. Positive behavioral strategies (PBS) are specific behaviors students can utilize to minimize the harm of alcohol consumption, including identifying a designated driver and alternating alcoholic drinks with water. Guided and informed by self-determination theory (SDT), the purpose of this study was to test the efficacy of a novel, brief values-based standalone PBS intervention (VBI), in the greater usage of PBS and the reported fewer alcohol-related negative consequences when compared to an alcohol education control condition.

Participants included 256 college students who reported they engaged in binge drinking in a 4-week period and consented to participate in research. Participants were randomly assigned to receive the VBI or alcohol education control. Pre-test measures were collected at the time of consent and post-test measures were collected 4 weeks later

(follow-up). Analysis of covariance (ANCOVA) was used to assess intervention effects and a series of regression analyses were conducted to test three hypothesized mediation models.

No significant differences with respect to overall PBS use or alcohol-related negative consequences between the VBI and control group were found at follow-up. In addition, the mediation hypotheses were not supported. In sum, the results of the study do not support the efficacy of the VBI to change PBS use or alcohol-related negative consequences at the time of follow-up. Various limitations of the study are identified. Additional intervention research is needed to continue development of brief and values-based alcohol interventions to reduce the costly negative consequences of alcohol use among college students.

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CHAPTER 1: INTRODUCTION

Risky alcohol use is considered the top public health crisis facing college students (O'Malley & Johnston, 2002) and is associated with a host of harmful consequences (Hingson, Zha, & Smyth, 2017; Johnston, O'Malley, Bachman, & Schulenberg, 2011). Compared to their non-college attending peers, college students consume more alcohol and experience more alcohol-related harm (Carter, Brandon, & Goldman, 2010; Wechsler, Lee, Nelson, & Lee, 2001; Wechsler & Nelson, 2008)). In fact, more than 60% of college students report drinking alcohol in the past 30 days, and over 40% report having "been drunk" in the past month (Schulenberg, Johnston, O'Malley, Bachman, Miech, & Patrick, 2018). The consequences resulting from frequent acute intoxication can be severe. Over the course of one year, approximately 1,500 deaths, 600,000 unintentional injuries and 650,000 physical or sexual assaults among college students can be associated with alcohol use (Hingson et al., 2009; 2017). Additionally, heavy episodic drinking (i.e., consuming five or more drinks in a row during the previous two weeks), which is common among college students, can result in several detrimental outcomes, ranging from hangovers and poor class attendance to risky sexual behavior and death (Hingson et al., 2009; 2017; Litt, Stock, & Lewis, 2012).

Protective behavioral strategies (PBS; e.g., using a designated driver, alternating alcohol drinks and water) have gained considerable attention as a method to reduce risks associated with alcohol use among college students (Martens et al., 2005). The vast majority of the research on PBS supports that students who use these strategies as part of a larger intervention package drink less and experience fewer consequences than their peers that do not use PBS (Benton et al., 2004; Haines, Barker, & Rice, 2006; Martens et al., 2004; Park & Grant, 2005). Despite these encouraging findings, *standalone PBS*

interventions have been unsuccessful in improving alcohol outcomes despite demonstrated increases in PBS use relative to control conditions. Therefore, it appears as if standalone PBS interventions need augmentation to promote effective use of PBS for substantial decreases in alcohol-related consequences.

According to Self-Determination Theory, a given behavior is likely to occur more frequently when that behavior is self-determined (i.e., intrinsically motivated; Deci & Ryan, 1985). Increasing the intrinsic value of PBS while drinking may be a worthwhile treatment target. Recent research in related fields (i.e., Acceptance and Commitment Therapy) has shown the importance of values in changing behavior and increasing intrinsic motivation (Wilson, Sandoz, Kitchens, & Roberts, 2010). Taken together, clinical exercises, such as values clarification, may be a novel technique to increase the frequency and effective use of PBS to reduce risky alcohol use and related consequences. The present study aims to test a novel values-based feedback intervention (VBI) to reduce alcohol-related harm. The primary aim is to determine whether the intervention is efficacious at reducing alcohol-related harm through the increase of PBS utilized when drinking over a one-month period (when compared to a general alcohol education control group).

CHAPTER 2: LITERATURE REVIEW

Prevalence of College Student Drinking

National surveys estimate 70-80% of college students use alcohol, with 60-65% of students reporting that they used alcohol within the past thirty days, and over 40% reporting having “been drunk” in the past month (Schulenberg et al., 2018). More than one-third of full-time college students (i.e., 32% of women, 44% of men) report at least one episode of binge drinking (i.e., five or more drinks) in the past two weeks (Schulenberg et al., 2018). Compared to their non-college attending peers, college students consume more alcohol and experience more alcohol-related harm (Carter et al., 2010). In fact, *compared to all other age groups*, college-aged youth binge drink the most (National Institute of Alcohol Abuse and Alcoholism [NIAAA], 2006).

Binge drinking is of particular concern on college campuses. Binge drinking is defined as a ‘pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08-gram percent or above. For the typical adult, this pattern corresponds to consuming 5 or more drinks (for males), or 4 or more drinks (for females), in about 2 hours’ (NIAAA, 2004). A standard drink is defined as half an ounce of pure alcohol (10g of ethanol), roughly equal to alcohol contained in a 12-ounce beer, a 5-ounce glass of wine, or a 1.5 ounce of distilled spirits (Wechsler et al., 2001). More than 40% of college students report engaging in binge drinking with the past month (32% report engaging in binge drinking within last two weeks) and binge drinking is often associated with risky and/or illegal behaviors (Schulenberg et al., 2018). Especially alarming are reports of drinking 2 or more times the standard binge drinking thresholds, also known as high-intensity or extreme binge drinking. Prevalence rates indicate 10% of college students

report having 10 or more consecutive drinks (16.5% male, 7% female) and 4% endorse 15 or more consecutive drinks (7% male, 1.5% female) during one occasion in the last two weeks (Schulenberg et al., 2018). In contrast to non-college peers, binge drinking rates are on average over 5% higher on college campuses (Wechsler et al., 2001; Wechsler & Nelson, 2008). Whereas rates of college drinking have slightly declined over 30 years (Schulenberg et al., 2018), risky alcohol use on college campuses remains a significant public health issue.

Alcohol-Related Consequences

The high rates of alcohol consumption among college students is well-documented but assessing the occurrence of alcohol-related consequences is more useful in understanding the public health impact (Ham & Hope, 2003). College student drinking is associated with a host of harmful consequences (Hingson et al., 2017; Schulenberg et al., 2018). Results from the most recent National College Health Assessment survey (ACHA, 2018) reported the following for various alcohol-related problems experienced in the previous year: 23% of respondents reported doing something they later regretted, 19% reported forgetting where they were or what they did, 1.4% reported they got in trouble with the police, 0.2% reported they sexually assaulted someone, 1.8% reported they were raped, 15% reported they had unprotected sex, 8.6% reported they physically injured them self, 0.9% reported they physically injured another person, and 2.9% reported that they had seriously considered suicide as a result of alcohol use. Of all college student drinkers, 50.6% reported experiencing at least one of the previous negative consequences.

Most seriously, college students' drinking has been linked to an increase risk of death (Hingson et al., 2017). Each year, 1,519 students die due to alcohol-related injuries, including automobile fatalities, falls, drownings, suicides, homicides, and alcohol poisoning events (Hingson et al., 2017). Alcohol-related vehicular accidents are the second leading cause of death among college students with a mortality rate of 3.37 per 100,000 (Turner, Leno, & Keller, 2013). Additionally, heavy alcohol use can lead to involvement in the legal system, academic failure, physical and developmental ailments, and financial problems (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Knight, Wechsler, Meichun, Seibring, Weitzman, & Schuckit, 2002). In particular, binge drinking may result in poor nutrient absorption due to patterns of fasting prior to drinking as well as diarrhea and vomiting that might occur after heavy alcohol consumption (Foster & Marriott, 2006). More chronic binge drinking is related to the development of liver disease (Parry, Patra, & Rehm, 2011; Polednak, 2012; Rehm, Samokhvalov, & Shield, 2013), a variety of heart problems (Nicoll & Henein, 2011; Parry et al., 2011), and cancer (Foster & Marriott, 2006; Parry et al., 2011). Additionally, binge drinking is predictive of future alcohol and substance abuse disorders when measured in adolescence (Jennison, 2004; Chassin, Pitts, & Prost, 2002) and related to the prevalence of alcohol use disorders at the population level (Esser, 2014). As a result of the rates of excessive alcohol use among college students, the United States Department of Health and Human Services (2013) has made reducing binge drinking rates in young adults an objective in the Healthy People 2020 initiative. Thus, efforts to reduce the harm associated with excessive alcohol use remains of importance for college campuses.

Relationship Between Alcohol Use and Negative Consequences

Whereas research consistently supports a positive relationship between alcohol consumption and alcohol-related negative consequences (e.g., Araas & Adams, 2009; Hingson et al., 2009; 2017; Wechsler & Nelson, 2008), alcohol consumption does not fully explain the onset of negative consequences. In fact, drinking typically only accounts for 50-80% of the variance in experiencing negative consequences (Larimer, Cronce, Lee, & Kilmer, 2004; Mallett, Marzell, & Turrisi, 2011; Bravo, Prince, & Pearson, 2017). These studies showed that not all of the college students consuming the most alcohol reported experiencing alcohol-related negative consequences and those consuming the least amount of alcohol did not all report the fewest number of alcohol-related negative consequences. In other words, alcohol-related consequences are not fully accounted for by the quantity of alcohol consumed, but instead appear influenced by various individual and environmental factors (Benton, Benton, & Downey, 2006; Mallett et al., 2013).

Individual Risk and Protective Factors

Gender. As alcohol consumption does not solely account for the experience of negative consequences, it is important to understand the various factors that protect or put an individual at risk of experiencing or perpetrating harm when alcohol is consumed. Several studies have demonstrated that female college students experience fewer negative alcohol-related consequences and are less likely to meet diagnostic criteria for an alcohol related disorder than male students (Clements, 1999; Engs & Hanson, 1990; Hammer & Pape, 1997; Kahler, Strong & Read, 2005; Neal, Corbin, & Fromme, 2006; Slutske, 2005; Wechsler et al., 2002). However, there appears to be a qualitative difference in the experience of negative consequences between men and women. For example, Barnett and colleagues (2014) examined the relationship of alcohol-related consequences and found

that there were no gender differences in the total number of consequences reported but found that women were more likely to report internal negative consequences (e.g., regretting something they said, feeling sad or depressed, feeling like they disappointed others, and regretting sexual activity) and men were more likely to report external behaviors (e.g., driving after drinking). Moreover, when alcohol use levels are controlled for, females tend to experience more alcohol-related consequences than males. The findings on gender highlight the difficulty and inconsistency in the research examining the direct relationship between demographic variables and the emergence of alcohol-related negative consequences when controlling for alcohol consumption. Furthermore, many of the commonly studied factors are not easily modified and, thus, are not highly amenable to intervention efforts. Therefore, researchers have begun to examine other variables more directly associated with negative consequences that could potentially be targeted in intervention programs such as, specific drinking behaviors (ACHA, 2017; Haines et al, 2006; Martens et al., 2004; Martens, Ferrier, & Cimini, 2007; Sugarman & Carey, 2009).

Drinking Behavior. Drinking behavior typically accounts for 50-80% of the variance in experiencing negative consequences (Larimer et al., 2004; Mallett et al., 2011; Bravo et al., 2017). Thus, *how someone drinks* may be as important as *how much* someone drinks. Protective behavioral strategies (PBS) have garnered considerable research attention as a way to improve drinking behavior. PBS been defined as “behaviors that individuals can engage in while drinking alcohol in order to limit negative alcohol-related consequences” (Martens et al., 2004, p. 390). Examples of such strategies include alternating nonalcoholic and alcohol beverages, using a designated

driver, putting ice in your drinks, and pacing your drinks to one or fewer per hour (Martens et al., 2004). These behaviors serve as a potential moderator between consumption and consequences (e.g., the impact of alcohol consumption on experiencing negative consequences may be weaker when individuals report using high levels of PBS). The following section reviews a number of studies examining this construct and its relationship to alcohol-related outcomes.

Protective Behavior Strategies (PBS)

The research on PBS has primarily emphasized three types of strategies: (1) stopping/limiting drinking, (2) the manner of drinking, and (3) serious harm reduction. These types of PBS were based on Martens and colleagues (2005) development of the Protective Behavioral Strategies Scale and the corresponding three factors that emerged from the measure during factor analysis. Stopping/limiting drinking refers to strategies used to control how much alcohol one consumes (e.g., putting extra ice in your drink), and pace of drinking (e.g., alternating alcoholic and nonalcoholic drinks). The manner of drinking refers to strategies used to determine the manner in which one consumes alcohol (e.g., avoiding drinking games or drinking slowly rather than gulping or chugging). Serious harm reduction refers to strategies used to avoid potentially harmful outcomes (e.g., using a designated driver or knowing where your drink has been at all times).

PBS, Alcohol Consumption, and Alcohol-Related Problems. Researchers have found mixed results between PBS use and alcohol consumption. Some evidence suggests that PBS use is negatively associated with binge drinking episodes (Martens, Pederson, LaBrie, Ferrier, & Cimini, 2007) and number of drinks consumed per week (Martens et al., 2007; Martens et al., 2008; Pearson, Kite, & Henson, 2012), whereas other

researchers have found positive relationships between certain protective strategies and alcohol consumption (Sugarman & Carey, 2007; 2009). However, it has been speculated that these mixed findings are due to measurement bias issues (Kite, Pearson, & Henson, 2013). They found that across three studies, when PBS measures were measured on a contingent (i.e., stem: “When drinking... how often...”; response scale: never to always) frequency, PBS was found to negatively correlate with alcohol-related outcomes as predicted. However, when measured on an absolute frequency response scale, they were non-significantly or positively related to alcohol-related outcomes (Kite et al., 2013).

Whereas the relationship between PBS and alcohol consumption is mixed, research has more consistently found a negative relationship between PBS and alcohol-related problems (Araas & Adams, 2009; Benton et al., 2004; Martens et al., 2007; Martens et al., 2008; Martens et al., 2009; Patrick & Maggs, 2011; Pearson et al., 2012) and this relationship is present controlling for both gender (Martens et al., 2004) and alcohol consumption (Delva et al., 2004; Martens et al., 2004; Patrick & Maggs, 2011). These findings lend support for focusing on specific drinking behaviors that are related to reducing alcohol-related harm. In fact, PBS use has been found to moderate the relationship between alcohol consumption and alcohol-related problems (Benton et al., 2004; 2006; Borden et al., 2011). Benton and colleagues (2006) found that frequent PBS use attenuated the relationship between alcohol consumption and related problems. Further, Borden and colleagues (2011) examined the interaction between binge drinking, PBS use and alcohol-related problems. The interaction showed that, when controlling for gender, more frequent PBS use moderated the relationship between binge drinking and alcohol-related problems. This finding is particularly important as many college students

may not be interested in reducing or eliminating their alcohol consumption (Johnston et al., 2011). Therefore, behaviors while drinking that reduce the likelihood of experiencing negative consequences are especially important for further research.

In summary, the behaviors college students engage in when drinking may be an important factor to determine the negative consequences they will experience during alcohol consumption. In essence, it is not just how *much* someone drinks, but also *how they drink* that is related to the consequences they may experience. Interventions that dually focus on specific drinking behaviors and reductions in alcohol consumption appear to be particularly useful to address problems associated with drinking among college students. The next sections will review the most widely used and researched interventions for college drinking and make a case for focusing on protective behaviors while drinking through a novel online values-based brief intervention.

Alcohol Interventions and Theoretical Constructs

In response to the significant alcohol use and consequences experienced among college students, national agencies have issued a specific “Call to Action” to target college student drinking (NIAAA, 2002; NIAAA, 2007), emphasizing the use of empirically supported interventions. NIAAA (2002) outlined specific strategies that are effective to reduce drinking and related consequences in college students (deemed “Tier 1” interventions). These recommendations included the use of brief interventions that: (1) combine cognitive-behavioral skills with norms clarification and motivational enhancement interventions, (2) offering motivational interventions, and (3) challenging alcohol expectancies.

Brief Interventions. The efficacy of brief interventions was first tested in the early 1960s to help engage individuals with alcohol problems in treatment (Chafetz, 1961). Compared to no intervention, brief advice-giving was found effective (Bien, Miller, & Tonigan, 1993). Further, brief interventions were found to be as effective as 10 weeks of outpatient treatment (Miller, Gribskov, & Mortell, 1981), as well as more extensive alcohol treatment (Edwards et al., 1977). The effective components of these brief interventions were found to be feedback, responsibility, advice, menu of strategies, empathy, and self-efficacy (i.e., FRAMES) and were critical to the success of these interventions (Miller & Sanchez, 1994).

Using these components of effective brief interventions, Kivlahan and colleagues (1990) created the first Alcohol Skills Training Program. This was an eight-week harm reduction intervention that included alcohol education, drinking monitoring, setting drinking limits, and relapse prevention strategies (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990). Baer and colleagues (1991) condensed the eight-week Alcohol Skills Training Program into a two-session personalized feedback treatment intervention, the *Brief Alcohol Screening and Intervention for College Students* (BASICS). BASICS is a brief motivational intervention (BMI) that has served as the model for individual alcohol interventions and is used at more than half of all college campuses nationwide (Carey, Scott-Sheldon, Carey, & DeMartini, 2007).

BASICS Overview. According to the manual (Dimeff, Baer, Kivlahan, & Marlatt, 1999), BASICS is built on an “empathetic, non-judgmental, non-labeling and non-confrontational style.” The primary goals of the program are typically to help students reduce alcohol consumption and negative outcomes due to drinking, promote

healthy choices in the college student population, and provide information and coping skills that reduce risky behaviors.

The BASICS protocol includes a pre-interview self-report questionnaire and two 50-minute sessions with a trained clinician. The first session focuses on gathering information about the client's current drinking behavior, their readiness to change, and provides basic education on alcohol use (e.g., the legal blood alcohol content, biphasic effects of alcohol, and the defining standard measurements of alcohol use). Between sessions, the client is asked to monitor his/her drinking behavior. The second session, occurring one to two weeks after the session one, is geared toward delivering personalized feedback on alcohol use norms, facts on norms, facts to debunk to alcohol myths, teaching tools to reduce future risks associated with use, and strategies (i.e., PBS) to assist in changing current drinking patterns or risky behaviors (Dimeff et al, 1999).

The BASICS program was developed to serve as a brief harm-reduction intervention for college students who meet the diagnostic (DSM-IV-TR; APA, 2000) criteria for alcohol abuse. It should be noted that the BASICS program was not designed to be used as an intervention with students who clearly meet criteria for alcohol dependence, and that those students who do meet these criteria would be best served by more intensive interventions designed for working with that population. The BASICS model is based on three assumptions about students who abuse alcohol in college:

- [1] Many of these students lack important information and coping skills to drink moderately;
- [2] certain developmental milestones contribute to heavy drinking (e.g., separation from parents and assumption of adult activities); and
- [3] personal (e.g., faulty beliefs about alcohol); and environmental (e.g., peer pressure, heavy-