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Coping Styles as Predictors of Alcohol Consumption with Undergraduate College Students Perceiving Stress

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COPING STYLES AS PREDICTORS OF ALCOHOL CONSUMPTION WITH

UNDERGRADUATE COLLEGE STUDENTS PERCEIVING STRESS

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Dissertation Approval

This is to certify that the thesis presented to us by **Shoshana S. Twersky**

on the **21**st day of **March**, **2017**, in partial fulfillment of the requirements for the degree

of Doctor of Psychology, has been examined and is acceptable in both scholarship and

literary quality.

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Abstract

Coping was examined as a potential predictor for alcohol consumption with an undergraduate college population. Eighty-nine undergraduate students in the United States participated in the study by completing a survey between February and October 2016. A hierarchical multiple regression was used to analyze whether specific coping styles predict problematic drinking among undergraduate college students who report experiences of perceived stress. The following self-report questionnaires measured the variables: the subjective portion of the Perceived Stress Scale, Coping Strategies Inventory-Short Form (CSI-S), Cahalan's (1969) Quantity Frequency Index, and a background demographic questionnaire developed to assess basic demographic information. Findings revealed that weekend drinking was predicted by emotion-focused disengagement. Students with higher scores on the emotion-focused disengagement reported more problematic weekend drinking than other study participants. This study expanded upon existing literature by further clarifying the correlation between stress and drinking among undergraduate college students.

Keywords: stress, coping, drinking

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Chapter 1: Introduction

Statement of the Problem

Excessive alcohol consumption, specifically binge and heavy drinking among college students (Centers for Disease Control and Prevention [CDC], 2014; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2012), is a major public health concern in the U.S. (Butler, Dodge, & Faurote, 2010). According to the NIAAA (2014), four out of five college students drink alcohol, and half of college students who drink also consume alcohol through binge drinking.

The CDC (2014) defines excessive drinking as any drinking by pregnant women or people younger than age 21, or binge drinking or heavy drinking by any age or group. Binge drinking, the most common form of drinking, is defined as consuming four or more drinks during a single occasion for women and five or more drinks during a single occasion for men (CDC, 2014). Heavy drinking is defined as consuming eight or more drinks per week for women and 15 or more drinks per week for men (CDC, 2014). These prevalence measures have become vital in estimating the extent of alcohol problems on college campuses (CDC, 2014; Wechsler, J. E. Lee, Kuo, & H. Lee, 2000). Studies show that engaging in binge and heavy drinking is associated with adverse occurrences ranging from poor academic performance to more serious consequences such as physical and/or sexual assaults, unplanned pregnancies, unintentional injuries, and even death (Doweiko, 2012; NIAAA, 2012; Wetherill & Tapert, 2013). Binge and heavy drinking are also associated with other adverse events, such as unsafe driving and lowered inhibitions, and can lead to alcohol toxicity and possible brain damage (Ferriero & Miller, 2010; Guerri & Pascual, 2010; López-Caneda, Rodríguez Holguín, Squeglia, Jacobus, & Tapert, 2009;

Wetherill & Tapert, 2013). Over time, binge and heavy drinking has been shown to

affect neurological functioning in the developing brains of young adults (Guerri &

Pascual, 2010; Squeglia et al., 2009; Wetherill & Tapert, 2013). Specifically, overuse of

alcohol damages the prefrontal cortex area of the brain, which manages cognitive

functions such as attention, working memory, and inhibitory control (López-Caneda et

al., 2014).

Although some researchers emphasize that many college students who drink do so

in moderation (NIAAA, 2014), defined as up to one drink per day for women and up to

two drinks per day for men (NIAAA, 2012), and obtain positive health and social

outcomes from moderate drinking (Anderson, Nokia, Govindaraju, & Shors, 2012),

statistics show that half of college students who drink engage in binge and heavy drinking

(Butler et al., 2010). Therefore, identification of the causes and risk factors that

contribute to this problem is imperative. Research has demonstrated that gender is a

central factor to consider in alcohol research (Foster et al., 2014). With regard to

increased drinking and associated problems, males have been shown consistently to be at

greater risk than females. College students also report that they believe men drink more

heavily, are more likely to drink and drive, are less concerned with campus alcohol use,

and use fewer protective behavioral strategies than their female counterparts (Foster et

al., 2014).

It is also important to note that some college students may be drinking due to

biological or other predisposing factors. According to the NIAAA (2012), genetic factors

influence alcoholism. Children of individuals with alcohol use disorders are about four

times more likely than the general population to develop alcohol problems. Nevertheless,

alcohol use disorders, are multi-determined, and more than half of all children of

individuals with alcohol use disorders do not develop similar problems. Non-genetic

factors, such as how parents act and treat each other and their children, also affect the risk

for alcoholism. A person's risk increases if he or she is in a family with the following

difficulties and/or traumatic environmental factors: a parent with alcohol use disorder

who is also depressed or has other mental health diagnoses, both parents abuse alcohol

and other drugs, the parent's or parents' alcohol abuse is severe, and conflicts lead to

aggression and violence in the family (NIAAA, 2012).

   Acknowledging a potential diversity of reasons for drinking, such as reducing or

blunting negative affective states (Vaughan et al., 2012), relieving distress (Mohr et al.,

2013), and dealing with adverse experiences that exceed the coping abilities of an

individual (Keyes, Hatzenbuehler, Grant, & Hasin, 2012), researchers have focused on

perceived stress as a prime variable correlated with binge and heavy drinking (Keyes et

al., 2012; Kreig, 2013; Rice & Van Arsdale, 2010; Tavolacci et al., 2013). Specifically,

when students are "emotionally overwhelmed by internal fears and anxieties" or what

they perceive to be external pressures and tensions, they may turn to drinking alcohol for

relief (Becker, Lopez, & Doremus-Fitzwater, 2011, p. 131). For example, academic

stress was identified as a trigger for drinking in college students when academic

perfectionism was a driving force (Bardone-Cone, 2012). Other research focuses on

college students who are employed and, therefore, drink to cope with the pressures of

academic stress while under time constraints (Butler et al., 2010). Studies also show that

daily hassles, such as dealing with traffic or feeling overwhelmed from life

circumstances, predict increased alcohol consumption (Crutzen & Knibbe, 2012).

The correlation between perceived stress and binge and heavy drinking is based on findings that reveal that drinking behavior acts as a negative reinforcer. That is, stress is removed temporarily when drinking alcohol, resulting in feeling better emotionally. Thus, students will be motivated to drink repeatedly (Backer-Fulghum, Patock-Peckham, King, Roufa, & Hagen, 2012; Vieten, Astin, Buscemi, & Galloway, 2010). In this way, students may find themselves in a cycle of increasing drinking as a potentially detrimental coping mechanism for perceived stress. Most of the current literature that examined drinking behavior from this perspective looked at a variety of mediating and/or moderating coping variables between perceived stress and drinking to better understand why some students who experience perceived stress look to excessive drinking for relief and others do not (Bardone-Cone, 2012; Butler et al., 2010; Crutzen & Knibbe, 2012). As a potential moderating factor, coping is considered a cognitive, emotional, and behavioral effort to reduce or overcome perceived stress (Thuen, 2007). Accordingly, coping styles reflect various ways that people commonly manage or regulate their emotions, thoughts, and behaviors in situations in which they perceive stress (Thuen, 2007). What research has not looked at as much is if specific coping strategies are associated with lower alcohol consumption when students feel stressed.

Relevant to an analysis of risk factors for binge and heavy drinking is the literature comparing different coping styles for dealing with perceived stress (Lorant, Nicaise, Soto, & d'Hoore, 2013). Students who drink excessively may not be able to cope, show competence in dealing with life transitions and stressors, or adapt to changes that are frequent at this stage of life (Seiffge-Krenke et al., 2010). For instance, according to the self-medication hypothesis (Khantzian, 1985) and the earlier tension-

reduction hypothesis (Conger, 1956), alcohol use is a deliberate attempt to alleviate stress

when alternative coping skills are lacking or otherwise unavailable (Bailey, 2013;

Berking et al., 2011). In addition, "avoidance and emotion-focused coping" (Quan, Zhen,

& Yao, 2014, p. 971), withdrawal or venting (Seiffge-Krenke et al., 2010), and

disengagement such as avoidance behaviors (McConnell, Memetovic, & Richardson,

2014) may predispose students to binge and heavy drinking as well as smoking cigarettes,

eating high fat foods, drinking caffeinated or high in sugar beverages, expressing anger

aggressively, or bottling up feelings (Hakan & Hendy, 2014). The reinforcement

achieved through binge and heavy drinking may provide immediate relief but,

problematically, the relief is not lasting and also contributes to long-term consequences

(Hakan & Hendy, 2014). These studies highlight that perceived stress may lead directly

to binge and heavy alcohol consumption and subsequent negative emotional and health

consequences (Hakan & Hendy, 2014; Quan et al., 2014). Binge and heavy drinking may

be related to a lack of coping skills and social competencies to reduce tension and

perceived stress in more positive ways (Quan et al., 2014). Whether students are able to

seek help and think positively (Quan et al., 2014) or are able to engage in internal

processes of reflection about stressors (Seiffge-Krenke et al., 2010) may be relevant

factors leading to binge and heavy drinking. Similarly, the presence of coping skills,

such as being problem-focused and task-oriented (McConnell et al., 2014; Quan et al.,

2014), may be significant factors that mitigate the susceptibility toward excessive

drinking. Examples of coping behaviors and mechanisms that may diminish risks of

drinking are exercise, adequate sleep, healthy eating, social support, and being comforted

by spiritual and/or religious means (Hakan & Hendy, 2014). Finally, the ability to use

coping skills continually and maintain coping competence are potential mitigating factors in determining whether perceived stress will result in heavy and binge drinking as well as other adverse consequences (Seiffge-Krenke et al., 2010).

Previous studies have not adequately examined specific coping skills that affect drinking when students report higher levels of perceived stress. Specifically, studies that have explored different styles of coping and situation-specific variables (e.g., perfectionism, employment, daily hassles) have indicated neither the relative importance of these coping styles nor how they interact with perceived stress (Backer-Fulghum et al., 2012; Lorant et al., 2013; Rice & Van Arsdale, 2010; Tavolacci et al., 2013; Vieten et al., 2010). The types of coping skills that are used to manage perceived stress may be the relevant factor in determining whether drinking becomes a problematic behavior. In other words, although research shows that perceived stress may be a significant causal factor in binge and heavy drinking, the variables that may exacerbate or reduce the drinking (i.e., coping styles) have not been examined explicitly.

The current study investigated particular coping styles as predictors of alcohol consumption when students report feeling stressed. The self-medicating hypothesis is the explanatory framework to study binge and heavy alcohol consumption in this research. Individual coping styles were explored within the framework of engagement (e.g., problem solving) versus disengagement (e.g., problem avoidance) coping styles.

Purpose of the Study

The purpose of the current study was to evaluate specific coping styles as predictors of alcohol consumption (particularly problematic drinking) in a stressed undergraduate college sample. In other words, when perceived stress is similar for two

individuals, differences in coping resources such as the type and/or quantity of coping

styles may explain differences in drinking outcomes. The study attempted to account for

other variables (e.g., drinking to have fun at parties, peer pressure/exploration) that have

been linked to heavy and binge drinking within the college population. The rationale for

a focus on coping as it relates to drinking is that the information about coping styles can

be used for implementing appropriate preventative and treatment interventions to foster

emotional health, safety, and overall well-being for students on college campuses.

Chapter 2: Literature Review

Drinking Among College Students

Drinking among college students is an important public health issue (CDC, 2011; Hingson, Heeren, Winter, & Wechsler, 2005; Silveri, 2012). In fact, drinking at college has become a ritual that students often see as an integral part of their higher education experiences (Boekeloo, Novik, & Bush, 2011; NIAAA, 2013). The legal drinking age in the United States is 21, but it appears that underage drinking on college campuses has been problematic for many years (Main, 2009). Notably, college students have higher binge drinking rates and a higher incidence of drunk driving than their non-college-attending peers (Hallett et al., 2012; NIAAA, 2015b). Many students go to college with established drinking habits and, given the unique aspects of college life, such as unstructured time, the widespread availability of alcohol, inconsistent enforcement of underage drinking laws, and limited interactions with parents and other adults, behavioral problems associated with drinking may be exacerbated or reinforced (Grekin & Sher, 2006; NIAAA, 2013).

A study was conducted comparing the prevalence of alcohol use disorders and alcohol use disorder symptoms in college-attending young adults with their non-college-attending peers using a large and representative U.S. national sample (Slutske, 2005). Using a cross sectional survey, participants aged 19 to 21 years reported on different indicators of frequency of alcohol. As compared to the general population of similar age, this study found consistent evidence across all indicators, suggesting that young adults in college drink more than their non-college-attending peers (Slutske, 2005).

Within the college student population, members of fraternities and sororities are

also more likely than are other students to engage in high-risk drinking and substance use, and to experience related consequences (Turrisi, Mallett, Mastroleo, & Larimer, 2006). In particular, men living in fraternity houses drink more both in quantity and frequency, and as a result, experience more adverse consequences than do non-Greek student members (Turrisi et al., 2006). Athletes, like fraternity and sorority members, are considered a high-risk college group for problem alcohol use and associated negative consequences (Turrisi et al., 2006). Although research focusing on drinking etiology in college athletes is limited, studies have shown that athletes drink more frequently and consume more per occasion than do their non-athlete peers (Brenner & Swanik, 2007). Athletes are also more likely than are their non-athlete peers to engage in risky behaviors related to alcohol consumption, such as driving under the influence, and have an increased likelihood to be involved in physical fights (Brenner & Swanik, 2007). Identified factors for excessive alcohol use among college athletes relate to stress balancing the demands of being both students and athletes (Martens, Dams-O'Connor, & N. C. Beck, 2006). Some of the specific motivators for college athletes drinking include coping with physical pain or injury, being under public scrutiny, dealing with the emotional highs and lows of athletics, and the pressure to perform placed on them by their coaches (Martens et al., 2006).

Generally, the first 6 weeks of freshman year is an especially vulnerable time for heavy drinking and alcohol related consequences because of student expectations and social pressures at the start of the academic year (Grekin & Sher, 2006; NIAAA, 2013). In fact, freshmen have been found to consume larger amounts of alcohol than upperclassmen (Lewis, Neighbors, Oster-Aaland, Kirkeby, & Larimer, 2007; Thompson,

Leinfelt, & Smyth, 2006), and are more likely to be arrested for alcohol related offenses

(Thompson et al., 2006).

Other studies report that problems with drinking last throughout the college years.

Research shows that more than 80% of college students drink alcohol, and almost half

report binge drinking in the past 2 weeks (Chiauzzi, DasMahapatra, & Black, 2013;

Chiauzzi, Green, Lord, Thum, & Goldstein, 2005; NIAAA, 2013; Prince, Reid, K. B.

Carey, & Neighbors, 2014). The term *binge drinking* is defined as consuming five or

more consecutive drinks for men, and four or more consecutive drinks for women

(NIAAA, 2005). According to this definition, about two out of five college students have

engaged in binge drinking in the past 2 weeks, an additional two out of five college

students drink recreationally but not to excess, and one out of five does not use alcohol at

all (NIAAA, 2005). The consequences of excessive drinking, such as lowered inhibitions

leading to dangerous or problematic behaviors, affect virtually all college campuses,

college communities, and college students, whether they choose to drink or not (NIAAA,

2013; Philpott, 1997). Nevertheless, it is not only excessive drinking that is problematic:

The disinhibition effect is encountered after just one to two drinks (Doweiko, 2012). The

behavioral manifestation of disinhibition is when the individual starts to "forget" social

inhibitions and does things he or she might later regret. This effect is caused when

alcohol interferes with neurocognitive functioning, and this occurs when an individual's

blood-alcohol level (BAL) is merely 0.02 to 0.03 mg/ml (i.e., one to two drinks;

Doweiko, 2012). Another significant problem with alcohol use with this population is

that alcohol and nicotine prime the brain for a heightened response to other drugs, and are

commonly used before a person progresses to other illicit substances (National Institute

on Drug Abuse, 2016).

   Definitions of drinking categories. According to the NIAAA (2005), the term

alcohol consumption encompasses two ideas important in characterizing an individual's

drinking behavior: frequency (i.e., how often a person drinks) and quantity (i.e., how

much a person drinks). Frequency of consumption refers to the number of days or,

sometimes, occasions that an individual has consumed alcoholic beverages during a

specified interval (e.g., week, month, year). Quantity of consumption refers to the

amount ingested on a given drinking occasion. Most typically, consumption is assessed

using "standard drinks;" in the U.S., for example, these are 5 ounces of wine, 12 ounces

of beer, or 1.25 ounces of distilled spirits (Cahalan, 1969). Because individuals do not

drink the same amount at every drinking occasion, surveys often attempt to assess the

frequency with which a person drinks various amounts of alcohol (e.g., one to two drinks,

three to four drinks, five to six drinks) over a specified time period. This approach

provides a fairly accurate assessment of the total volume consumed and of the variability

in drinking patterns.

   Measuring alcohol consumption is complex because there are several important

factors that need to be considered. Frequency of drinking will show whether there is a

routine pattern of heavy drinking, as opposed to quantity that will reveal whether an

episodic pattern of binge drinking exists. Research has shown that alcohol quantity

decreases in the final year of college and beyond, whereas alcohol frequency patterns

remain relatively unchanged during the college years (Nealis, Collins, Lee-Baggley,

Sherry, & Stewart, 2017). Further, gender, body mass index (which is calculated using

height and weight), metabolism, and other individual factors need to be considered.

Acknowledging that there is controversy as to whether light/moderate drinking generally

leads to harmful consequences (Rehm, Shield, Joharchi, & Shuper, 2012), more relevant

research surrounds binge and heavy drinking, as these studies focus on how alcohol may

become problematic due to the effects it has on drinkers and possibly others (NIAAA,

2013; White & Hingson, 2013).

It is important to evaluate alcohol consumption in college students because heavy

drinking can lead to a myriad of aversive consequences. These problems can include

academic, personal, social, legal, and medical problems, as well as dependent symptoms

such as tolerance, withdrawal, and loss of control (Wechsler et al., 2000). In addition,

consequences of heavy drinking can affect others, such as when a person who is

intoxicated drives or becomes aggressive or combative toward others (NIAAA, 2013;

Philpott,1997).

Consequences of drinking. National estimates indicate that thousands of college

students are injured, killed, or suffer other significant consequences every year as a result

of binge and heavy drinking (White & Hingson, 2013). Drinking affects college students,

their families, and college communities (NIAAA, 2013). The consequences of drinking

range across a variety of negative outcomes, and research specifies statistical outcomes

for different categories.

Death. Binge and heavy drinking is the third leading cause of preventable deaths in the

U.S. (Silveri, 2012). Each year, an estimated 1,825 college students between the ages of

18 and 24 die from alcohol related unintentional injuries, including motor vehicle

accidents (NIAAA, 2013). In fact, alcohol is responsible for more deaths from chemical

overdose than any other drug of abuse (Doweiko, 2012). The amount of alcohol that must be ingested to induce intoxication is already a significant fraction of the lethal dose, and the higher that the individual's BAL becomes, the closer he or she will be to death from an alcohol overdose (Doweiko, 2012).

   Injury. Alcohol consumption is a known risk factor for fatal and non-fatal injuries, and studies show that this association is consistent over a variety of injury characteristics (Kuendig, Hasselberg, Gmel, Daeppen, & Laflamme, 2009). Each year, an estimated 599,000 students between the ages of 18 and 24 are unintentionally injured under the influence of alcohol (NIAAA, 2013).

   Assault. Each year, an estimated 696,000 students between the ages of 18 and 24 are assaulted by other students who have been drinking (NIAAA, 2013).

   Sexual abuse. Women experience sexual victimization (e.g., being verbally or physically coerced, threatened, or forced to engage in sexual activity) after consuming alcohol (Messman-Moore, Ward, & DeNardi, 2013; Sugarman, DeMartini, & Carey, 2009). Each year, an estimated 97,000 students between the ages of 18 and 24 are victims of alcohol related sexual assault or date rape (NIAAA, 2013). Over an academic year, one in 20 women in college experiences rape, and 72% of these assaults occur when the victim is too intoxicated to consent (Orchowski, Mastroleo, & Borsari, 2012). Additionally, less than 5% of these rapes are reported to police due to shame, fear of social isolation, and self-reproach for drinking with the assailant before the rape (Cole, 2006). Ninety percent of college women who are raped know their assailants, and most of the rapes occur in social situations such as parties or studying together in dormitories;

about half of perpetrators and rape survivors are drinking alcohol at the time of the

assault (Cole, 2006).

Although a number of studies have found a positive correlation between women's

alcohol use and sexual victimization (Parks, Hsieh, Taggart, & Bradizza, 2014), sexual

victimization occurs more frequently when the woman is not intoxicated and the

perpetrator is intoxicated (Abbey, Parkhill, Jacques-Tiura, & Saenz, 2009; Olmstead,

Roberson, Pasley, & Fincham, 2015). These findings brought about the temperance

movement governing alcohol-control laws to help strike a balance between the freedom

to drink and public order and safety (Moeller, 2012).

Unsafe sex. A growing body of research indicates that excessive drinking of

alcohol increases high-risk sexual behaviors (Cashell-Smith, Connor, & Kypri, 2007). A

U.S. college student survey found that frequent binge drinkers were more than seven

times more likely than non-binge drinkers to engage in unplanned sexual activity, or to

not use contraception when having sex after drinking alcohol (Cashell-Smith et al.,

2007). Each year, an estimated 400,000 students between the ages of 18 and 24 have

unprotected sex, and more than 100,000 students of the same age range report having

been too intoxicated to know whether they consented to having sex (NIAAA, 2013).

Further, college students who consume alcohol are more likely to engage in unprotected

sex and to have sex with someone with whom they would not ordinarily have sex (i.e.,

casual sex) than are students who do not consume alcohol (Lewis, Granato, Blayney,

Lostutter, & Kilmer, 2012; Patrick & Maggs, 2009; Patrick, O'Malley, Johnston, Terry-

McElrtah, & Schulenberg, 2012).

Common reasons for regretted sexual experiences include engaging in sexual activity with someone who an individual would otherwise not have desired had he or she not been drinking, failure to use a condom, or realizing that alcohol influenced the decision to have sex (Orchowski et al., 2012). A study of sexually active college women indicated that sexual intercourse with a partner only once and engaging in sexual intercourse with someone known for less than 24 hours were predictive of sexual regret (Eshbaugh & Gute, 2008). Regarding the prevalence of sexual regret, as many as 194 of 270 (72%) sexually active college students reported at least one regretted sexual experience (Orchowski et al., 2012).

Academic problems. Approximately one quarter of college students report having academic consequences because of their drinking, including missing classes, falling behind, doing poorly on exams or papers, and receiving lower grades overall (NIAAA, 2013; Vaughan, Corbin, & Fromme, 2009).

Alcohol abuse and dependence. In one study, 19% of college students between the ages of 18 and 24 met the criteria for alcohol abuse or dependence, but only 5% of these students sought treatment for alcohol problems in the year preceding the survey (NIAAA, 2013).

Drunk driving. Each year, an estimated 3,360,000 students between the ages of 18 and 24 drive under the influence of alcohol (NIAAA, 2013). Even when a drinker stays below the legal intoxication level (BAL between 0.05 and 0.079), he or she has a 546% higher risk of being in a motor vehicle accident when driving, whereas a BAL of 0.08 increases the odds of that person being in a motor vehicle accident by 1,500% (Doweiko, 2012).

*Other consequences***.** Other consequences of binge and heavy drinking include suicide attempts, health problems, vandalism, property damage, and involvement with the police (NIAAA, 2013). Additionally, binge and heavy drinking can lead to a type of memory impairment called a blackout (White & Hingson, 2013). A blackout is a period of amnesia during which a person engages in behaviors, but the brain cannot create memories for the events (White & Hingson, 2013). An estimated one in eight emergency hospital visits for alcohol related injuries involve a blackout (Mundt & Zakletskaia, 2012). On a campus of 40,000 students, this translates into approximately $500,000 in annual costs related to blackout emergency hospital visits (Mundt & Zakletskaia, 2012). In a recent study, college students underwent a magnetic resonance imaging (MRI) scan at the start of their freshmen year and again 6 months later (Silveri, 2012). Results revealed significant structural brain changes in multiple regions including the frontal lobe, which is responsible for executive functions (Silveri, 2012).

Sleep disturbance and heavy drinking also increase risk of negative consequences in college students, such as motor vehicle accidents, academic problems, and relationship issues (DeMartini & Fucito, 2014). College students with higher alcohol consumption reported lower sleep duration (Singleton & Wolfson, 2009) and, correspondingly, sleep related problems were associated with increased alcohol use (Orzech, Salafsky, & Hamilton, 2011). Caffeine is also highly popular with the college population and is associated with poor sleep quality. Over the last decade, college students have considerably increased caffeine consumption beyond recommended amounts and in various forms, such as coffee and energy drinks (Roth, Titus, Chen, Bridges & Woodyard, 2015). Even more problematic is the growing popularity and risks associated

with caffeinated alcoholic drinks on college campuses; these are beverages combining

two of the most widely and readily available substances (Lau-Barraco & Linden, 2014).

Caffeine is classified as one of the 10 drug classifications in the fifth edition of the

Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*; American Psychiatric

Association [APA], 2013). These findings indicate that college drinking interventions

could benefit from the incorporation of sleep related content, and also suggest value in

adding brief alcohol assessments and interventions to other college health treatments

(DeMartini & Fucito, 2014).

In addition, other drugs such as marijuana and tobacco are common among U.S.

college students (Arria, Caldeira, Bugbee, Vincent, & O'Grady, 2015; Rosa & Aloise-

Young, 2015). Marijuana use, particularly heavy use, has been shown to affect working

memory, learning, and information processing, functions that are necessary for academic

performance (Crean, Crane, & Mason, 2011). Another type of smoking that is popular

among college students is tobacco use (Rosa & Aloise-Young, 2015). Many college

student tobacco users reject the social identity of "smokers," and prefer to identify as

"occasional smokers" (Rosa & Aloise-Young, 2015). Consistent with this identification,

according to the American College Health Association-National College Health

Assessment (ACHA-NCHA), in 2016, undergraduate college students reported tobacco

use with the following frequency of use within the past 30 days: 2.2% used all 30 days,

1.4% used 10 to 29 days, 5.8% used 1 to 9 days, 13.9% used but not within the last 30

days, and 76.8% reported never using tobacco products (NIAAA, 2016). A study

investigated college students' smoker identities beyond the smoker/nonsmoker

classification to determine what qualities college students believe define these categories

(Rosa & Aloise-Young, 2015). Overall, they found five college student smoker

identities: regular, light, stress, social, and drunk smokers. Stress smokers reported

tobacco use to reduce perceived stress levels; social smokers reported smoking to help

meet new people, start a conversation, or be able to be around other friends who smoke;

and drunk smokers reported smoking to enhance the effects of alcohol (Rosa & Aloise-

Young, 2015).

Despite a great deal of adverse consequences, college students continue to drink.

In attempting to understand the role of alcohol in college students' lives, it is useful to

first consider the motivations for alcohol consumption amongst this population.

Numerous studies have looked at why a college population might be more inclined to

drink as compared to similar aged individuals who are not in college. Some of the main

reasons identified are related to socializing (Wicki, Kuntsche, & Gmel, 2010), special

occasions (e.g., a 21st birthday celebration; White & Hingson, 2013), cultural issues

(Comasco, Berglund, Oreland, & Nilsson, 2010), peer pressure (Yeramaneni, 2009), and

perceived stress (Armeli, Conner, Cullum, & Tennen, 2010).

Reasons for Drinking. Researchers have investigated several reasons that

college students engage in alcohol consumption. These include but are not limited to

socialization, special occasions, cultural reasons, perceived pressure, and perceived

stress.

Socialization. Over the past several years, there have been increased efforts to

explore the influence of social norms on heavy drinking on college campuses (Granfield,

2005). A study in the United Kingdom looked at reasons that undergraduate college

students engage in binge drinking activities (Norman, 2012). Four reasons were

analyzed: (a) to be sociable, (b) to celebrate something, (c) to relieve stress, and (d) to

have fun (Norman, 2012). The most strongly endorsed reason for binge drinking was to

have fun. This finding is in line with qualitative work in the United Kingdom, which has

reported that students perceive binge drinking to be an enjoyable activity that helps them

socialize (Guise & Gill, 2007). Similarly, researchers reported that U.S. students tended

to emphasize the social benefits (e.g., making friends) and disinhibiting effects (e.g.,

having fun) of heavy drinking (S. M. Colby, J. J. Colby, & Raymond, 2009).

Quantitative studies have also found that the most frequently cited motives for drinking

tend to be social and enhancement motives such as to have a "good time" and to increase

"pleasure" (Wicki et al., 2010). In fact, just under 90% of college students view alcohol

consumption as a central component to their social lives (Doweiko, 2012).

Social media sites have also played a role in influencing college students to

engage in risky drinking behaviors (Boyle, Earle, LaBrie & Ballou, 2017). College

students are exposed to alcohol related posts that glorify alcohol use without addressing

negative consequences of drinking. Unlike Facebook, which links posts to individual

names of posters, Instagram and Snapchat accounts do not require identifying

information or age verification, minimizing the legal and social consequences related to

underage drinking (Boyle et al., 2017).

Special occasions. Drinking has become a common way that college students

mark times of transition or rites of passage. College students drink excessively during

specific events such as academic breaks, after taking exams, and 21st birthday

celebrations (White & Hingson, 2013). During spring breaks, for example,

approximately 42% of students drink excessively on at least 1 day, 11% drink to the point

of blacking out or passing out, 32% report hangovers, and 2% get into trouble with police

(D. M. Litt et al., 2014). In addition to spring break, 21st birthday celebrations are

another opportunity for students to drink excessively (Rutledge, Park, & Sher, 2008). An

estimated four out of five college students drink alcohol to celebrate their 21st birthdays,

and many students drink more than they had planned to drink (Brister, Wetherhill, &

Fromme, 2010; Rutledge et al., 2008), reaching intoxication levels that place them at risk

for serious negative consequences (The National Center on Addiction and Substance

Abuse [CASA] at Columbia University, 2007). For almost half of those celebrating a

21st birthday, this event will mark the heaviest drinking day to date, and many young

adults attempt to imbibe 21 alcoholic beverages, a drink for each year of life (Winograd

& Sher, 2015). Binge and heavy drinking associated with the 21st birthday is a serious

concern for college administrators, student health service professionals, and public

officials (Lewis, Neighbors, Lee, & Oster-Aaland, 2008). In addition, research has

shown that those who consume more alcohol on their 21st birthday will drink more

through the remaining year, with an increase in alcohol related consequences for up to 9

months after their birthdays (Geisner et al., 2017).

      Cross cultural considerations. Alcohol use is widespread and accepted as

normal behavior in several cultures (Comasco et al., 2010; Tan, 2012). Additionally,

there are many exceptions to the law of underage (under 21) drinking in 45 out of 50 U.S.

For example, Colorado permits underage individuals to drink alcohol on private property

with parental consent (NIAAA, 2011). Forty-five states have set exceptions to allow

underage consumption of alcohol under certain circumstances. Only five states

(Alabama, Arkansas, Idaho, New Hampshire, and West Virginia) have no exceptions in

their underage alcohol consumption laws (NIAAA, 2011). Therefore, it is difficult to

define a global definition distinguishing between excessive and acceptable alcohol use

(Comasco et al., 2010). Reference group theory has been used to explore the

consumption of alcohol within a college population of students with various religious

affiliations and social class backgrounds (Abu-ras, Ahmed, & Arfken, 2010). There is

controversy whether religious affiliation decreases (Koenig, King, & Carson, 2012;

Rodriguez, Neighbors, & Foster, 2014) or increases (Doweiko, 2012) alcohol

consumption in a college population (Neighbors, Brown, Dibello, Rodriguez, & Foster,

2013). For example, in the Jewish tradition, it is customary and ritualistic to drink

excessively on the Purim holiday until one reaches a level of intoxication so that one is

incapable of distinguishing between the protagonist and Mordechai and the antagonist

Haman in the Purim story (Rubenstein, 1992). Therefore, data on geographic location

and religious affiliation were collected for descriptive purposes in the current study.

   Peer pressure. Peer influence and pressure are often predictors of college

students' alcohol use (Trucco, Colder, Bowker, & Wieczorek, 2011), though this appears

to be more prevalent with a younger teenaged undergraduate population (Yeramaneni,

2009). In a review of research on peer influence, three mechanisms through which peers

could influence campus alcohol consumption were reviewed (Sessa, 2007). First, peers

can encourage drinking actively through explicit encouragement (i.e., peer pressure).

Second, peers can influence less directly by modeling drinking behavior. The third

mechanism refers to the norms for drinking on campus; these perceived social norms for

drinking among peers can influence students' alcohol use by setting apparent normative

standards for drinking (Sessa, 2007).

Perceived stress. Perceived stress is another motivation for drinking in an undergraduate college population. Stress, which is a part of everyday life, occurs when situations or perceived threats create feelings of anxiety, fear, and anger, among other emotions (Stephens & Wand, 2012). Physiologically, stress challenges the body's ability to function as it normally would. When stressed, the body develops complex responses that are designed to defend against harmful or dangerous situations, in order to keep the body balanced physiologically (Stephens & Wand, 2012). Specifically, when challenged with a stressful situation, the body shifts quickly from a normal metabolic process into "high gear." When this happens, the hypothalamic pituitary adrenal (HPA) axis, which involves the brain and hormonal changes in the body, prepares for a fight or flight response. The body will either fight the stressor or flee from it (Herman, 2012; Stephens & Wand, 2012). The hormone cortisol has an important role in how the body responds to stress. Cortisol increases available energy that prepares the body to respond fast and efficiently. A healthy stress response will involve a spike in cortisol followed by a rapid fall in the cortisol level once the threat or stress has ended (Alim et al., 2012). Stress and the fight or flight response occur in all individuals, and college students are not immune to this phenomenon.

The fact that college students are stressed has been well established in the literature. College students face multiple stressors, such as academic overload, constant pressure to succeed, social adjustment, competition with peers, and concerns about the future (Monteiro, Balogun, & Oratile, 2014; Tavolacci et al., 2013). Past studies report that 75% to 80% of college students are moderately stressed and 10% to 12% are severely stressed (Brougham, Zail, Mendoza, & Miller, 2009). According to the 2016

ACHA-NCHA Undergraduate Student Reference Group Executive Summary, out of a

list of 31 factors affecting individual academic performance, defined as when an

individual has "received a lower grade on an exam or an important project; received a

lower grade in the course; received an incomplete or dropped the course; or experienced a

significant disruption in thesis, dissertation, research, or practicum work" (p.5),

undergraduate college students rated stress as the number one variable impacting

academic performance. Students in higher education report experiencing emotional and

cognitive reactions to stress, especially due to external pressures and self-imposed

expectations (Kausar, 2010). In the context of stress, one's perceived stress can be

conceptualized as the extent to which one holds the belief that stress has enhancing

consequences for various stress related outcomes, such as performance and productivity,

health and wellbeing, and learning and growth, or the belief that stress has debilitating

consequences for those outcomes (Crum, Salovey, & Achor, 2013). When the perceived

stress is viewed as having debilitating outcomes, it may be associated with potential risk

for maladaptive coping behaviors leading to onset of substance use and related problems

that are heightened during the college period (Tavolacci et al., 2013).

     Consequently, when a person is experiencing stress and alcohol is introduced as a

coping mechanism, the alcohol throws off the person's physiological balance; therefore,

the initial stressors may compile and become worse. For example, continued alcohol use

has a tendency to sensitize striatal reward function and may intensify craving, negatively

altering the person's stress-regulating function (Blaine, Milivojevic, Fox, & Sinha, 2016).

This may lead to problems relating to increased drinking and/or addiction (Menary,

Kushner, Maurer, & Thuras, 2011). Normally, the brain's reward circuit responds to

pleasurable experiences by releasing the neurotransmitter dopamine, which creates

feelings of pleasure. Drugs hijack this system, causing unusually large amounts of

dopamine to flood the system, resulting in a "high" (Wein, 2015). Specifically, alcohol

creates an overall mood improvement that helps people feel relaxed. A problem with the

alcohol use is that it depresses nerves that control involuntary actions such as breathing

and the gag reflex that prevents choking. A fatal dose of alcohol will eventually stop

these functions (NIAAA, 2007).

Exploring the issue of stress and coping in broader terms revealed that research

has looked at the stress relationship with various disorders relative to drinking. Some of

these include trauma and posttraumatic stress disorder (PTSD), anxiety, schizophrenia,

bipolar disorder, and other major psychopathologies (Gage, Hickman, & Zammit, 2016;

Keyes et al., 2012; Menary et al., 2011; Paterson, Darby, & Sandhu, 2015). Research has

also looked at stress in relation to different substances that are abused commonly in

conjunction with different psychological disorders. For example, veterans who have

been in active combat are especially likely to turn to alcohol as a means of coping with

PTSD (Keyes et al., 2012; Schumm & Chard, 2012; Seal et al., 2009; Tanelian & Jaycox,

2008). Similarly, anxiety has been linked with a comorbidity of abuse of alcohol,

marijuana, crack/cocaine, and heroin (Menary et al., 2011; Robinson, Sareen, Cox, &

Bolton, 2009). Those with high levels of anxiety use emotional and behavioral avoidance

strategies in dealing with the symptoms of worry or negative affect and, therefore, are

more likely to abuse substances, thereby reinforcing the avoidance cycle (Scott &

Hulvershorn, 2011). Schizophrenia is another disorder commonly linked with substance

abuse. According to the National Institute of Mental Health (NIMH), nicotine is the most

common drug abused by people with schizophrenia, as nicotine may temporarily alleviate

the cognitive deficits commonly observed in schizophrenia. People with schizophrenia

frequently abuse marijuana as well (Gage et al., 2016). The NIMH also discusses alcohol

and drug abuse among people diagnosed with bipolar disorder, who may try to treat their

symptoms by self-medicating (Quello, Brady, & Sonne, 2005). Some drugs, including

marijuana, alcohol, and opiates, seem to blunt the effects of mood swings temporarily.

Speed (i.e., methamphetamine, crank, crystal) and cocaine are two substances that have

sent many abusers into manic episodes (McKetin et al., 2016), often followed quickly by

deep depression and psychotic symptoms (Farren, Hill, & Weiss, 2012). Hallucinogens,

including lysergic acid diethylamide (LSD) and phencyclidine (PCP), can induce also

psychotic symptoms (Paterson et al., 2015). Thus, use of alcohol and other substances is

problematic because it may trigger or prolong bipolar symptoms, and the behavioral

control problems associated with mania can result in a person drinking too much.

There is controversy in the literature relating to causes and correlates of drinking.

Some of the research acknowledges that the problems of binge and heavy drinking are

multidetermined (Armeli et al., 2010) and do not provide a comprehensive exploration of

possible reasons. Other avenues of inquiry report that binge and heavy drinking are

students' coping responses to stress. Coping related excessive drinking in a college

population is posited to be a function of not having alternative coping skills to deal with

stressors such as studying for exams and meeting project deadlines (Armeli et al., 2010).

Social enhancement drinking is motivated by a desire to enhance personal interactions

and, at times, to reduce anxiety one might experience during social gatherings (Armeli et

al., 2010) thus rendering this particular motivation to benefit from disinhibiting effects of excessive drinking a coping mechanism (Stewart, Morris, Mellings, & Komar, 2006).

Coping

According to Lazarus and Folkman (1984), coping is defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). The strategies that are used either enable individuals to deal effectively with conflict and discord (i.e., healthy coping) with an increased likelihood of achieving productive outcomes, or escalate conflict and discord (i.e., destructive coping) with an increased likelihood of negative outcomes (Frydenberg, 2004). Therefore, coping is critical for how individuals deal with day-to-day challenges of life (Diehl et al., 2014). In general, studies have distinguished between two and four main coping categories. Lazarus's approach (1999) has been categorized into problem-focused (adaptive) and emotion-focused (maladaptive) coping (Riley & Park, 2014; Wichianson, Bughi, Unger, Spruijt-Metz, & Nguyen-Rodriguez, 2009). Other scholars have identified four aggregate coping styles (Lazarus & Folkman, 1984) discussed extensively in the literature (Tobin, Holroyd, Reynolds, & Wigal, 1989). Lazarus and Folkman also distinguished between problem- and emotion-focused engagement and problem- and emotion-focused disengagement. This conceptualization was used in the current research to operationalize coping because the coping scale used in this study was devised specifically to examine coping with regard to a stressful event (Tobin et al., 1989). Additionally, the focus on these four coping styles is relevant to this study because they are common in younger populations, and undergraduate college students may lack distress tolerance skills.

Further, research has identified different styles of coping when individuals perceive stress. Some adaptive coping skills involve positive reinterpretation, mental disengagement, humor, acceptance, and use of social support (Carver, Scheier, & Weintraub, 1989). Maladaptive coping strategies involve denial, aggression, substance use, and even suicide (Carver et al., 1989). Coping skills are employed when faced with barriers or difficulties in life, such as perceived stress (Berto, 2014). Developing effective coping skills requires learning to recognize the difference between adaptive and maladaptive coping and then acquire adaptive skills to deal with perceived stress in a healthy and effective way, promoting emotional well-being (Chao, 2012).

Nezu, Nezu, and D'Zurilla's theory of coping. According to A. M. Nezu, C. M Nezu, and D'Zurilla (2013), the problem solving model of coping states that in life, there are major life events and minor daily hassles that occur. The way a person copes with those events impacts the reaction he or she has and, consequently, the amount of stress he or she experiences. If the person is a poor coper, he or she will hit a downward spiral of distress, because poor coping will result in more daily problems and, thus, more dysfunctional thoughts, feelings, and behaviors, which will cause more distress. The theory suggests there are changeable situations in some instances, which would respond to problem-focused coping. Problem-focused coping can be applied to change a situation, one's reaction to the situation, or both. There are other circumstances the person cannot control, and in those instances, emotion-focused coping can be used.

Generally, coping is any response to daily stressors to help prevent, minimize, or reduce stress. Problem solving coping is changing the situation, one's reaction to it, or both, using adaptive rational systematic skills, such as initiating behaviors, rational

systematic problem solving, or emotional coping strategies. Maladaptive coping may include avoidance, impulsive or careless styles of behavior, and disengagement of behavior. Drinking is an example of a maladaptive coping strategy.

   Coping skills and perceived stress in college-aged populations. Coping flexibility, the ability to employ diverse coping strategies to adjust to life changes, is especially important when people are going through developmental changes in addition to everyday-life stressors (Cheng, Lau, & Chan, 2014). From a developmental perspective, the young adult college student age range (18 to 24 years old) has been described as emerging adulthood, which is a transitional developmental stage between late adolescence and adulthood (Mahmoud, Staten, Hall, & Lennie, 2012). This transition, which requires developing skills for maintaining the independence and self-sufficiency an individual gains through adolescence, is considered stress-arousing and anxiety-provoking (Mahmoud et al., 2012). Because of a lack of maturity, college students may turn to solving these stressors with negative coping styles such as drinking in response to stress (Changxiu & Xiaojun, 2014).

   The college environment can be perceived as stressful, and that can lead both to adaptive and maladaptive coping (Velezmoro & Lacefield, 2010). Further, perceived stress can trigger previous psychological problems, and may lead to worsening anxiety or depression. Perceived stress refers to a perception or an assessment of a threat coupled with a lack of resources to cope effectively (Velezmoro & Lacefield, 2010). Consistent with A. M. Nezu, C. M. Nezu, and D'Zurilla's (2013) theory of coping, there are three general ways that college students may cope with perceived stress, which include problem-focused coping to find solutions, emotion-focused coping to reduce distress, and

avoidant coping to deny the problem and to disengage from finding solutions (Digdon &

Landry, 2013). Problem- and emotion-focused coping are usually adaptive, whereas

avoidant coping is often maladaptive (Digdon & Landry, 2013). Drinking to cope is

associated with avoidant coping (Hasking, Lyvers, & Carlopio, 2011).

     A recent study examined students' perceived stress relating to several factors,

including homework, exams, work, volunteer positions, family problems, and many other

issues (Stoliker & Lafreniere, 2015). Results indicated that both avoidant and approach

coping ability decreased perceived stress and enhanced academic performance among

students. Another study examined experiences of perceived stress among college

students, and investigated the relationship between sex, specific sources of perceived

stress, and coping strategies utilized (Brougham et al., 2009). Results found that college

women reported higher levels of perceived stress and greater use of emotion-focused

coping strategies than college men. College men and women also reported different

coping strategies for different stressors; however, both men and women utilized emotion-

focused coping strategies over problem solving strategies. These results have

implications for designing stress reduction workshops that build on the adaptive emotion-

focused strategies that are currently promoted to college students (Brougham et al.,

2009). The continuing high alcohol consumption among college students has produced a

variety of prevention and intervention strategies that are tailored specifically to college

drinkers. Some of the interventions are designed to reduce drinking, whereas others

promote responsible drinking or zero tolerance policies.

Reducing drinking

Colleges have tried various approaches and interventions to reduce incidences of drinking on college campuses, including NIAAA's College Alcohol Intervention Matrix (CollegeAIM) evidence-based alcohol interventions. These approaches focus on a mix of individual and environmental strategies. Specifically, individual strategies are designed to change students' knowledge, attitudes, and behaviors related to alcohol. At an environmental level, the strategies are designed to change the campus and community environments in which student drinking occurs. One example is to reduce the availability of alcohol (NIAAA, 2015a).

One drinking reduction approach is personalized feedback interventions (PFIs) (Miller et al., 2013). PFIs have been moderately effective in reducing alcohol use and associated consequences in the college population, especially among heavier drinkers (Larimer & Cronce, 2007; Miller et al., 2013). Stemming from motivational and social psychology, PFIs are intended to encourage thoughtful consideration of future alcohol use by reframing use in terms of personal, social, financial, caloric, or other consequential costs, and/or comparing individual students' risks (Miller et al., 2013).

Another approach intended to reduce alcohol consumption is cognitive behavioral therapy (CBT). This treatment modality includes learning skills to avoid high-risk situations, refuse drink offers, manage emotions such anger that predispose one to alcohol seeking, and manage perceived stress (M. D. Litt, Kadden, Cooney, & Kabela, 2003). A study was conducted in which two groups were assigned to one of two treatment modalities: CBT, specifically intended to develop coping skills to reduce drinking, and interactional therapy, intended to examine interpersonal relationships. Results indicated

that both treatments yielded significant increased healthy coping skills (M. D. Litt et al.,

2003). Nevertheless, neither treatment resulted in reduction of drinking. Further,

specific coping-skills training was not essential for increasing the use of coping skills.

The type of skills that participants reported using made little difference in drinking

outcomes; rather, the quantity of coping skills was the determining factor in decreased

drinking outcomes (M. D. Litt et al., 2003). The results raise questions about the efficacy

of specific treatment elements of CBT in treatment of alcohol consumption.

Zero tolerance policies. In a study that looked at sanctioned college students for

violation of a zero-tolerance campus alcohol policy, students were required to participate

in one of two interventions (K. B. Carey, DeMartini, Prince, Luteran, & M. P. Carey,

2013). These interventions included either a brief motivational intervention (BMI) or a

computer-delivered educational program. Students in this mandated sample varied on the

severity of their alcohol use and had differing responses to the sanction process. These

mandated students exhibited more defensiveness and less readiness to change than

students who participated in interventions voluntarily, and defensiveness was associated

with poorer post-intervention outcomes (Palmer, Kilmer, Ball, & Larimer, 2010). Thus,

mandated interventions may impact motivation for change negatively.

A common approach in these interventions is to increase or strengthen coping

skills; however, the research is less clear about the type of coping that is recommended.

Engagement coping skills involve problem solving techniques, cognitive restructuring,

social support, and expressing emotions. These all reflect attempts by the individual to

manage stressful person-environment interactions. Alternatively, disengagement

strategies include problem avoidance, wishful thinking, social withdrawal, and self-

criticism. Contrary to the former, these strategies are likely to result in disengaging the

individual from the person-environment transaction. Thus, more studies are needed to

understand what type of coping can help decrease maladaptive responses (such as

excessive drinking) when perceiving stress.

      Interventions. The literature has described several areas of intervention for

problematic campus drinking. The main interventions identified are motivational

interviewing techniques (Martens, Smith, & Murphy, 2013), psychoeducation (Thadani,

2009), and treatment programs to optimize interventions designed to reduce drinking

problems among adolescents and young adults, starting with screening and including

regulatory policies, such as the minimum drinking age and zero-tolerance laws (Windle

& Zucker, 2010).

      Research has established that brief, multicomponent motivational interviewing

based interventions can be effective at reducing alcohol use or related problems (Martens

et al., 2013). A study was conducted to test the efficacy of two single-component, in-

person, brief (15 to 20 minutes) alcohol interventions: personalized normative feedback

(PNF) and protective behavioral strategies feedback (PBSF). Results indicated that the

PNF intervention was efficacious relative to the other conditions at reducing alcohol use.

The PBSF intervention was not efficacious for reducing alcohol use or alcohol related

problems. These findings provide support for the efficacy of an in-person PNF

intervention and theoretical support for the hypothesized mechanisms of change in the

intervention (Martens et al., 2013).

      According to a recent study, education-only interventions produce little change in

drinking behaviors, but multi-component prevention programs, which include alcohol

information as one feature, can decrease drinking (Thadani, 2009). This study examined

the role of alcohol knowledge in a multi-component intervention previously found to

reduce first-year female college students' alcohol consumption. Intervention and control

group students completed pre- and post-intervention assessments of drinking behaviors

and a post-intervention assessment of alcohol-knowledge. Intervention students

outperformed control students on the measure of alcohol knowledge; however,

knowledge did not predict drinking outcomes for this group, and it was positively

correlated with drinking behaviors for control students. The findings suggest that

although learning took place through the intervention, it was not the mechanism by which

the intervention reduced drinking behaviors. In fact, students who drank more were also

the ones who were more likely to acquire knowledge about alcohol (Thadani, 2009).

Currently, the U.S. health care, educational, and juvenile justice systems are not

comprehensively equipped to address the range of adolescent and young adult alcohol use

problems (Windle & Zucker, 2010). Nevertheless, some recent initial data from

screening and brief intervention studies in hospital emergency rooms and college student

health centers have demonstrated promising findings and may provide a platform for

subsequent studies (Windle & Zucker, 2010). The issues of screening, referral, and brief

interventions are of sufficient prominence that NIAAA (2008) has formed a committee

on the Assessment and Screening for Underage Drinking Risk as part of the larger

Underage Drinking Initiative (Windle & Zucker, 2010). In terms of prevention, the most

common programs include classroom curricula administered to students within high

school settings, which may be supplemented with components to change the school-wide

climate regarding alcohol use, parent programs, mass media programs, and community-

wide interventions. Most universal interventions are based on the social-influence model, which suggests that the primary influences affecting youths' alcohol consumption behaviors are social factors, such as peer, family, and media influences. Accordingly, these programs strive to help adolescents acquire skills that will enable them to effectively resist social pressures (especially peer pressures) and to promote social attitudes and norms that oppose alcohol use (Windle & Zucker, 2010).

Chapter 3: Hypothesis

Research Question

Do specific coping styles predict problematic drinking in an undergraduate college student population when students report experiences of perceived stress?

Rationale for Research Question

Drinking in college populations has been linked to race, gender, religiosity, and year of college attendance (Borsari, Murphy, & Barnett, 2009). Drinking as a coping mechanism has been identified most strongly in first-year students and in individuals who seem to lack other more appropriate or adaptive coping skills (Borsari et al., 2009). Additional reasons for drinking that have been established in the literature are special occasions, peer pressure, and socializing/having fun (Armeli et al., 2010; Comasco et al., 2010; White & Hingson, 2013; Wicki et al., 2010; Yeramaneni, 2009).

Researchers have defined coping as consisting of several distinct strategies. The Coping Strategies Inventory (CSI) identifies two distinct strategies indicative of engagement with stress or a problem situation, and two distinct strategies that indicate a person may be disengaged from a problem or stressful situation (Tobin et al., 1989). Therefore, these four subscales of emotion- and problem-focused engagement and disengagement were examined as predictors of drinking in a stressed college population.

Hypothesis

It was hypothesized that coping, as defined by four scales on the CSI (problem-focused engagement, emotion-focused engagement, problem-focused disengagement, and emotion-focused disengagement) would predict the frequency of alcohol consumption in the last 30 days in a sample of self-reportedly stressed college students.

Chapter 4: Method

Study Design

In this study, data were collected utilizing a cross sectional, correlational, web-based survey design. Advantages of this design are to ensure the anonymity of participants, and ease of administration and completion for participants.

Participants

Participants included sophomore through senior undergraduate students from colleges and universities throughout the U.S. These students were self-selected by responding to social media invitations (e.g., Facebook invitations, listserv invitations, etc.). Participation was open to respondents from urban, rural, and suburban areas, and to respondents enrolled in either private or public colleges or universities. Participation was also open to respondents from any gender, race, and ethnic group. Recruitment occurred between February and October 2016. Of the original 192 participants, the analytic sample for this investigation was reduced to 89 individuals who met the inclusion criteria.

Inclusion criteria. To be eligible for the study, participants had to report their age as 18 and over, be a currently enrolled as a full-time sophomore or above undergraduate student at a college or university, and to have consumed any amount of alcohol within the past month. A power analysis was conducted to determine the number of participants needed. Eighty-nine participants made up the sample and 84 were needed for adequate power and medium effect size with an alpha of .05 (Cohen, 1992). Participants had to be students in the U.S. Students needed to respond to a question in the survey that asked about a recent stressful event.

Exclusion criteria. Freshman college students were not included in this study

because they have been found to consume larger amounts of alcohol than upperclassman.

In addition, individuals who have abstained completely from drinking alcohol within the

past month were also excluded from the study. Finally, students who did not have

computer access were excluded.

Measures

       Perceived stress. Perceived stress was measured using coding of self-reported

stressors. Data regarding perceived stress came from the subjective portion of the coping

scale. Raters were required to have completed up-to-date human subjects training

through the Collaborative Institutional Training Initiative (CITI). They were also cleared

through the institutional review board (IRB) to participate as raters for this research.

Raters used the global assessment of functioning (GAF) scale from the fourth edition of

the *DSM* (*DSM-IV*; APA, 2000) to rate the levels of stress reported by participants. The

GAF considers psychological, social, and occupational functioning on a continuum of

severity. Raters scored participant responses utilizing a 5-point Likert scale ranging from

1 (*most severe perceived stress*) to 5 (*least perceived stress*). The principle investigator

of the study served as the expert rater to determine the final rating for a particular item if

the raters failed to meet consensus.

       Coping skills. The Coping Strategies Inventory-Short Form (CSI-S; Tobin et al.,

1989) assesses a broad range of coping responses relating to how people respond when

they are confronted with difficult or stressful events in their lives. It is a 32-item self-

report questionnaire that consists of four subscales. It was designed to assess a broad

range of coping responses among adults. Participants rate items using a 5-point Likert

scale ranging from 1 (*never*) to 4 (*very often*). In this study, the higher score represented

greater coping strategies used by the students. Cronbach's alpha has been the most frequently reported coefficient of reliability for measures of coping processes. The alpha coefficients for the CSI-S range from .71 to .94 ($M = 83$).

Drinking frequency. Cahalan's (1969) Quantity Frequency Index obtains a frequency count of drinking within the past month. Frequency of alcohol intake was calculated and used as a dependent variable in the study. The results for amount of alcohol were also categorized for descriptive purposes into binge, heavy, moderate, and non-problematic drinking according to the CDC (2014) standards of Alcohol and Public Health. The measure is continuous to enable a description of the sample population, describing how many people fall into particular drinking categories (i.e., binge, heavy, moderate, non-problematic). An example question is, "How often did you drink during the last month?"

Demographic information. A questionnaire was utilized to assess basic demographic information. Participants were asked to disclose age range, gender, race/ethnicity, religiosity, housing situation (dorm room, off campus, etc.), relationship status, year in program, major (if declared), income, belonging to a fraternity, and other personal information. Some basic information about each participant's drinking history and/or family history of drinking was also asked. In addition, other variables that have been related to drinking in a college student population were measured and used as possible control variables in the analyses. For examples, a question about any significant/special occasion that may have occurred in the participant's life in the last 30 days was included in the questionnaire.

Procedure

Recruitment of participants began in February 2016. A variety of recruitment methods were employed. A random sample of college and university students was contacted with an invitation to the survey. The invitation letter indicated that data would not be reported by college; rather, student participants from all colleges would be included in data analysis together. The invitation for participation was posted to Facebook interest groups and other public social media interest groups with a request for individuals to forward the survey to anyone they believe would be eligible and interested in participating in the study. Specifically, invitations were posted to 200 Facebook group pages (e.g., approximately 115 college Facebook groups), club pages, college resource pages, diverse group pages, and others pages that were posited to be accessed by qualified participants. Additionally, six Craigslist posts were accessible for periods of 1 to 1.5 months each, and approximately 15 flyers were posted at college campuses, bars, and coffee shops in Philadelphia, Pennsylvania and Boston, Massachusetts.

A snowball method of recruitment was utilized, and individuals could share the link with the description of the study to other undergraduate college students who they know and who may have fit the inclusion criteria. The study inclusion and exclusion criteria, rationale for the study, and risks and benefits were outlined in the invitation letter. If a student decided to participate, he or she was required to click a button indicating by self-report that he or she met the inclusion criteria. Participants were asked to read the risks and benefits of the study and were reminded that their participation was voluntary and they could terminate the survey at any time. Students were asked to click a button asking them to agree to the terms of the study. They were then directed to the

SurveyMonkey survey to begin completing the measures. The alcohol frequency

measures were offered first, followed by the coping scale and the short demographic

questionnaire. Coding of self-reported stressors used data from the subjective portion of

the coping scale.

Data were recorded anonymously in that the survey cannot be linked back to a

given person's IP address/e-mail account. A lottery for a $10 gift card for every 20

participants was offered. Participants were given the option at the end of the survey to e-

mail their names and e-mail addresses separate from their replies to be entered in this

lottery. The survey was discontinued when the study sample size was reached. Twenty-

two participants asked to be included in the lottery, and two gift cards were given. Data

were transformed into SPSS and analyzed at the conclusion of the data analysis.

Chapter 5: Results

Demographics

The total sample consisted initially of 192 participants. Participants with missing data from the dependent or any of the independent variables (e.g., drinking, coping variables, or perceived stress) were excluded from the analysis because of the missing values from the specified variables. A mean imputation method was used to input remaining missing data points for analysis (Scholmer, Bauman, & Card, 2010). The majority of participants who were not included were excluded because they did not complete either the independent or dependent variable measures. The criterion for imputation was that not more than 10% of the measure was missed on the independent variables. Because of the exclusion of participants via the pairwise deletion method, the total sample size decreased to 89 participants ($N = 89$).

Central tendency and frequencies were used to describe key characteristics of the sample. Descriptive statistics were used for organization and summarization of participant data for the overall sample ($N = 89$). Eighteen percent of participants were male *(n = 16)*, 66.3% were female *(n = 59)*, and 15.7% did not report sex *(n = 14)*. For those participants who did not specify sex, a third category titled "other" was created, and the data for this category were examined compared to both male and female norms. The majority of the sample was Caucasian (79%). Forty-nine percent of the sample ranged between 21 and 23 years in age, followed by 18 to 20 years old (24%) and age 30 older (11%). Nearly half of the participants were in their senior years of college (45%), 20% were juniors, 21% were sophomores, four participants reported being freshmen, and the remaining sample (8.0%) fell into "other" categories, such as "5th year seniors." Finally,

71% reported they were not a member of a fraternity or sorority, and 29% reported they were members.

Statistical Analyses

A hierarchical regression was used to analyze the data. The hierarchical regression was selected to test the relationship between different coping styles and drinking while accounting for variables that have been related to drinking in past research. A hierarchical regression can test theoretical assumptions and examine the influence of several predictor variables in a sequential way, such that the relative importance of a predictor may be judged on the basis of how much it adds to the prediction of a criterion, over and above that which can be accounted for by other important predictors (Petrocelli, 2003). Hierarchical multiple regression is a hypothesis-testing technique used to predict values of the dependent variable from multiple independent variables (Field, 2013).

Many statistical analyses rely on assumptions about the variables being tested; assumptions that, if not met, can cause the results to produce an overestimation or underestimation of significance or effect size (Osborne & Waters, 2002). Therefore, the first step in a multiple regression analysis is to look at the data to ensure they meet all of these assumptions. The first step in the analysis tested for the assumptions of a multiple regression. These assumptions include that variables are normally distributed, there is a linear relationship between the independent and dependent variables, variables are measured without error (reliability), and homoscedasticity is present (Osborne & Waters, 2002). Another assumption with multiple regressions relates to multicollinearity; this concern exists when there is a strong correlation between two or more predictors (Field,

2013). When there is no multicollinearity, the assumption is that the independent variables are not highly correlated with each other.

Regression assumes that variables are normally distributed; therefore, visual inspection of data plots, as well as analyzing the skewness and kurtosis of the variables, provides information about the normality of the data (Osborne & Waters, 2002). It is also assumed that a linear relationship exists between the dependent and independent variables. This assumption exists due to the fact that if there is a non-linear relationship between the variables, the results of the regression analysis will underestimate the true relationship between the variables (Osborne & Waters, 2002). Further, it is assumed that variables are measured reliably and without error. If the covariate in a multiple regression is not reliably measured, effect sizes of other variables may be overestimated (Osborne & Waters, 2002). Therefore, it is suggested that researchers correct for low reliability in order to obtain an accurate representation of the relationship between variables, as well as to avoid the overestimation of the effect of another variable (Osborne & Waters, 2002). One way to account for this is to use valid and reliable instruments (Field, 2013). The final assumption of multiple regressions is homoscedasticity, which refers to the similarity in variance of errors across all independent variables (Osborne & Waters, 2002). Visual examination of the scatterplot of the standardized residuals can help in determining whether heteroscedasticity is indicated. Marked heteroscedasticity can lead to distortions of findings and significantly weaken the analysis by increasing the possibility of a Type I error (Osborne & Waters, 2002). None of these assumptions were violated in this study.

Coping styles and drinking frequency. The independent variables are the two secondary scales from the coping styles inventory that are emotion- and problem-focused engagement, and the two secondary scales from the coping styles inventory that are emotion- and problem-focused disengagement. The dependent variable is the frequency of alcohol consumed in the last month. It was posited that the type of coping skills used would potentially predict the relationship between frequency of alcohol consumption when perceiving stress. The alpha level for the hierarchical regression was set at $\alpha =$ 0.016 (after conducting a Bonferroni correction based on three analyses).

The relationship between the coping strategies and drinking frequency was analyzed. Coping means and standard deviations were calculated for each of the primary scales (see Table 1), secondary subscales (see Table 2), and tertiary subscales (see Table 3) in the CSI-S coping scale. According to the norm scale scores (Tobin et al., 1989), all participants scored within one standard deviation of all of the subscales.

Table 1

Subscale Item Means and Standard Deviations of Primary Scales

Primary Scales	Male (*n* = 16; 18%)		Female (*n* = 59; 66.3%)		Other (*n* = 14; 15.7%)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Problem Solving	3.54	.69	2.84	.84	3.26	1.20
Cognitive Restructuring	2.92	.89	2.89	.93	2.72	1.20
Express Emotions	2.70	.97	3.17	1.09	2.69	1.45
Social Support	2.93	1.28	3.61	1.17	2.93	1.42
Problem Avoidance	2.64	.98	2.49	.82	2.40	.95
Wishful Thinking	3.37	.97	3.28	.98	3.55	1.01
Self Criticism	3.04	1.01	2.62	1.25	2.66	1.22
Social Withdrawal	3.03	1.16	2.59	1.10	3.37	1.24

Table 2

Subscale Item Means and Standard Deviations of Secondary Scales

Secondary Scales	Male (*n* = 16; 18%)		Female (*n* = 59; 66.3%)		Other (*n* = 14;15.7%)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Problem Focusing Engagement	3.23	.53	2.86	.75	2.99	1.06
Emotion Focusing Engagement	2.82	1.10	3.39	1.04	2.81	1.34
Problem Focusing Disengagement	3.00	.89	2.88	.73	2.97	.87
Emotion Focusing Disengagement	3.03	.95	2.61	.97	3.01	1.00

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Table 3

Subscale Item Means and Standard Deviations of Tertiary Scales

Tertiary Scales	Male (*n* = 16; 18%)		Female (*n* = 59; 66.3%)		Other (*n* = 14; 15.7%)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Engagement	3.02	.72	3.13	.70	2.90	1.00
Disengagement	3.01	.65	3.01	.51	2.94	.83

Drinking. Drinking percentages were calculated (see Tables 4, 5, and 6 for a full description of drinking patterns). In the present sample of 89 participants, the majority reported drinking once or twice per week (males, *n* =10, 62.5%; females, *n* = 25, 42.4%; other, *n* = 7, 50%). The remainder of the sample drank once per month (19%), two to three times per month (24%), and three to four times per week (9.0%); only one participant reported drinking at least daily.

When asked how many standard alcoholic beverages they drank on a typical weekend, on average, men reported 7.12 drinks, women reported 2.54 drinks, and those who did not disclose sex reported 2.9 drinks, with one outlier who reported 30 or more drinks. When asked to reflect on a specific occasion participants drank the most within the past month, on average, males reported 9.56 drinks, females reported 4.40 drinks, and those who did not disclose sex reported 3.84 drink   s, with one outlier who reported 30 or more drinks.

Findings indicated that 68% of the sample reported they were drinking to socialize. Thirty out of the 59 female participants (50.8%) classified as binge drinkers, whereas 75% of males qualified as binge drinking as well. In total, almost half of the

sample (47.1%) reported binge drinking. In addition, 24% of participants were under 21

years old, minimally qualifying them as excessive drinkers. For a detailed description of

participants' drinking histories, see Appendix. Table 4 represents alcohol frequency

percentiles for consumption in the last month, Table 5 illustrates alcohol quantity

percentiles for consumption on a typical weekend evening during the last month, and

Table 6 depicts alcohol quantity percentiles for consumption on the occasion the most

drinking occurred during the last month.

Table 4

Alcohol Frequency Percentiles for Consumption in the Last Month

Response	Male (*n* = 16; 18%)		Female (*n* = 59; 66.3%)		Other (*n* = 14; 15.7%)	
	n	%	*n*	%	*n*	%
About once a month	2	12.5	13	22.0	2	14.3
2-3 times a month	2	12.5	15	25.4	4	28.6
Once or twice a week	10	62.5	25	42.4	7	50.0
3-4 times a week	2	12.5	6	10.2	0	0.0
Once a day or more	0	0.0	0	0.0	1	7.1

Note: *N* = 89

Table 5

Alcohol Quantity Percentiles for Consumption on a Typical Weekend Evening During the Last Month

Response	Male (n = 16; 18%)		Female (n = 59; 66.3%)		Other (n = 14; 15.7%)	
	n	%	*n*	%	*n*	%
0 drinks	0	0.0	8	13.6	1	7.1
1 drink	2	12.5	10	16.9	2	14.3
2 drinks	1	6.3	12	20.3	3	21.4
3 drinks	3	18.8	14	23.7	3	21.4
4 drinks	1	6.3	8	13.6	1	7.1
5 drinks	0	0.0	3	5.1	1	7.1
6 drinks	1	6.3	2	3.4	2	14.3
7 drinks	0	0.0	1	1.7	0	0.0
8 drinks	0	0.0	1	1.7	0	0.0
10 drinks	4	25.0	0	0.0	0	0.0
12 drinks	3	18.8	0	0.0	0	0.0
15 drinks	1	6.3	0	0.0	0	0.0
30 or more drinks	0	0.0	0	0.0	1	7.1

Note: *N* = 89

Table 6

Alcohol Quantity Percentiles for Consumption on the Occasion the Most Drinking Occurred During the Last Month

Response	Male (n = 16; 18%)		Female (n = 59; 66.3%)		Other (n = 14; 15.7%)	
	n	%	*n*	%	*n*	%
0 drinks	0	0.0	2	3.4	0	0.0
1 drink	0	0.0	8	13.6	3	21.4
2 drinks	0	0.0	8	13.6	1	7.1
3 drinks	3	18.8	11	18.6	2	14.3
4 drinks	1	6.3	7	11.9	3	21.4
5 drinks	1	6.3	5	8.5	0	0.0
6 drinks	3	18.8	6	10.2	2	14.3
7 drinks	0	0.0	1	1.7	1	7.1
8 drinks	0	0.0	4	6.8	1	7.1
9 drinks	1	6.3	0	0.0	0	0.0
10 drinks	1	6.3	4	6.8	0	0.0
11 drinks	0	0.0	2	3.4	0	0.0
12 drinks	1	6.3	0	0.0	0	0.0
13 drinks	0	0.0	1	1.7	0	0.0
14 drinks	1	6.3	0	0.0	0	0.0
15 drinks	1	6.3	0	0.0	0	0.0
18 drinks	1	6.3	0	0.0	0	0.0
19 drinks	1	6.3	0	0.0	0	0.0
20 drinks	1	6.3	0	0.0	0	0.0
30 or more drinks	0	0.0	0	0.0	1	7.1

Note: *N* = 89

Perceived stress. Perceived stress was analyzed using rater rankings of stressful scenarios provided by study participants. Rankings were rated 1 to 5 in order of severity (1 = *most severe*, 5 = *least problematic*) using the GAF criteria. Of the 89 participants, 60% scored 4 or 5, and only 40% of the sample scored below 4 (*mild-moderate symptoms of stress*). At the extremes, 2.2% of the sample (two participants) scored 5, and 7.8% of the sample (seven participants) scored 1, indicating severe stress.

Hypothesis

A hierarchical linear regression analysis was completed with the secondary scales of problem-focused engagement, emotion-focused engagement, problem-focused disengagement, and emotion-focused disengagement from the CSI-S measure as the predictor variables, and self-reported frequency of alcohol consumption as the criterion variable. Alcohol consumption was analyzed based on the frequency of drinking in the last month (see Table 7). The results of the overall hierarchical linear regression analysis were not significant ($R^2 = .012$; $F(4,.263)$; $p = .90$).

The beta weights, presented in Table 8, suggest that none of the predictor variables significantly contributed to drinking frequency.

Table 7

Correlations, Means, and Standard Deviations for the Secondary Scales with Frequency of Alcohol Consumption During the Last Month

Scale	M (SD)	1	2	3	4	5
1. Frequency of Drinking	3.51 (.98)	1	.06	.03	-.07	-.06
2. Problem-Focused Engagement	2.96 (.78)		1	.25	.15	.10
3. Emotion-Focused Engagement	3.20 (1.13)			1	.16	-.27
4. Problem-Focused Disengagement	2.92 (.78)				1	.44
5. Emotion-Focused Disengagement	2.75 (.99)					1

Note: $n = 89$
$p < .016$

Table 8

Simultaneous Multiple Regression Analysis Summary for Problem Focused Engagement, Problem Focused Disengagement, Emotion Focused Engagement, and Emotion Focused Disengagement Predicting Drinking Frequency

Variable	B	SEB	β
Problem-Focused Engagement	.092	.142	.074
Problem-Focused Disengagement	-.089	.160	-.071
Emotion-Focused Engagement	.014	.106	.016
Emotion-Focused Disengagement	-.033	.130	-.033
Constant	3.538	.599	

Note: $R^2 = .012$; $F(4,.263)$
$p < .01$

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The VIF value was less than 10, and the tolerance value was above .10, thus falling within acceptable ranges as outlined by Bowerman and O'Connell (1990) and Myers (1990; as cited in Field, 2013) for all predictors (CSI Problem-Focused Engagement = 1.09 and .91; CSI Emotion-Focused Engagement = 1.28 and .77; CSI Problem-Focused Disengagement = 1.37 and .72; and CSI Emotion-Focused Disengagement = 1.47 and .67, respectively).

Post Hoc Analysis

A Bonferroni correction was conducted by dividing the *p*-value of .05 by the 3 regression analyses, which resulted in a *p*-value of .016. The post hoc analysis revealed a multiple correlation (*r* = .227, *p* = .032) with a coefficient of determination of .052 (R^2 = .052), indicating that approximately 5.2% of the variance observed can be attributed to the predictor variable (emotion-focused disengagement). The adjusted coefficient of determination ($AdjR^2$ = .041) suggests that there would be minimal shrinkage from sample to population if the population had been evaluated. The overall post hoc analysis, as shown in Table 9, revealed a regression that was approaching significance (*F* = 4.740, *p* = .032), indicating that students with higher scores on the emotion-focused disengagement as defined by the Social Withdrawal and Self-Criticism subscales of the CSI-S measure reported more problematic drinking than other study participants, but only on weekends. Emotion-focused disengagement as a predictor variable was approaching significance (*r* = .227, *p* = .032). Emotion-focused disengagement was also predictive of alcohol consumed on the occasion of highest drinking in the last month (see Table 10; *r* = .19, *p* = .041). Neither of post hoc finding, however, was significant at the .016 level.

Table 9

Correlations, Means, and Standard Deviations for the Secondary Scales with Amount of Alcohol Consumed on a Typical Weekend Evening in the Last Month after Outlier Removal

Scale	M (SD)	1	2	3	4	5
1. Amount of Drinking	4.74 (4.24)	1	.05	-.12	.01	.23
2. Problem-Focused Engagement	2.96 (.78)		1	.25	.15	.10
3. Emotion-Focused Engagement	3.20 (1.13)			1	.16	-.27
4. Problem-Focused Disengagement	2.92 (.78)				1	.44
5. Emotion-Focused Disengagement	2.75 (.99)					1

Note: *n* = 89
p < .016

Table 10

Correlations, Means, and Standard Deviations for the Secondary Scales with Amount of Alcohol Consumed on the Occasion of Highest Drinking in the Last Month after Outlier Removal

Scale	M (SD)	1	2	3	4	5
1. Amount of Drinking	6.55 (4.99)	1	.01	-.16	-.04	.19
2. Problem-Focused Engagement	2.96 (.78)		1	.25	.15	.10
3. Emotion-Focused Engagement	3.20 (1.13)			1	.16	-.27
4. Problem-Focused Disengagement	2.92 (.78)				1	.44
5. Emotion-Focused Disengagement	2.75 (.99)					1

Note: *n* = 89
p < .016

Chapter 6: Discussion

The present study sought to examine coping as a potential predictor for alcohol consumption with an undergraduate college population. One must consider the results from this study in the context of the social-influence model. The model suggests that the primary influences affecting youths' alcohol consumption behaviors are social factors, such as peer, family, and media influences. Accordingly, intervention programs have been designed that strive to help adolescents acquire skills that will enable them to effectively resist social pressures (especially peer pressures) and to promote social attitudes and norms that oppose alcohol use (Windle & Zucker, 2010). Broadly, findings from this study yielded null results with regard to coping as a potential predictor for alcohol consumption. Results from the post hoc analyses revealed differences that were approaching significance, with students with higher scores on the emotion-focused disengagement reporting more problematic drinking than other study participants, but only on weekends. It is also important to note that maladaptive coping predicted the drinking, but that is not to say that people who have adaptive coping skills are not also drinking excessively.

Regarding study participants, four people identified as "freshman" despite the inclusion criteria requiring participants to agree that they were undergraduate students in their second years or above. A possible conclusion is that they were in their second years of their freshman requirements. This study reported how often and how much participants are drinking, and how their drinking is related to coping. It is important to consider that there may be something unique about the people who participated in the survey. Participants may have been motivated by the potential gift card rewards, or may

have been altruistic people who wanted to help. This sample generalizes to those who were willing to take the time to fill out an online survey.

It is possible that the college population is drinking a lot more than this study represented, and that the particular participants who were recruited were not all that stressed. On a 1 to 5 scale, with 1 indicating high stress and 5 indicating low stress, 60% of the population scored either a 4 or a 5, and only 40% of the sample scored below a 4 (mild-moderate symptoms of stress). Therefore, it is likely that there are other factors influencing the relationship between coping and drinking. According to a recent study that looked at contextual factors that can differentiate problem and non-problem drinkers among students (K. Beck, Caldeira, Vincent, & Arria, 2013), problematic drinkers—especially those meeting the criteria for the most severe form of alcohol use disorder—drink in a variety of contexts and no single factor is likely to be sufficient at predicting their drinking patterns. Drinking might be related to underlying personality and temperament traits that predispose college students to become problematic drinkers (K. Beck et al., 2013). In conclusion, it is possible that there is no relationship between the type of coping skills being used and drinking, it is possible that other factors are moderating the relationship between the two, and it is is possible that drinking relates to the social context. Finally, the sample did not consist of dysfunctional drinkers. Out of the entire group, 12% have missed classes, 5% claimed they had lowered grades, and only 2% had late assignments as a result of drinking.

Clinical Implications

Regardless of whether undergraduate college students are using alcohol and other substances because they are stressed, what remains true is that they *are* using alcohol and

other substances, most heavily on weekends. Neurobiological factors address this

vulnerable period of traditionally-aged undergraduate college students (ages 18 to 24),

when the final stages of brain maturation are occurring (Silveri, 2012). Accordingly,

alcohol use during this period could have detrimental long-term implications, because the

frontal lobe, which is responsible for functions relating to problem solving, is affected

negatively (Silveri, 2012). According to Tobin et al.'s (1989) CSI-S used in this study,

the problem-focused engagement secondary subscale included problem solving abilities

as a healthy coping alternative to alcohol consumption. Alcohol consumption negatively

impacts the neurodevelopment of parts of the brain responsible for problem solving

maturation.

Perhaps the programs currently in place to optimize interventions designed to

reduce drinking problems among undergraduate college students are not particularly

effective because they are not addressing an important aspect of drinking: socialization.

This is important to explore, because results from this study revealed that almost 70% of

the sample were drinking to socialize. Alternative socializing behaviors that would be

attractive to this population need to be explored in an effort to decrease substance use

while maintaining comparable socializing alternatives.

Limitations

This study should be considered within the context of a number of limitations.

First, there are several internal validity issues that need to be considered. Internal validity

relates to how much confidence can be placed on concluding correlations between the

variables that were studied (Campbell & Stanley, 2005). Maturation is a threat to internal

validity that describes an instance when a study does not control for the natural

maturation of a sample (Campbell & Stanley, 2005). Freshmen students were

intentionally excluded because, according to the research, freshmen students generally

drink above and beyond upperclassmen (Lewis et al., 2007; Thompson et al., 2006).

Perhaps the study outcomes would be different with more diversity, including freshman

students and students from a wider variety of cultural and religious backgrounds. Due to

the sample being restricted, the amount of freshman students who perhaps were drinking

because they could not handle stress remains unknown. Instrumentation is another

internal validity limitation, which occurs when individual opinions factor into a study,

and different results may ensue based on the particular individuals (Campbell & Stanley,

2005). A perceived stress scale was accidentally omitted from the study survey. To

measure stress, a particular subjective question from another measure asking participants

to describe a recent stressful event was utilized, and raters were added to analyze the

data. Calibration of individual opinions could have differences in results because one

rater might think an event warrants a 5 on a 1 to 5 scale, and another rater might think the

same event warrants a 3 in the qualitative analysis. In addition, the perceived stress

variable is subjective, thereby leading to different perceptions of the same event for each

person rating it. Differential selection is a third threat to internal validity. This limitation

relates to whether the study participants are in fact representative of the intended study

population (Campbell & Stanley, 2005). The students that self-selected into the study are

not necessarily representative of the entire U.S. undergraduate student population.

Additionally, other important variables associated with this population were not

considered. For example, other considerations, such as differences in male versus female

drinking, as well as common genetic contributions to alcohol use disorders, such as

biological and environmental factors, were not assessed in the current study.

In this study, drinking frequency was expected to be affected by particular coping

styles. It is possibly that looking exclusively at drinking was too narrow of an analysis

for this particular population. For example, despite a high prevalence of college students'

marijuana, caffeine, and tobacco use, these substances were not assessed because the

study was in the preliminary stage of investigating correlations between perceived stress,

alcohol, and coping variables. Specifically, marijuana is a common drug that is used

frequently by undergraduate college students. By not asking about marijuana use, it may

have limited a more accurate understanding about the ways in which undergraduate

college students who lack adaptive coping skills manage stress, and including other

substances of abuse may have led to more significant findings.

Further, self-identified eligibility to participate in the study, as well web-based

survey responses cannot be verified. The accuracy of an individual's report may also be

difficult to determine, such as responses to questions about alcohol consumption. A

month is a relatively long time to recollect how many drinks a person has had. The

weekend drinking findings may be a more accurate portrayal of participants' drinking

styles, because the participants only had to think back a few days. In addition, it is

important to consider that typical drinking in college occurs on weekends, and that may

be diluting the findings with the other two drinking markers in this study. Finally, when

asked about drinking occasions, it is possible that nothing significant was found because

of recollection issues, subjective interpretations of special occasions, or the participants

did not *have* any special occasions. Therefore, "How much did you drink on (a particular Friday or Saturday) evening?" may have been a better estimate of their drinking.

There are additional limitations to consider. Diversity of drinking attitudes may vary significantly due to different drinking laws in different states. Cultural factors may also be an issue because this study accepted all eligible participants that met the inclusion criteria. In other words, it is possible that the sample obtained was not representative of a diverse sample that may have otherwise captured increased or decreased drinking based on students coming from different cultural backgrounds.

There was also no way to determine whether study participants were in fact drinking because of perceived stress or whether drinking was due to other reasons despite qualifying as "stressed." There are potential variables other than coping that would influence drinking that were not included in this study. Some examples include peer pressure, cultural factors, living on or off campus, age, academic year, special occasions such as 21st birthdays, or rushing a fraternity or sorority that may skew the data.

Another limitation relates to the 14 participants who did not identify sex. It is important to consider the issue of diversity with regard to gender identity. The survey provided a gender category titled "Other (please specify)." Nevertheless, only two participants utilized this option; one reported "bi-gender," and the other suggested providing XX or XY chromosome options. Clearly, this is a sensitive and important topic that warrants careful consideration.

Suggestions for Future Research

Future research should address some of the limitations that were present in the current study. For example, it is important that future studies be sensitive to self-

categorization relating to gender, but that they also allow for use of existing traditional

male/female norms. In regard to drinking, it may be beneficial to have people keep

running logs to track how many drinks they have had, to ensure more accurate reporting.

Additionally, it would be important to ask about other substance use, particularly

marijuana. Finally, other variables may contribute to increased or decreased drinking in

an undergraduate college population when individuals perceive stress. Perhaps it would

be valuable to look at whether it is not specific coping strategies that are predictive of

drinking when perceiving stress, but the *amount* of different coping strategies at a

person's disposal.

Conclusion

Results supported earlier research noting that half of college students binge drink

(CDC, 2014). In total, almost half of the sample (47.1%) reported binge drinking.

Although the drinking habits of the study sample as a whole did not appear to be

significantly linked to any particular coping style, the students with higher scores on the

emotion-focused disengagement reported more problematic drinking than other study

participants, but only on weekends. Findings indicate that students are in fact drinking

problematically, and that the drinking is occurring commonly in social contexts.

Findings from this study suggest concerns about issues such as stress, coping

skills, and substance use among undergraduate youth, to which college administration

could become more aware in order to create a healthier and more effective and attractive

social and stress outlets for their students. These issues apply both to students dealing

with stress and to those who are merely interested in having fun.

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Appendix

Drinking History

Response	*n*	%
At what age did you have your first drink?		
10 years or less	3	4.0
11 – 12 years old	3	4.0
13 – 14 years old	14	18.7
15 – 16 years old	21	28.0
17 – 18 years old	23	30.7
19 – 20 years old	6	8.0
21 – 22 years old	4	5.3
25 years old or more	1	1.3
Has anyone ever told you that you drink too much or too often?		
Yes	14	18.7
No	61	81.3
Is there a history of problematic drinking in your family (e.g. alcoholism)		
Yes	32	42.7
No	43	57.3

Note: *n* = 75