Protective Behavioral Strategies and Negative Consequences of Alcohol Use Among College Athletes

Nirmala Jayaraman

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PROTECTIVE BEHAVIORAL STRATEGIES AND NEGATIVE CONSEQUENCES OF ALCOHOL USE AMONG COLLEGE ATHLETES

A Dissertation

Presented to the Faculty of
Antioch University of New England

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by

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PROTECTIVE BEHAVIORAL STRATEGIES AND NEGATIVE CONSEQUENCES OF ALCOHOL USE AMONG COLLEGE ATHLETES

This dissertation, by Nirmala Jayaraman, has been approved by the committee members signed below who recommend that it be accepted by the faculty of Antioch University New England in partial fulfillment of requirements for the degree of

DOCTOR OF PSYCHOLOGY

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ABSTRACT

PROTECTIVE BEHAVIORAL STRATEGIES AND NEGATIVE CONSEQUENCES OF ALCOHOL USE AMONG COLLEGE ATHLETES

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Alcohol use is associated with a variety of negative consequences among young adults (Benton et al., 2004). Current studies are considering how protective behavioral strategies (PBS), such as acting as a designated driver, alternating with a non-alcoholic beverage, or watching out for a friend at a party, can be analyzed to better understand what factors contribute to alcohol consumption and drinking behavior (Borden et al., 2011). The purpose of this study was to further understand the relationship between the use of specific protective behavior strategies and negative consequences related to drinking alcohol among college athletes. The present study used survey findings from 2017, which asked college-age students from multiple undergraduate schools in New Hampshire about their alcohol consumption, protective behavioral strategy use, and the negative consequences of drinking. Inferential statistics such as $t$-tests and ANOVA were used to investigate questions of whether participation in athletics would relate to different patterns of PBS use. Intercollegiate athletes were found to be just as vulnerable to the negative consequences of alcohol consumption as club sport participant and non-participating students. Implications from results include that non-participating students would benefit as much from using PBS as their club sport and intercollegiate athlete peers. This dissertation is available in open access at AURA (https://aura.antioch.edu) and OhioLINK ETD Center (https://etd.ohiolink.edu).
Keywords: college athletes, alcohol use, drinking behaviors, protective behavioral strategies, negative consequences, developmental psychology
Dedication

This dissertation is dedicated to my family, friends, and mentors from over the years. Thank you for your support and encouragement. I would also like to express gratitude to my dissertation chair, Dr. Karen Meteyer. Thank you for your patience, kindness, and wisdom. I would also like to thank my committee members, Dr. Rosie DeVincentis and Dr. Kate Evarts. I would like to thank my peers and cohort from graduate school for the community they created every day both in person and on Zoom. I would also like to thank Dr. Vincent Pignatiello, who served as our department chair during the COVID-19 pandemic. Thank you for your leadership and guidance.
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CHAPTER I: INTRODUCTION

One of the challenges that some college students may face can include drinking more alcohol at the expense of their overall health goals. Studies on college student drinking patterns are designed to consider how alcohol consumption impacts the student’s overall safety, health, and academic progress (Merrill & Carey, 2016). Research suggests that drinking patterns in the general college population can range from having short-term to long-term consequences that impact a student’s trajectory for academic and overall life success (Collins et al., 2010). For example, under university policy, if students accrue violations around their alcohol consumption on campus and experience consequences that impact their academics, such as performing poorly in a class overall, they may be required to attend mandated counseling to address their drinking behaviors (Collins et al., 2010). College mental health centers may benefit from reviewing more literature on drinking research to better address how a cascade of events led their students to experience consequences related to alcohol misuse.

Epidemiological studies suggest that drinking patterns that begin during college remain a potential risk factor for problematic drinking and alcohol-related problems among 30%–40% of the young adult population, ages 18–26, in the United States (Krieger et al., 2018). The literature on college drinking patterns can offer insight into the conditions that shape a college student’s drinking use and measure the impact their alcohol consumption has on their mental health. College students are considered at risk for developing a problem with their drinking behaviors if they have a higher frequency of binge drinking episodes where they consume five or more drinks in a short amount of time. There is a growing body of college drinking literature on the proximal effects of at-risk alcohol consumption and their impact on the psychosocial development of young adults (Haller et al., 2010). From an integrated developmental perspective, alcohol
consumption has a longitudinal impact on individuals during emerging adulthood and can be an antecedent for experiences that include the use of addictive behaviors to cope with life stressors and interpersonal conflict in relationships.

Of the groups that report having developed drinking behaviors in college, student-athletes are of particular interest to researchers because they report having higher rates of alcohol-related problems when compared to their same-age peers who do not participate in sports (Barry et al., 2015). Interestingly, college athletes that compete at different levels of their sport have reported engaging in different drinking patterns. However, research has yet to tease apart how different levels of participation in college athletics could reflect the trajectory of drinking patterns among college students during emerging adulthood (Marzell et al., 2015). Different drinking patterns thus reflect a critical area where athletic coaches and counseling centers could provide interventions, education, and alcohol counseling. Targeted areas for intervention can be contextualized with the language of the harm-reduction model that utilizes approaches such as protective behavioral strategies.

Protective Behavioral Strategies (PBS) are practices that target reducing the negative consequences of alcohol consumption. PBS falls under the umbrella of the harm-reduction model in which new behavioral approaches toward reducing alcohol use are learned once changes are made in the environment (Noble et al., 2013). The underlying concepts behind behavioral change include modifying levels of negative reinforcement, taking away the drinking behavior, and positive reinforcement or replacing the drinking behavior with a non-alcohol related alternative action (Braitman et al., 2015). According to the research literature, PBS use does not make alcohol consumption safer for mild, moderate, or heavy drinkers (Li et al., 2020). Rather, the more students use PBS, the less likely they will consume alcoholic drinks and the less likely they
will experience negative consequences due to drinking as a result (Noble et al., 2013). Furthermore, PBS are less understood in their contribution toward changing the frequency of negative consequences of general drinking behaviors among college-age students (Martens et al., 2004). Synthesizing ideas from what the drinking research literature has to say about college drinking patterns, student-athlete drinking patterns, protective behavioral strategies, and negative consequences of alcohol use can help psychologists contextualize college student needs that are not being fully addressed.
CHAPTER II: LITERATURE REVIEW

College Drinking Patterns

Understanding how college students develop drinking patterns can help clinicians further explore questions around their drinking behaviors. College students may express ambivalence about making a change for their health because they have relied on alcohol use as a coping mechanism in the past. College students may weigh the positive and negative aspects of their drinking behavior and find that they have many reasons why they still like consuming alcohol even when they recognize that there are health risks involved. In other words, there are many reasons why college students consume alcohol. College students may drink alcohol for celebration, recreation, or coping with stressors associated with socializing (Andes et al., 2012). They may turn to alcohol use to cope with the stress of academics and develop a maladaptive cycle. By spending more time consuming alcohol in a social context to reduce their negative feelings, students then concentrate less on their school work which impacts their performance in class and their overall sense of self-efficacy. College students may also turn to alcohol to cope with the stressors of having a pre-existing mental health challenge such as anxiety and depression; they may also be exposed to the co-morbid risk for addiction as their drinking patterns increase (Joyner et al., 2016). Psychologists benefit from learning more about the research on general drinking patterns among college students because clinicians need to understand what is motivating the drinking behaviors of students that start during this chapter in their development.

The research literature suggests that college students engage in drinking patterns for recreational reasons that are motivated by a reward-seeking mindset (Joyner et al., 2016). Individuals use alcohol to feel an alteration of physical sensations and self-confidence in social
settings (Finlay et al., 2012). By enjoying alcohol-related activities, college students perceive non-alcohol related activities as less rewarding and enjoyable (Joyner et al., 2016). On average, college students spend over 40 hours outside of their classes involved in extracurricular and leisure activities. Non-alcohol-related rewarding activities are typified for being long-term with an emphasis on skill building and goal setting, such as volunteering, spiritual life, and athletics. Alcohol-related rewarding activities, such as partying on the weekends or pre-gaming with peers, place an emphasis on reaching short-term goals including drinking alcohol to experience being intoxicated as an end to itself (Finlay et al., 2012). College students who are introduced to alcohol in a social context are not necessarily equipped with the skills to handle social situations. Although they can experience the short-term rewards of leisure activities involving alcohol use, they may not be devoting time to building skills to meet longer-term goals that do not involve academics (Finlay et al., 2012). College student drinking behavior can reinforce maladaptive attempts at bonding over a shared hobby or activity (Maloney, 2011). While alcohol use is not always the source of stressors for college students experiencing peer pressure, the social interactions that shape an individual’s experience among their peers are worthy of further inquiry.

Research on college drinking behaviors has considered both direct and indirect social pressures that students face around alcohol use. Students may not have developed strong enough refusal skills and may begin drinking due to peer pressure (Eisenberg et al., 2014). Students who attribute positive consequences to joining groups for social drinking, such as a surge in social status and popularity among their peers, remain at risk for increasing the frequency of their drinking behaviors in their environment (Benton et al., 2020). According to another study, students who participate in drinking games during pre-partying have higher blood alcohol levels
and experienced more negative consequences when compared to their same-age peers that participated in social drinking without pre-partying (Hummer et al., 2013). Overall, the research literature suggests that alcohol use promotes a different set of implicit rules during social engagement that impacts the quality of students’ experiences of themselves as individuals and as members of the group.

College counseling sites have organized interventions around students who are assigned to a mandated treatment plan due to performing poorly in their academics (Carey et al., 2020). The more time a student spends on non-academic activities that involve pregaming, partying, and social drinking, the less time they can devote to academics in addition to spending less time on long-term goals in their extracurriculars (Finlay et al., 2012). In one study of college freshmen drinking behavior, increasing the inebriating effects of alcohol consumed at parties was more likely to happen in a social context on a non-school night when students are not concerned about completing homework for a class the next morning (Boekeloo et al., 2011). Psychologists are in a position to consider the cumulative effects of drinking behaviors that occur over time on non-school nights as this relates to poorer performance in academics (Carey et al., 2020). Observing overall trends in students’ drinking patterns proffers insight as much as the drinking behaviors that they accumulate over time.

Researchers are still studying college drinking patterns to assess when a student’s alcohol consumption becomes a problem to the point when they need to attend their college counseling center (Benton et al., 2004). In a study that reviewed student reasons for attending therapy at their college mental health program, an underwhelming 10% of the students that represented 80% of those at risk for alcohol dependence took initiative to reach out to their counseling center for help while the rest of their peers continued to drink as a way to cope with ongoing stressors.
Another study found that drinking alcohol to cope with stress was a mediator between a student’s experience of stress and alcohol-related concerns (Rice & Van Arsdale, 2010). In other words, alcohol misuse reinforced the students’ experience of having low self-efficacy to face stressful challenges that required a different set of skills to achieve their goals. The results from these previous studies reflect that identifying antecedents for drinking behaviors and newly adopted drinking patterns in the college student population is a complex process.

When college students recreationally use alcohol, they not only continue to experience issues involving socializing and negative academic consequences, they also become vulnerable to co-morbid conditions such as mood-related disorders, depression, anxiety, and addiction (Rice & Van Arsdale, 2010). Alcohol use has been studied as a mediating factor for negative affect in college students who use drinking as a coping mechanism to regulate mood. Research suggests that the emerging adult population is likely to use alcohol to escape overall discomfort and experience of negative emotions (Gonzalez et al., 2011). Ego-depletion was also found to be a vulnerability factor among individuals at risk for experiencing recurrent drinking episodes (DeHart et al., 2014). In a study that focused on first-year college students, the authors reviewed the relationship between alcohol use and specific depression symptoms. Students listed negative academic consequences as having impacted their mood and that they used alcohol as a way to cope. However, the students later reported that they developed a maladaptive cycle. Drinking more had exacerbated their symptoms of depression (Geisner et al., 2012). Further inquiry into how college drinking patterns impact mental health issues can offer insight into how groups, such as student-athletes, have complex needs for different types of interventions targeting their alcohol use.
Alcohol Use Among Student-Athletes

Student participation in college athletic groups is another variable that may impact patterns of alcohol consumption. Like the general college student population, student-athletes may initially participate in drinking behaviors for recreational reasons. In a review of drinking game research, the authors describe how college athletes are at a higher risk level for participating in drinking games when compared to their non-participating student peers (Zamboanga et al., 2014). Furthermore, the higher the frequency of social events attended by athletes, the more likely they were to participate in social drinking including pre-gaming (Zamboanga et al., 2014).

There may be differences in drinking patterns between individual athletes based on gender, culture, and group status. For example, competitiveness among male student-athletes is considered a risk factor when students participate in drinking games during parts of their academic year, when they are off-season, and when they are not playing a sport during a specific academic term (Weaver et al., 2013). Students that identify with cultural and sexual minority groups are also likely to use maladaptive ways of coping with minority stress, such as binge drinking, among the population of student-athletes as well (Kroshus & Davoren, 2016). Research on college athlete drinking patterns needs to be recognized for having only addressed a few aspects of student group identity as it pertains to development. However, the ideas that have emerged from researching differences between athletic group status are still worthy of inquiry within the literature on college student drinking patterns.

In terms of group status, there are various levels of involvement in college sports that shape a college student-athlete’s experience. Students who engage in club or intramural sports are motivated to play for reasons that involve socializing with their peers, while intercollegiate
athletes play more competitively with the desire to improve their performance (Barry et al., 2015). Students who join club sports are informally pursuing an athletic activity to have fun or to learn something new (Dahab et al., 2019). In fact, club sport athletes are not committing the same amount of time to focus on participating in athletics when compared to students that meet more frequently for intramural sports.

Furthermore, student-athletes who participate in team-sport games may experience different alcohol-related outcomes compared to those who participate in sports that focus on individual performance and achievement. Factors such as a student's proximity to living near their college campus or their membership in a Greek organization, such as a fraternity or sorority, may also play a more significant role in increasing their chances of participating in events that include social drinking (Teets & Clydesdale, 2017). Further clarification of the role that different levels of athletic participation play in student drinking patterns is needed.

**Club Sport, Intramural, Intercollegiate Athlete Drinking Patterns**

Intercollegiate or varsity students strongly identify with their role of being an athlete and with their specific group. Intercollegiate athletes are socially brought together through mandatory activities, such as traveling for away games, practices, and mealtimes, which require team-building skills (Marzell et al., 2015). Having team-building skills can serve as a protective factor that reduces the student-athlete's chances of using alcohol consumption as a harmful coping strategy to address social, academic, or mental health stressors. Varsity athletes reported lower rates of high-risk drinking than club sport and intramural athletes. Being held to higher standards by the National Collegiate Athletic Association also influences drinking patterns among the most competitive student-athletes (Marzell et al., 2015). Overall, the research
literature suggests that there are valid distinctions between different levels of athletic participation that shape a student’s level of exposure to social drinking in college.

Social settings are also a variable for student-athlete alcohol use; exposure to social drinking varies in relation to the degree to which students participate in a college sport (Marzell et al., 2015). Intercollegiate athletes spend less time with non-participating students and are not as exposed to the social contexts where non-participating students are often found engaging in frequent drinking behaviors (Andes et al., 2012). Intercollegiate athletes consume alcohol less frequently and attend events at off-campus bars less frequently when compared to non-participating students, club sport participants, and intramural athletes. However, when intercollegiate athletes do consume alcohol in social settings, they report drinking greater quantities of alcohol than their non-participating student peers (Barry et al., 2015). Club sport and intramural athletes participate in less demanding programs where they have more unstructured time to socialize around drinking. However, like their student-athlete peers, intercollegiate athletes’ drinking behaviors are positively reinforced from partying off-season (Marzell et al., 2015). One study about the impact of athletic participation on college student drinking found that student-athlete status may not play a significant role in increasing the chances that a college student participates in social drinking (Teets & Clydesdale, 2017). Student-athlete drinking patterns are thus just as context-dependent as the general college drinking patterns that emerge during young adult development.

During their training season, athletes place consistent effort in caring for their health as they continue to develop and grow. Alcohol consumption is a variable that influences their vulnerability to sickness and physical injury (Cimini et al., 2015). The dehydrating effects of alcohol use may motivate college student-athletes to reduce their alcohol consumption in order to
not negatively impact their physical performance in a team sport. The negative consequences of at-risk drinking that are categorized as harmful for an athlete’s health also include other performance factors such as nutrition, injury risk, sleep, performance recovery, and motor skill development (Cimini et al., 2015). Another variable to consider is that reports of higher physical activity among student-athletes have a positive association with higher amounts of alcohol consumed in a given academic year (Andes et al., 2012). While the short-term negative consequences related to alcohol use are temporary, student-athletes are still at risk for developing drinking behaviors that can be of concern to athletic coaches, who are then in a position to provide education around alcohol use and its impact on their health and overall performance.

Non-participating students, club sport participants, and intramural athletes are not only less tightly organized as a group when compared to intercollegiate athletes, but they are also less supervised by coaches. Furthermore, alcohol is more socially available to them in between practices (Barry et al., 2015). The impact of descriptive social norms among intercollegiate athletes is greater in the drinking literature. In other words, the more a student strongly identifies with their role as an athlete, at the intercollegiate level of sports, the more they depend on perceived social norms to inform them of socially acceptable drinking behaviors within their specific athletic group. For example, an intercollegiate athlete will make decisions about how much or how little to drink in order to mirror the drinking behaviors of other fellow intercollegiate athletes within their group (Barry et al., 2015). Overall, the research literature suggests that drinking behaviors are learned and patterns develop when student-athletes base their decision-making on how the group experiences a social drinking event outside of their practices and games.
Based on social norms theory, there may be more scatter among reports from individual non-participating students, club sport participants, or intramural athletes when they address their drinking behaviors (Grossbard et al., 2009). Since they identify less with their role as a student-athlete, club sport participants, and intramural athletes may not use group norms to guide their drinking behaviors. Individual alcohol use may vary among non-participating students, club sport, and intramural athletes when compared to intercollegiate athletes who place greater emphatic importance on group cohesion. Since they are receiving less preventative education around drinking behaviors than their intercollegiate athlete peers, non-participating students, club sport participants, and intramural athletes are far likelier to make a decision based on misperceptions around alcohol use (Grossbard et al., 2009). However, there are academic consequences that intercollegiate student-athletes could face that are uniquely related to their college lives. Intercollegiate athletes that are dependent on a sports scholarship while attending college engage in less drinking behaviors when compared to non-participating students, club sport participants, and intramural athletes. Intercollegiate athletes are regularly informed of competing contingencies that tie their athletic performance to academic achievement (Turrisi et al., 2007). Overall, the literature demonstrates that there is a parallel between student-athletes and the general college population in studies that collect reports on emerging adult drinking behaviors and patterns. Psychologists would also benefit from further inquiry that investigates if there is a parallel between student-athletes and the general college population when protective behavioral strategies are utilized in order to change drinking behaviors.

**Protective Behavioral Strategies in the General College Population**

Protective factors represent a broad range of ideas behind what helps individuals stay motivated to continue with the maintenance of a behavioral change. For example, protective
factors, such as an intrinsic value system constructed outside of one’s peer group, could help individuals sustain a behavioral change as their motivation fluctuates (Logan et al., 2010). Overall, studies involving positive psychology and applied strengths-based approaches have identified how utilizing an intrinsic set of values can serve as a protective factor for long-term behavioral change among individuals who experience negative outcomes from alcohol-related problems.

Harm-reduction treatments that include stepped-care and values-based interventions, such as motivational interviewing, are utilized to empower students in mandated counseling to consider the risks they accrue when engaging in their drinking patterns (Borsari et al., 2012). Protective behavioral strategies (PBS) are based on a harm-reduction approach and are used to change the impact of one’s alcohol use. Protective factors, such as family connectedness and psychoeducation, have been studied for their role in modifying the negative consequences of alcohol consumption among college students (Martens et al., 2004). Yet, there is still a paucity of research on how protective behavioral strategies have an impact on a student’s mechanism for change with their drinking behaviors in the context of pre-gaming and partying.

The relapse prevention approach also considers how protective behavioral strategies can target motivation. An individual’s motivation to change can decrease if they experience the abstinence violation effect from breaking their own rules around abstaining from an addictive substance such as alcohol (DiClemente, 2018). Research on PBS offers insight into other methods for safely reducing drinking behaviors in addition to practices involving abstinence. For example, selective avoidance of risky drinking practices, such as mixing multiple alcoholic beverages, are also studied as a potential protective behavioral strategy that differs from abstaining (Braitman et al., 2015). Inquiry into how PBS are helpful in a student’s overall
approach to bettering their quality of life can ultimately address the concerns associated with alcohol use on campus.

In one study, protective behavioral strategies were found to have a moderate effect on reducing negative consequences of alcohol consumption and positive improvements in the social health status among student participants (LaBrie et al., 2009). College students who experience the most drinking episodes may use less PBS; however, they may have a higher tolerance level during a drinking episode to the point where their use of PBS is no longer efficacious. Furthermore, college students with a lower tolerance level for alcohol may have a lower frequency of experiencing binge drinking and utilize PBS that will enhance their chances of not experiencing a binge-drinking episode altogether (Borden et al., 2011). Students that demonstrated conscientiousness, such as planning ahead and anticipating the negative consequences of their drinking behaviors, were also found to have better mental health and frequent use of PBS. Overall, however, PBS’s positive influences in moderating and improving overall health among college students have not been fully understood (LaBrie et al., 2010). Studying PBS’s positive influences on a subgroup within the general college population, such as student-athletes, may help clarify what makes PBS use effective.

**Protective Behavioral Strategies Among College Athletes**

The mediating role that protective behavioral strategies (PBS) have in reducing the negative consequences of alcohol consumption has been studied among the adolescent and young adult population. However, there are still gaps in the literature on how PBS may play a role in reducing the negative consequences of alcohol consumption within the population of college athletes. While college athletes may participate in different patterns involving drinking behavior when compared to non-participating students, they may also benefit from using PBS to
reduce the chance of experiencing a negative or short-term consequence from alcohol consumption. Research on whether or not college athletes are using more PBS than their non-participating peers may provide insight as much as an investigation into what subtypes of PBS are being used by the general college population (Noble et al., 2013). Research may clarify how PBS can help college athletes avoid the negative consequences of their drinking behaviors (Weaver et al., 2012). Overall, student-athlete PBS use can influence their overall approach toward achieving both short-term and long-term life goals that they create for themselves during this time in their development.

Athlete status has yet to be fully explored as a variable among college-age students that experience varying levels of alcohol consumption in different social contexts in their college community. Potential limitations in the drinking research literature include the narrowness of previously held ideas about which aspect of the harm-reduction approach is worthy of further inquiry. Research on the role that PBS use has in shaping student-athlete drinking behaviors may show how much more inquiry is needed to better understand the effectiveness of a single intervention that incorporates multiple responses to a student’s mental health needs.

Student-athletes who experience problems involving their mental, physical, and social health are likely to benefit from using PBS that protect them from negative outcomes of alcohol consumption that directly impact them in these aforementioned areas. For example, PBS promoted as an educative measure during orientation week on college campuses may also reduce the chances of experiencing both bodily and socially relevant negative consequences of alcohol consumption among athletes and non-participating peers (Kenney & LaBrie, 2013). There are still gaps in the literature on how PBS may be utilized differently among student-athletes when
compared to others who participate in different sports-related groups such as intramural and club sports programs.

One study did compare how participants in a club sport, intramural, and intercollegiate athletic programs utilized PBS. Among varsity athletes, specific PBS such as abstaining, tracking drinks, and staying with the same group of friends were the least likely to be used (Andes et al., 2012). In the same study, club sports athletes reported that they were least likely to use alternating with non-alcoholic beverages and avoiding drinking games as a PBS. Intramural athletes were also the least likely to use PBS altogether, including strategies such as pacing drinks to less than one per hour, having a friend watch for them, setting or limiting the number of drinks they would consume, abstaining, avoiding drinking games, and alternating with a non-alcoholic beverage (Andes et al., 2012). Tailoring mental health awareness education or interventions to the type of sports group that the student-athlete is involved with can also be informed by survey findings that collects student responses to questions about which PBS they use (Mastroleo et al., 2013). Psychologists can understand which types of PBS are most effective and thus have an impact on university policies that support mental health programming targeted at helping college students avoid the negative consequences of alcohol use.

**Negative Consequences of Alcohol Use**

The negative consequences of alcohol consumption can have a lasting neurocognitive impact on young adults as their brains continue to develop. Higher levels of alcohol consumption were also associated with poorer development of prospective memory among college students (Paraskevaides et al., 2010). Outcomes from alcohol-related problems were further studied in neuropsychological studies that found young adults had performed poorly on cognitive tasks that required the use of executive functions, processing speed, and working memory (López-Caneda
et al., 2014). One study measured the mood and neurocognitive performance of college students that were administered one alcoholic beverage the night before being scheduled to take an academic exam. While their test-taking performance was not impacted, their mood and attention showed moderate changes on neurocognitive measures (Howland et al., 2010).

However, the negative consequences of alcohol use are not only physically harmful but also socially and emotionally detrimental to students’ self-perception and other-awareness in their interactions among their peers. Student expectations of perceived detriments due to alcohol consumption were moderated by the level of frequency of negative consequences including missed classes, lower grades, and higher rates of interpersonal conflict that were associated with overdoses, short-term experiences of impaired judgment, and blackouts (White & Hingson, 2013). Positive and negative consequences of drinking are defined by the quantity and frequency of episodic drinking. The negative consequences can also include having a weaker immune response to stressors, having memory loss, and disappointing others (Barnett et al., 2014).

Students’ academic performance had a negative correlation with the frequency of the number of negative consequences they experienced from a binge-drinking episode (Ruthig et al., 2011). In one study, motivation to achieve academically was negatively correlated with at-risk binge drinking behavior. The authors of the study proposed that utilizing preventative measures and protective behavioral strategies could help reduce the negative consequences of binge drinking and increase the chances of students’ academic success (El Ansari et al., 2013). While individual negative consequences are reported in the literature with respect to a student’s academics, health, and social relationships, there are still questions regarding how students’ participation in athletics may influence these connections.
Potential Limitations and Gaps in the Literature

The research literature suggests that non-athletes have different drinking patterns compared to athletes in the college student population. However, there are still gaps in the literature on the different drinking patterns that emerge among student-athletes who participate at various levels in their chosen sport during college. Potential gaps in the literature include questions around whether different levels of involvement in sport participation among student-athletes are associated with more negative consequences of alcohol consumption and/or less PBS use. For example, how do intercollegiate participants compare to those who engage in a club or intramural sports with respect to the use of PBS? Furthermore, do non-participating students, intercollegiate, and club sports students practice different types of PBS or experience different types of negative consequences as a result of their alcohol use?

The Present Study

The current study explored how PBS was utilized by students depending on their athletic status and how these related to the negative consequences students experienced with the following research questions:

1. Did intercollegiate athletes, club sport/intramural athletes, and non-participating students report different levels of PBS use overall?

I hypothesized that intercollegiate athletes would report more PBS use than club sport athletes and non-participating students. This hypothesis was based on past research that explored levels of sport participation as a variable in college student reports of drinking patterns (Barry et al., 2015).

2. Did athletic participation correlate with higher use of certain types of PBS, specifically limit setting and pro-social skill-based strategies?
Since there was not enough research literature on limit setting, it was difficult to form a hypothesis. As such, possible differences among students in three groups (club, intercollegiate, non-participating students) were explored. With respect to pro-social skill PBS use, it was predicted that club and intramural sport student-athletes would report lower rates of pro-social skill PBS than their intercollegiate athlete and non-participating, or non-athlete, peers. This hypothesis was based on previous research that suggested that intercollegiate athletes have to adhere to team-building goals and would report higher rates of pro-social PBS due to the demands of having to commit to their training and in making improvements in their athletic performance (Andes et al., 2012).

3. Next, did students who participate in intercollegiate athletes, club sport/intramural athletes, and non-participating students report different rates of negative consequences associated with alcohol use?

My hypothesis was that club and intramural sports athletes and non-participating students would report higher rates of negative consequences associated with drinking than their intercollegiate athlete peers. This hypothesis was based on the precedent of past research suggesting that students that participated in sports for social reasons were likely to participate in social drinking and experience higher rates of negative consequences when compared to intercollegiate athlete peers (Andes et al., 2012).

4. Lastly, if the above relationships were found to be statistically significant, I then planned to explore the interconnections among all three. In other words, did PBS use moderate the relationship between student-athlete level of participation and negative consequences of alcohol use?
My hypothesis was that club and intramural sports student-athletes and non-participating students report higher rates of negative consequences than their intercollegiate athlete peers as a function of PBS use. This hypothesis was based on the precedent of past research suggesting students’ PBS use moderates the relationship between the level of athletic participation and negative consequences in a positive direction, where more PBS use and higher level of athletic participation are associated together (Zamboanga et al., 2014).
CHAPTER III: METHOD

Participants and Procedures

Archival findings were used, based on The New Hampshire Higher Education Alcohol, Tobacco, and Other Drug (NHHEATOD) Survey, which was sent electronically to 14,422 students at seven colleges and universities in the state of New Hampshire in 2017. Two thousand eight hundred and forty-seven students responded to the survey resulting in a total of 2,115 valid responses. Survey questions were informed by social norming theory (Doumas, 2013). Participating students were directed to a separate survey from their respective college or university if they wanted to enter into a local campus giveaway as an incentive. The population of interest for the current analysis was students who engaged in drinking behaviors; students that responded to the survey that they “never had a drink” were therefore excluded. Demographics, including class year, age, race, ethnicity, sex, and gender identity, were reported as available from the survey findings.

Before administration of the survey, each institution received approval from their Institutional Research Board. All schools implemented an administration method to ensure anonymity and confidentiality of participants. The survey began in mid-to-late February, and all surveys were completed prior to spring break vacation. The choice to end the survey prior to spring break helped to ensure a uniform experience that was generally typical of usual use and not colored by spring break activities. Students were sent email invitations to participate in the NHHEATOD survey, which was posted for two weeks. Most institutions offered small incentive prizes (e.g., gift certificates or a raffle).
Measures

Student-Athlete Participation

The level of student-athlete participation was measured by using a combination of two items from the survey. Participants were asked, “Within the last year, to what extent have you participated in the following activities? Mark One Answer For Each Activity.” The two athletic items included “intercollegiate sports” and “intramural or club sports.” Responses were reported on a Likert scale: 1 (Not involved), 2 (Involved), 3 (Leadership position), and 4 (Not available at my school). The value for Cronbach’s Alpha for grouped survey items was $\alpha = .749$.

Alcohol Use

Participants’ alcohol consumption was measured by survey questions that asked students about their use within the past 30 days at the time they participated in the study. Participants were asked, “Which statement best describes your drinking history?” Responses were reported on a Likert scale: 1 (Never had a drink), 2 (I started drinking before college), and 3 (I started drinking in college). Participants were also asked, “How many alcoholic drinks do you typically consume in a week?” Responses were recorded on a scale ranging from 1 (none) to 7 (16+). Participants were also asked, “In the past 30 days, how many days do you estimate that you used alcohol (beer, wine, liquor)?” Responses were recorded on a Likert scale ranging from 1 (none) to 7 (all 30). The value for Cronbach’s Alpha for survey items was $\alpha = .673$.

Drinking Behaviors

Drinking behaviors was measured by a combination of two items from the survey. Participants were asked, “When you ‘party, socialize, go out,’ how many alcoholic drinks do you usually have?” Responses were recorded on a Likert scale ranging from 1 (none) to 7 (11 or more). Participants were also asked, “How many nights per week do you usually ‘party,
“socialize, go out’?” Responses were also recorded on a Likert scale ranging from 1 (none) to 6 (5 or more). The value for Cronbach’s Alpha for items was $\alpha = .602$.

**Negative Consequences of Drinking Behaviors**

Negative Consequences was measured with a combination of 25 items from the survey. The negative consequences of alcohol use ranged from short-term to long-term outcomes, which included physical injury and social conflict among peers. Participants were asked, “During this school year, have you had a negative experience due to YOUR drinking or other drug use?” (emphasis in original survey). Responses were also recorded on a Likert scale: 1 (N/A, I don’t use drink or drugs), 2 (Possible), and 3 (Yes). Examples of negative consequences included: “had a hangover,” “got into an argument or fight,” “got nauseated or vomited,” “been criticized by someone I know,” “thought I might have a drinking or drug problem,” “hurt or injured another person,” “tried unsuccessfully to stop using,” and “been transported to the hospital.” Participants indicated the frequency of each negative consequence and responses were scored on a Likert scale ranging from 1 (none) to 6 (8 or more times). Responses were totaled to yield a negative consequences sum score and the value for Cronbach’s Alpha was $\alpha = .738$.

**Protective Behavioral Strategies**

The use of PBS was assessed by 13 items that asked, “During this school year when you socialized/went out/ partyed how often did you …?” Items included: “choose not to drink,” “alternate non-alcoholic and alcoholic beverages,” “determine in advance not to exceed a set number of drinks,” “‘party’ with people you know,” “watch out for friends who may have had too much alcohol,” “used a designated driver,” “act as a designated driver,” “eat a full meal before drinking,” “keep track of how many drinks you are having,” “pace your drinks to one or fewer per hour,” “abstained due to warning for a prescribed medication,” and “avoided drinking
games.” Responses were scored on a Likert scale ranging from 1 (never) to 5 (always); the participants also had the choice on the same Likert scale to select 6 (NA, don’t drink). A total PBS score was calculated by summing participants' responses across all items and the value for Cronbach’s Alpha was $\alpha = .775$.

**Procedure**

Inferential statistics were used to explore the association between protective drinking behaviors, alcohol consumption, and negative consequences among college-age students based on their participation (or not) in athletics. Findings were analyzed using SPSS software (ver. 21) through descriptive methods, Pearson correlation, and ANOVA. A final ANOVA was used to test for interaction effects of Level of Sport Participation as a moderator on PBS use and its effect on Negative Consequences of alcohol consumption.
CHAPTER IV: RESULTS

Relationship Between Alcohol Consumption and Negative Consequences

A frequency table was created to explore the number of alcoholic drinks consumed per week. Based on the survey items from a Likert scale (17a), “How many alcoholic drinks do you consume in a week?” students could respond with “none,” “1–2,” “3–4,” “5–7,” “8–10,” “11–15,” or “16 +” drinks consumed, on average, per week.

A series of Pearson Product Moment two-tailed correlations was performed to determine the association of alcohol consumed on average per week with levels of negative consequences experienced due to alcohol consumption. As expected, there was a positive correlation between level of negative consequences and number of drinks consumed, $r(2506) = .438$, $p = .001$. Approximately 19% of the variance in negative consequences was explained by level of alcohol consumption. Not surprisingly, the more drinks consumed per week, the higher the number of negative consequences.

Level of Sport Participation

A frequency table was created to compare three student groups: two groups that participated in athletics (intercollegiate or intramural/club sports) and one group of students who did not participate in sports ($2 = $ participant in intercollegiate sport, $1 = $ participant in intramural/club sport, $0 = $ non-participant). Of the 2,847 general college student responses, 56.5% reported that they identified as non-participants in sports ($N = 1,519$), 27.5% reported that they identify as intramural/club sport athletes ($N = 740$), and 16.0% reported that they identify as intercollegiate athletes ($N = 431$). Interestingly, there was an overlap between the two groups of athletes in student responses. That is, intercollegiate athletes sometimes also participated in club sports and reported belonging to both athlete groups. Of the 431 intercollegiate athletes in group
2,223 students reported that they also play in a club sport. The students whose participation overlapped in both groups were placed in the intercollegiate athlete group because intercollegiate sports are more demanding of time, attention, and commitment compared to club sports (Barry et al., 2015). ANOVA (reported below) was performed to compare the three student groups (non-participant, intramural/club athlete, and intercollegiate athlete) with respect to their overall alcohol consumption, PBS use, and negative consequences associated with alcohol consumption.

**Relationship Between Alcohol Consumption and Level of Sport Participation**

An ANOVA was performed to compare students who did not participate in athletic sports (non-participants; N = 1,393), intramural/club sport athletes (N = 674), and intercollegiate athletes (N = 390) on their level of alcohol consumption. Bonferroni post hoc tests were performed to explore group differences. This analysis excluded students who reported that they did not consume alcohol.

There was a **significant** main effect of level of sport participation on the level of alcoholic drinks consumed per week, $F(2, 2454) = 91.3, p = .001$. Post hoc comparisons using Bonferroni tests indicated that level of alcoholic drinks consumed per week for non-participants ($M = 0.98, SD = 0.96$) was less when compared to both club athletes ($M = 1.58, SD = 1.06, p = .001$) and intercollegiate athletes ($M = 1.40, SD = 1.06, p = .001$). The level of alcoholic drinks consumed per week was also **significant** for differences between club athletes ($M = 1.58, SD = 1.06$) and intercollegiate athletes ($M = 1.40, SD = 1.06, p = .015$), with club athletes reporting the highest levels of consumption.

**Relationship Between Level of Sport Participation and Overall PBS Use**

To address Hypothesis 1, that intercollegiate athletes would report higher levels of PBS use than club sport athletes and non-participating students, an ANOVA test was performed to
compare non-participants \((N = 1,393)\), intramural/club sport athletes \((N = 674)\), and intercollegiate athletes \((N = 390)\) on their level of overall PBS use. The overall effect of level of sport participation on PBS use was significant \(F(2, 2255) = 13.9, p < .001\). Post hoc comparisons using a Bonferroni test indicated that level of total PBS use for non-participants \((M = 33.5, SD = 18.0)\) was less when compared to both club athletes \((M = 36.9, SD = 12.9, p < .001)\) and intercollegiate athletes \((M = 37.5, SD = 14.1, p < .001)\). However, the level of overall PBS use was not significant for differences between club athletes and intercollegiate athletes. In other words, level of PBS use was significant overall when comparing both sport groups to the group of students that did not participate in sports, but not between the two athlete groups.

**Relationship Between Level of Sport Participation and Specific Subtype PBS Use**

ANOVA was used to address Hypothesis 2 to compare student non-participants \((N = 1,393)\), intramural/club sport athletes \((N = 674)\), and intercollegiate athletes \((N = 390)\) on their level of specific subtype PBS use. Hypothesis 2 predicted that club and intramural sport student-athletes would report lower levels of pro-social skill PBS use than their intercollegiate athlete peers. Due to a lack of prior research on limit setting, a hypothesis was not formulated around limit setting as a specific subtype for PBS. Results of the current study suggested that the relationships between non-participating athletes and the two different groups of participating athletes (club sport and intercollegiate students) had more nuanced differences in regards to specific subtype PBS use for both pro-social skills and limit setting, as described in further detail below.

**Pro-Social Skills as a Specific Subtype of PBS Use**

The effect of level of sport participation on pro-social skills PBS use was significant \(F(2, 2325) = 24.6, p < .001\). Post hoc comparisons using Bonferroni tests indicated that level of
pro-social skills PBS use for non-participants ($M = 10.8, SD = 6.57$) was higher when compared to both club athletes ($M = 9.12, SD = 4.63, p < .001$) and intercollegiate athletes ($M = 8.98, SD = 4.93, p < .001$). However, the level of pro-social skills PBS use was not different between club athletes and intercollegiate athletes.

**Limit Setting as a Specific Subtype of PBS Use**

The effect of level of sport participation on Limit Setting PBS use was **significant** $F(2, 2316) = 3.32, p = .036$. Post hoc comparisons using Bonferroni tests indicated that level of Limit Setting PBS use for non-participants ($M = 17.3, SD = 8.01$) was marginally higher than club athletes ($M = 16.7, SD = 6.09, p = .191$). Limit Setting PBS use for non-participants ($M = 17.3, SD = 8.01$) was also marginally higher when compared to intercollegiate athletes ($M = 16.4, SD = 6.56, p = .082$). However, the level of Limit Setting PBS use was **not significant** for differences when comparing club athletes to intercollegiate athletes.

**Level of Sport Participation and Negative Consequences of Alcohol Consumption**

Results indicated that the effect of level of sport participation on overall rate of negative consequences with alcohol consumption was **significant** $F(2, 1363) = 4.05, p = .018$. Post hoc comparisons using Bonferroni test indicated that level of overall rate of negative consequences use for intercollegiate athletes was **not significant** for differences when compared to club athletes. However, the level of overall rate of negative consequences use for intercollegiate athletes ($M = 35.3, SD = 13.2$) was marginally greater than for non-participants ($M = 33.6, SD = 9.26, p = .073$). The level of overall rate of negative consequences was also higher for club athletes ($M = 35.1, SD = 9.88$) than non-participants ($M = 33.6, SD = 9.26, p = .055$).

**Overall PBS Use and Negative Consequences**

A Pearson correlation was performed to compare overall PBS use and levels of negative
consequences experienced due to alcohol consumption. There was a negative correlation between overall PBS use and reported levels of negative consequences due to alcohol consumption, $r(1323) = -.283, p < .001$. In other words, there were fewer negative consequences for students who reported higher rates of PBS use overall, as would be expected.

**Level of Sport Participation Moderates PBS Use Effects on Negative Consequences**

An ANOVA was performed to see if level of sport participation moderated the relationship between PBS use and negative consequences of alcohol consumption. Results indicated that level of sport participation did moderate the relationship between PBS use and negative consequences of alcohol consumption $F(2, 78) = 2.59, p < .001$. While the level of negative consequences for alcohol consumption was similar for club and sport athletes, the level of PBS use differed depending on which group the student identified with in terms of sport participation (see Figure 5.1). In order words, level of sport participation functioned as a potential antecedent for PBS use, which impacted level of negative consequences for alcohol consumption. The level of PBS use was similar between non-participants and intercollegiate athlete groups, as was the level of negative consequences for both groups. Club sport athletes reported the highest level of negative consequences for alcohol consumption and the lowest rates of overall PBS use and presented as the most at risk group with respect to their drinking behavior.

These findings imply that the effectiveness of PBS use to lessen the level of negative consequences of alcohol consumption depended on level of sport participation. Thus, the level of sport participation between club and sport athletes impacted the relationship between PBS use and negative consequences for alcohol consumption. In other words, the relationship between PBS use and negative consequences was different for students who participated in club sports,
intercollegiate athletes, and for students who did not participate in athletics as well. Overall, PBS use had the best impact on circumstances where intercollegiate athletes reported fewer episodes of drinking and experienced lower negative consequences.
CHAPTER V: DISCUSSION

The purpose of this cross-sectional study was to explore if college athletes were vulnerable to the negative impact of alcohol consumption as much as students who did not participate in sports. Results indicated that the effect of sport participation (intercollegiate or intramural) on the level of alcoholic drinks consumed per week was different between non-participating students, club athletes, and intercollegiate athletes. Club sport athletes reported the highest level of alcohol consumption and the most accrued negative consequences due to drinking. Previous research studies suggest that heavy alcohol consumption is an antecedent to more negative consequences among both non-participating students and student-athletes (Noble et al., 2013). Research implications are best understood when contextualized with theories from developmental psychology. When applying harm-reduction principles to treat alcohol misuse on college campuses, counseling centers and athletic coaches would benefit from understanding the underlying mechanisms of late adolescent and young adult behavior.

Student-Athletes and Overall PBS Use

Contrary to prediction, the current study found the intercollegiate athletes were less likely to use PBS than non-athletes, but did not differ from club sports participants. However, non-participants reported higher levels of PBS use overall than both club sport and intercollegiate athletes. Whether or not any of these athletes were currently “in season” for their sport while completing the survey could not be determined from the data. Furthermore, no information was gathered on which sports student-athletes engaged in—it is possible that norms around drinking vary by sport. Student-athletes across club and intercollegiate levels for different sport types, such as hockey and rowing, may have different drinking patterns shaped by their respective sport type’s organized group behavior and social norms.
Athletes and Specific Subtype PBS Use

Contrary to prediction, non-participants used more PBS overall and reported higher levels of both pro-social skills and limit setting than intercollegiate and club sport athletes. Individual specific subtypes of PBS matter and may even function as antecedents for each other, reinforcing cumulative PBS use in the long-term (Andes et al., 2012). For example, watching out for a friend at a party, an example of a pro-social skill, can help an individual student with limit setting when it comes to their own alcohol consumption at the same social gathering.

Athletic Participation and Negative Consequences of Alcohol Consumption

Consistent with the study’s prediction, level of overall rate of negative consequences for non-participants was marginally significant for differences when compared to both club athletes and intercollegiate sport athletes. The level of negative consequences was not different between club sport and intercollegiate athletes. Thus, it appears that all students, regardless of athletic status, experience roughly equivalent levels of negative consequences secondary to their alcohol consumption.

Athletic Participation Moderates PBS Use Effects on Negative Consequences

Finally, as predicted, it was found that level of sport participation moderated the relationship between PBS use and negative consequences of alcohol consumption. There were fewer negative consequences for students who reported higher rates of PBS use overall, as would be expected. In addition, results showed that the effectiveness of PBS use depended on level of sport participation. Non-participants reported a lower level of negative consequences for the same level of PBS use level as intercollegiate athletes. Intercollegiate athletes reported higher PBS use than club athletes. Previous research studies suggest PBS use functions as an antecedent for minimizing drinking behaviors, consuming less alcohol, and lessening the overall number of
negative consequences accrued as a result (Noble et al., 2013). Previous research also suggests athletes benefit from education on PBS use and how negative consequences from alcohol consumption specifically impact athletic performance (Zamboanga et al., 2014).

Clinical Implications

Implications from the study’s findings relate to the developmental needs of young adults across multiple domains, including but not limited to their physical, emotional, and social health. Results from this study suggest that athletes adhering to higher expectations for physical fitness and non-athletes not held to the same standards benefit all the same from utilizing PBS. College Counseling Centers and Medical/Nursing staff can collaborate when screening for alcohol misuse to further promote the importance of treating student’s mental health and physical health needs with the same weight and level of importance (LaBrie et al., 2010).

Students who suffer from depression during college will likely use less PBS overall if their symptoms continue to interfere with their social and emotional functioning and remain untreated (Bravo et al., 2016). To have the most impact, student activities offices and athletics departments can collaborate to enhance social connectedness to provide a more pro-social environment on campus that challenges preconceived ideas students have about heavy drinking and socializing (LaBrie et al., 2010). Overall, it would appear that there is still room for substantial improvement in treatment, prevention, and intervention for alcohol counseling directed toward athletes when compared to non-athletes (Barry et al., 2015). College counseling staff, athletics departments, and student health centers would benefit from collaborating to screen student-athletes for behaviors that impact their overall emotional, social, and physical health. Clinicians are in a unique position where they can utilize their knowledge in developmental
psychology and health behavior change to enhance motivation among students across all levels of sport participation.

Club sport athletes and intercollegiate athletes might benefit from the same types of interventions around alcohol counseling as their non-participant peers, and yet remain vulnerable for not utilizing enough PBS. Psychologists and coaches can combine their efforts in identifying more ways to help student-athletes increase their PBS use with data-driven results informed by developmental psychology (Jensen & Nutt, 2015). Furthermore, psychologists may use education to teach athletic coaches about theories of development that support their efforts in teaching PBS to student-athletes, such as reviewing “myths and facts” about development and the brain (Siegel, 2015, p. 313). Many athletic coaches may assume that college students’ brains are fully developed after high school, when in fact they still need more scaffolding when it comes to developing their capacity to plan ahead and weigh the pros and cons of decisions that have long-term consequences during young adulthood.

Implications and clinical applications from this study suggest that negative consequences from alcohol consumption during college could be addressed by enlisting groups of non-participant, club sport participant, and intercollegiate athletes to teach and learn from each other. Coaches and counseling centers take for granted that during this stage in a college’s student development their capacity to have concern for others begins to emerge out of self-awareness from realizing that they are as vulnerable as everyone else in their cohort (Marino & Fromme, 2018).

According to Arnett’s theory on emerging adulthood, college students may also experience a stage in development not previously studied until recently in psychology (Lyons et al., 2021). Implications based on Arnett’s ideas about emerging adulthood are that family
members could also still play an important role in either enhancing or inhibiting specific subtype and overall PBS use among student-athletes who are still influenced by their families and remain dependent on family support for their efforts in achievement in education and sports during college.

Alternatively, there may be a threshold to how much athletic sport participation may help student-athletes with their relationship to PBS use. According to social cognition theory, cognitive dissonance, the level of consistency between one’s beliefs and actions, is another moderator that impacts PBS use for at risk drinking among athletes (Hamilton et al., 2016). College students may relate to a “work hard / play hard” culture on college campuses that promotes collective partying after long periods of work in either academics or athletics (Meier et al., 2020, p. 330). Student-athletes are likely to experience cognitive dissonance with group conformity around partying during college. However, tailored interventions to help them diversify and use multiple specific subtypes of PBS use can help them achieve as high a level of overall PBS use as their non-participant peers (Pearson et al., 2017).

According to developmental neuroscience, college students are still developing their brains and their capacity to understand the negative consequences of their actions, while also planning ahead in their decision-making (Alcock et al., 2018; Leasure & Neighbors, 2014). Intercollegiate athletes may be sensitive to their own cognitive dissonance when their at-risk drinking behaviors are inconsistent with individual and group attitudes toward maintaining a healthy lifestyle (Hamilton et al., 2016). In other words, intercollegiate athletes may be more sensitive to noticing discrepancies between ideal health behaviors promoted by PBS use and the negative consequences of alcohol consumption than by not living up to group expectations among their peers when partying during college.
However, no student, regardless of their level of athletic involvement in college, exists in isolation from the moderating effects of factors from their relationships and environment. According to the Bronfenbrenner ecological model of development, student level of sport participation is influenced by multiple systems, such as family relationships, school environment, and the historical time period of their lives (Bolter et al., 2018). In the bigger picture, there are ecological factors underlying the cognitive dissonance that student-athletes experience when they are not consistent with their attitudes and beliefs around their physical and social well-being. Multiple moderators, including level of sport participation, directly impact level of PBS use and can facilitate discussion about intervention and treatment practices.

Limitations

Limitations for this study include the possibility that findings that reject the null hypothesis are really a random occurrence or a false positive result, also known as Type I error. The possibility of Type I error is increased because the study ran multiple comparisons and included a large sample size (Pearson et al., 2017). In addition, the survey relied on self-report measures from college students, which may not be fully accurate due to social desirability bias. Furthermore, the survey collected responses during the spring semester; students’ participation in a sport on or off-season was not accounted for in the study design. Also, sport type was not factored into the survey items. Students were not asked to specify if the sport they participated in was oriented around individual performance, such as track and field, or around team performance, such as soccer or field hockey. To elaborate, sports that emphasize group achievement, such as basketball, may potentially promote the use of PBS differently than sports that emphasize individual achievement, such as tennis. Different sports may promote cross-training where student-athletes are expected to continue using PBS and other health behaviors
even off-season. It is also possible that different sports may have unique subcultures where group members of a team continue to work together after to stay healthy and use more PBS during the off season, which would impact results if the survey findings were collected during different times of the year.

Other limitations from this cross-sectional study include not having enough representation of different student-athletes in terms of cultural identity, race, ethnicity, and sexual orientation to further discuss the results’ generalizability to diverse populations. While overall there were more women than men that answered the entire college student survey, there was less representation of women who identified as athletes across different levels of sport participation, and thus there was a limit to what comparisons could be made between groups of intercollegiate and club sport athletes who also identified as women. Demographically, the student responses were collected at colleges and universities in New Hampshire and the majority of students that answered the survey identified as white, straight, and cisgender in both athlete groups and in the non-participant group.

Future Directions

Future directions include refining survey design for items that delve more into considerations around sport type, seasons when specific sport types were played during the year, and questions around identity that draw more results on diversity in the student-athlete and college student population. Ethnic, gender, and seasonal differences would be important to consider when comparing intercollegiate, club sport, and non-participating athletes (Longo et al., 2018). Level of sport participation may have interaction effects on level of PBS use among intercollegiate and club sport athletes who identify with underrepresented cultural minority groups.
For example, future surveys could be sent to colleges and universities that include more students of color, such as Historically Black Colleges and Universities (HBCUs). Alternatively, future moderation effect studies could ask questions in the survey about drinking motives and pre-college experiences about coping with minority stress and racism among student-athletes that are underrepresented in the college student population overall (Madson et al., 2015). It would also be important to consider if results based on gender differences have different outcomes (Kenney et al., 2014). Not enough women were represented in the category of club sport participation to meaningfully compare gender differences between club athletes and intercollegiate athlete drinking behavior and PBS use. Furthermore, women who participate in athletics may utilize PBS differently when compared to women who do not participate in sports. In the future, the survey could be sent to women’s colleges and universities to gather more findings for analysis on gender as a moderator for PBS use among student-athletes and non-athletes.

Finally, student-athletes who identify with the LGBTQ+ community may have different responses in the survey that reflect important findings for college counseling centers and athletic coaches. There were not enough students who identified as part of an LGBTQ+ group to explore this question more deeply in the current study. There are many barriers that LGBTQ+ students face, including stigma, cultural insensitivity, and safety, that make it difficult for them to have access to recommendations that support physical, social, and emotional health initiatives on college campuses (Ebersole et al., 2015). For example, student-athletes who identify as transgender may join club sports and not participate in intercollegiate sports due to concerns for safety and discrimination around both social experiences of minority stress and stigma from having to be further evaluated for their physical body during rigorous sport recruitment strategies...
(Walen et al., 2020). College counseling centers and athletic coaches would need to improve their outreach efforts and educational programming around alcohol consumption in ways that are culturally sensitive and responsive to student-athletes who face barriers to alcohol counseling due to larger social stigmas that they are facing as cultural minority students overall.

**Conclusion**

Overall, the more protective behavioral strategies used by students, athlete and non-participating alike, the less they consumed alcohol and accrued negative consequences from their drinking behaviors. Yet, the impact PBS use had on lessening the likelihood of those negative consequences was not the whole story. Student-athletes and their relationship to alcohol consumption were not only impacted by their PBS use but also by the level of involvement they invested in sports participation as well. Level of sport participation and PBS use are related in terms of promoting health behavior change. Both athletic participation and protective behavioral strategies are consistent with goals that target physical, social, and emotional well-being. The results of the study have implications for how athletic coaches and college counseling centers can use education to increase the effectiveness of students’ attempts to familiarize themselves with and use PBS overall. The effectiveness of individual PBS items may vary by different degrees, and health psychologists are in a position to explore how counseling centers can provide harm-reduction approaches in addition to PBS more successfully. Student-athletes who represent different sport types, attend alcohol counseling off-season from their chosen sport, or identify with underrepresented cultural and gender minority groups would benefit from further research on PBS. Ultimately, a robust developmental approach considers the stages of development at the biological, psychological, and social level that impact how student-athletes learn to protect themselves from the negative consequences of at-risk alcohol consumption. Psychologists play a
vital role in building up the trajectory of how student-athletes benefit from preventative health education during one of the most important times of their lives.

**Figure 5.1**

*Graph for Level of Sport Participation Moderates PBS Use on Negative Consequences of Alcohol Consumption*
References


