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# An Examination of Student-Athlete Stress and Risky Alcohol Use

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# AN EXAMINATION OF STUDENT-ATHLETE STRESS AND RISKY ALCOHOL USE

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ABSTRACT

AN EXAMINATION OF STUDENT-ATHLETE STRESS AND RISKY ALCOHOL USE

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Student-athletes are a sub-population of college students that are likely to engage in binge drinking behavior and experience the negative consequences associated with alcohol use (Barry, Howell, Riplinger, & Piazza-Gardner, 2015; Nelson & Wechsler, 2001). In addition, participating in intercollegiate athletics comes with unique stressors not faced by non-athlete students, such as balancing academic responsibilities with athletic obligations, managing the strain associated with playing competitive sport, and navigating complex interpersonal relationships with coaches, teammates, and peers (Parham, 1993; Watson, 2002). However, there appears to be little research examining the relationship between alcohol risk and the specific stressors associated with being a student-athlete (Yusko, Buckman, White, & Pandina, 2008).

Therefore, the aim of this study was to examine the relationship between stress and alcohol use outcomes in 512 collegiate student-athletes using Structural Equation Modeling (SEM). Prior to conducting the SEM analyses, a measure of student-athlete stress was developed and psychometrically evaluated using Exploratory Factor Analysis (EFA). Seventy-two items were

generated for this measure (Student-Athlete Stress Scale; SASS) based on a review of the literature and relevant clinical experiences with student-athletes. Two SEM models were tested. In the first model (Model A), it was hypothesized that a latent SASS variable would be related to risky alcohol use behavior, as measured by frequency of alcohol use and binge drinking. Similarly, in the second model (Model B), it was hypothesized that the same latent SASS variable would be related to greater endorsement of the negative consequences associated with alcohol use. In both models, the role of social norms as a moderator variable was examined. Results of the EFA revealed eight interpretable factors of the SASS (Balancing Responsibilities, Athlete Identity, Sport Injury, Coach-Athlete Relationships, Teammate-Athlete Relationships, Sport Motivation, Personal Finances, Academic Performance). Results of the SEM analyses reveled that Model A explained 43% of the variance in risky alcohol use. Similarly, Model B explained 27% of the variance. In Model A social norms and the interaction between student-athlete stress and social norms were significant predictors of risky alcohol use. In Model B, student-athlete stress, social norms, and the interaction between these two variables were all significant predictors of the negative consequences associated with alcohol use. However, inclusion of the interaction between student-athlete stress and social norms did not significantly improve model fit in either model.

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# CHAPTER 1

## INTRODUCTION

Alcohol use is a normative experience in college students, as 62.6% of all college students report recent alcohol use (American College Health Association, 2015). College students are prone to binge drink (commonly described as having four or more drinks for women and five or more for men) and are likely to experience a myriad of negative consequences associated with alcohol use, including academic impairment, risky sexual behavior, interpersonal conflict, and physical injury (Merrill & Carey, 2016). Compared to the general student population, student-athletes are a specific subpopulation likely to engage in risky alcohol use (Barry, Howell, Riplinger, & Piazza-Gardner, 2015; Ford, 2007; Hildebrand, Johnson, & Bogle, 2001; Leichliter, Meilman, Presley, & Cashin, 1998; Marzell, Morrison, Mair, Moynihan, & Gruenewald, 2015; Nelson & Wechsler, 2001; Turrisi, Mastroleo, Mallett, Larimer, & Kilmer, 2007, Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997). Of course, alcohol use can have deleterious effects on sport performance (Dziedzicki, Eberman, Kahanov, Mata, Niemann, & Adams, 2013; O'Brien & Lyons, 1993) and can lead to injury (Brenner, Metz, Entriken, & Brenner, 2014). Student-athletes are also at greater risk to experience general problems associated with alcohol use, such as academic difficulties, interpersonal conflict, physical concerns, and engaging in dangerous behavior, like drunk driving (Cadigan, Littlefield, Martens, & Sher, 2013; Doumas, Turrisi, Coll, & Haralson, 2007; Leichliter et al., 1998; Nelson & Wechsler, 2001; Weiss, 2010).

The unique stressors associated with the student-athlete lifestyle may facilitate high levels of binge drinking and negative alcohol-related consequences. Stress is positively associated with alcohol use and alcohol-related problems in the general student population

(Bodenlos, Noonan, & Wells, 2013; Corbin, Farmer, & Nolen-Hoeksema, 2013; Metzger et al., 2017), and previous research supports that student-athletes utilize alcohol as way to cope with problems (Martens, Watson, Royland, & Beck, 2005). When student-athletes do drink to cope with sport-related stress, they experience higher instances of alcohol-related problems (Doumas & Midgett, 2015; Martens, Cox, & Beck, 2003; Wahesh, Milroy, Lewis, Orsini, & Wyrick, 2013). Furthermore, student-athletes sport-related motivations for using alcohol are highest during competition season, which is presumably when the stress associated with sport participation is greatest (Martens & Martin, 2010). However, review of the literature reveals an apparent dearth of research that directly examines the relationship between the stress unique to sport participation and alcohol use outcomes (Yusko, Buckman, White, & Pandina, 2008). It is known that student-athletes experience challenges shared by non-athlete college students, while balancing greater restrictions on social engagement, pressures associated with success and failure in sport, rigorous training schedules, sports injuries, and travel to and from competitions (Humphrey, Yow, & Bowden, 2000; Parham, 1993), but the domains in which student-athletes perceive stress are not well understood. This suggests a need for a novel assessment tool to better understand the student-athlete experience.

While it makes conceptual sense that student-athlete stress contributes to binge drinking and negative alcohol-related consequences in student-athletes, additional factors exist that are known to predict alcohol outcomes. For instance, perceptions of the extent to which other individuals drink alcohol (descriptive social norms) and the perceptions of whether other individuals approve of drinking (injunctive social norms) predict alcohol use in student-athletes (Hummer, LaBrie, & Lac, 2009; Seitz, Wyrick, Rullison, Strack, & Fearnow-Kenney, 2014). From a social-cognitive perspective, social influences have an interactive relationship with

predictors of alcohol use (Maisto, Carey, & Bradizza, 1999). Thus, it is expected that social norms will have a similar relationship to student-athlete stress.

Therefore, the purpose of the present study was to examine the relationship between student-athlete specific stress and alcohol use outcomes in a sample of North American intercollegiate athletes. First, a new measure was developed based on a review of the literature and clinical knowledge of the student-athlete experience. Exploratory factor analysis was used to investigate the dimensions of student-athlete stress that exist within this new measure. Second, the relationship between the newly established dimensions of student-athlete stress and alcohol use outcomes were examined using structural equation modeling (SEM). Two SEM models were analyzed. Model A tested the relationship between student-athlete stress and alcohol use behavior (as measured by frequency of alcohol use and frequency of binge drinking). Model B tested the relationship between student-athlete stress and negative alcohol-related consequences. Furthermore, the potential interaction between social norms and student-athlete stress in predicting the respective alcohol use outcome was tested in both Model A and Model B.

**Hypotheses:**

1. It is hypothesized that the new measure of student-athlete stress will demonstrate good reliability for the overall scale and that the items generated for the new measure will contribute to the overall internal consistency of the measure. Furthermore, it is hypothesized that the results of exploratory factor analysis will yield multiple factors that are reliable and are consistent with the constructs of academic distress, teammate relationships, coach relationships, general health, social distress, sport demands, injury, role conflict, and financial concerns,

2. It is hypothesized that greater levels of student-athlete stress will be statistically related to greater levels of risky alcohol use as measured by the frequency of alcohol use and the frequency of binge drinking. Furthermore, it is hypothesized that higher injunctive and descriptive norms of peer alcohol use will strengthen the association between student-athlete stress and risky alcohol use.
3. It is hypothesized that greater levels of student-athlete stress will be statistically related to greater levels of negative alcohol-related consequences. Furthermore, it is hypothesized that higher injunctive and descriptive norms of peer alcohol use will strengthen the association between student-athlete stress and negative alcohol-related consequences.

# CHAPTER 2

# LITERATURE REVIEW

## Student-athlete Alcohol Use

Student-athletes are a unique subpopulation on college campuses where alcohol use is especially prevalent. According to the National Collegiate Athletic Association (NCAA; Rexroat, 2014), 80% of student-athletes reported using alcohol over a one-year period. In the same survey, 44% of males and 33% of females reported engaging in binge drinking behavior. Not only do student-athletes engage in binge drinking, but they are more likely to binge drink than their non-athlete counterparts. In a series of large scale, epidemiological studies that directly compared student-athletes with non-athletes, student-athletes were consistently found to have higher rates of binge drinking behavior (Barry et al., 2015; Leichliter et al., 1998; Nelson & Wechsler, 2001; Wechsler et al., 1997). Additionally, Ford (2007) found that student-athletes were significantly more likely to binge drink than non-athletes, even when controlling for race, gender, age, marital status, Greek affiliation, academic performance, and high school drinking behavior. Student-athletes are also more likely to consume larger quantities of alcohol (Doumas et al., 2007; Frye, Allen, & Drinnon, 2010; Hildebrand, et al., 2001; Marzell et al., 2015; Turrisi et al., 2007) and are more likely to drink to intoxication (Doumas et al., 2007; Frye et al., 2010; Turrisi et al., 2007).

Not only do student-athletes engage in risky drinking behavior, they experience more negative consequences associated with alcohol use than non-athletes. This includes an increased likelihood to experience interpersonal problems (Doumas et al., 2007; Leichliter et al., 1998; Nelson &Wechsler, 2001), have a hangover (Doumas et al., 2007; Leichliter et al., 1998), miss class (Doumas et al., 2007; Nelson & Wechsler, 2001), drive a car while under the influence

(Doumas et al., 2007; Hildebrand et al., 2001; Leichliter et al., 1998, Nelson & Wechsler, 2001), engage in risky sexual behavior (Barry et al., 2015; Hildebrand et al., 2001; Nelson & Wechsler, 2001), and seriously consider suicide (Barry et al., 2015). The higher rates of binge drinking and negative alcohol-related consequences among student-athletes occur despite student-athletes having increased exposure and access to prevention resources aimed at educating individuals about the risk and consequences associated with alcohol use (Nelson & Wechsler; 2001).

Cadigan et al. (2013) conducted a longitudinal study, examining the alcohol use behaviors of college students throughout their college career. The sample of 1,590 students, including individuals who never participated in intercollegiate athletics (N = 1,252), individuals who were not student-athletes as freshmen, but were student-athletes as seniors (N = 70), individuals who were student-athletes as freshmen, but not as seniors (N = 195), and individuals who were student-athletes at both time-points (N = 73). Individuals who participated in athletics at any time during college displayed significantly greater increases over time of binge drinking, frequency of drinking to intoxication, and alcohol-related problems. In comparison to individuals who never participated in athletics, students who remained athletes throughout their college career evidenced the highest risk for problem drinking.

There is empirical support suggesting alcohol use is perceived as an accepted practice within the culture of sport and that these perceptions are related to the alcohol use of student-athletes (Ford, 2007). Turrsi et al. (2007) found that student-athletes are more likely to engage in risky alcohol use behavior than non-athlete students and this discrepancy was explained by differences in perceptions of peer group alcohol use. In comparison to non-athletes, student-athletes are more likely to perceive that their peers engaged in frequent and heavy drinking (descriptive norms) and that their peers were more approving of risky alcohol use (injunctive

norms). Similarly, Yusko et al. (2008) found that in a sample of 896 college students (392 student-athletes), student-athletes were more likely to overestimate the drinking behavior of their peer group compared to non-athletes.

Social norms play an important role in understanding student-athlete alcohol use, as both descriptive and injunctive drinking norms predict personal alcohol use in student-athletes (Hummer et al., 2009; Olthuis, Zamboanga, Martens, & Ham, 2011; Seitz et al., 2014). While Thombs (2000) found that drinking behavior in student-athletes was influenced equally by the perceptions of teammate alcohol use and the perceptions of general student alcohol use, there is growing evidence that the proximity of the peer reference group (e.g., teammates, friends) influences alcohol use. Lewis and Paladino (2008) surveyed 211 NCAA Division I student-athletes and found that the perceptions of drinking behavior for other student-athletes, particularly teammates, was most influential in predicting student-athlete alcohol use. In a sample of 2,659 NCAAA Division I student-athletes, Lewis, Milroy, Wyrick, Hebard, & Lamberson (2017) found that the perceptions of teammate and closest friends' binge drinking behavior were significant predictors of student-athlete binge drinking. Similarly, Massengale, Ma, Rulison, Milroy, and Wyrick (2017) found that in a sample of 2,622 NCAA first year student-athletes, both descriptive and injunctive norms for friends on their sport team and close friends were significant predictors of current alcohol use.

Taken together, the extant literature examining student-athlete alcohol use provides strong evidence that student-athletes are a population at risk for binge drinking (Barry et al., 2015; Ford, 2007; Hildebrand et al., 2001; Leichliter et al., 1998; Marzell et al., 2015; Nelson & Wechsler, 2001; Turrisi et al., 2007, Wechsler et al., 1997) and negative alcohol-related consequences (Barry et al., 2015; Cadigan et al., 2013; Doumas et al., 2007; Leichliter et al.,

1998; Nelson & Wechsler, 2001). The elevated risk displayed by student-athletes suggests the need for further examination of the contributing factors for alcohol use behavior in this population. Furthermore, the influential role that social norms play in predicting student-athlete alcohol use (Hummer et al., 2009; Olthuis et al., 2011; Seitz et al., 2014) suggests a need for the examination of potential interactive effects between social norms and other predictors of student-athlete alcohol use.

**Student Athlete Stress**

The demands of participating in intercollegiate athletics can be a source of stress for student-athletes above and beyond the typical stressors of being a college student (Humphrey et al., 2000). For example, intercollegiate athletics require a significant time commitment. Potuto and O'Hanlon (2007) found that over 80% of NCAA athletes report spending more than 10 hours per week in practice for their sport, whereas Chen, Mason, Middelton, and Salazar (2013) reported that the average student-athlete spends more than 23 hours per week participating in athletics, which is higher than NCAA regulations. Additionally, student-athletes must balance both athletic and academic obligations, manage the physical and emotional strain associated with playing competitive sport, and navigate complex interpersonal relationships with coaches, teammates, and peers (Parham, 1993; Watson, 2002). Hwang and Choi (2016) found that academics, physical health, and social environment were the primary sources of stress for NCAA student-athletes and that stress from academics can be amplified by sport-specific factors, such as coach relationships and team climate. Student-athletes are also more likely to experience conflicts with the family of significant others, to have high amounts of responsibilities, to get less sleep, and to have high demands from extracurricular activities (Wilson & Pritchard, 2005).

Similarly, Kimball and Freysinger (2003) conducted an interpretive study exploring how collegiate sport participation acts as a source of stress and revealed common themes amongst participants. Seven male and seven female student-athletes participated in a semi-structured interview detailing the participant's day-to-day experiences as well as how they experienced stress. Consistent themes of stress related to lack of social support, managing the expectations of self and others, and experiencing racial and gender stereotypes emerged. However, these same student-athletes reported that participating in a sport provided a sense of autonomy and identity, as well as a source of social support. Furthermore, student-athletes viewed sport participation as a way to cope with their many life stressors (Kimball & Freysinger, 2003). That the student-athletes interpreted participating in a sport as both a source of stress and a protective factor against stress highlights the complex relationship between sport participation and stress. The risk-reward perspective on sport participation was also expressed by the student-athletes surveyed by Potuto and O'Hanlon (2007). Student-athletes reported that the increased time demands, academic limitations, and reduced time spent with the non-athlete community were acceptable tradeoffs for the benefits they received from being student-athletes.

Despite a willingness to experience the stressors of sport participation, stress puts student-athletes at risk for health-related concerns. Williams and Anderson (1998) proposed an interactional stress-injury model, contending that an athlete with a significant history of life stressors is at greater risk to experience injury. There is empirical evidence supporting this conclusion, as multiple studies have revealed life stress to be a significant predictor of sport injury (Johnson & Ivarson, 2011; Petrie, 1992; Stefen, Pensgaard, & Bahr, 2009). Furthermore, there is evidence to suggest that the relationship between injury and stress is reciprocal. Selby, Weinstein, and Bird (1990) found that one of the most significant stressors faced by student-

athletes is the concern that injuries would impact their abilities to participate in sport activities, which is a concern not faced by the non-athlete student population. Additionally, the stressors of sport participation may have implications on general wellbeing. In a study by Watson and Kissinger (2007), 157 students, 62 of whom were student-athletes, were surveyed on their behaviors and attitudes in various wellness domains (e.g., Friendship, Self-Care, Self-Control, Nutrition, Stress-Management, Exercise and Leisure). Non-athlete students reported significantly higher levels of wellness than student-athletes for 22 of the 23 wellness domains assessed. The only domain that student-athletes reported higher levels of wellness was in Exercise, but the difference between groups was not significant.

It is well established that stress is related to alcohol use and the negative consequences associated with alcohol use in the general college student population (Metzger et al., 2017). In addition, the literature reviewed above has established that student-athletes are at risk to binge drink and experience the negative consequences associated with alcohol use. It is also clear that sport participation can be a source of stress, so it makes conceptual sense that the specific stressors associated with sport participation may be a factor in influencing risky alcohol use and the negative consequences associated with alcohol use in student-athletes. This suggests the need for further empirical investigation of the relationship between sport-specific stress and alcohol use outcomes. To this end, comprehensive assessment tools that measure the dimensions of student-athlete stress are needed to better understand how the stressors of being a student-athlete are related to alcohol use.

Previous examinations of stress in student-athletes have relied on a variety of methods to measure stress. This has included the use of semi-structured interviews (Kimball & Freysinger, 2003; Rushall 1990), one-item questionnaires (Potuto & O'Hanlon, 2007), and psychometrically

validated measures (Cohen, Kamarck, & Mermels, 1983; Lu, Hsu, Chan, Cheen, & Kao, 2012). One of the most widely used measures of stress is the Perceived Stress Scale (PSS; Cohen et al., 1983). The PSS has been used in a diverse body of research examining involvement in sport and stress (Galambos, Terry, Moyle, & Locke, 2005; Gustafsson, Davis, Skoog, Kenttä, & Haberl, 2015; Main & Grove, 2009; Surujlal, Van Zyl, & Nolan, 2013). Originally developed with 14-items, 10-item versions also exist (Cohen & Williamson, 1988). The items of the PSS target general experiences that may be perceived as stressful, such as feeling irritated, having a lack of control in life, and poor confidence in the ability to handle problems. Psychometric analysis suggests the most valid interpretation of the PSS is with two factors: helplessness and self-efficacy (Taylor, 2015). The PSS provides useful information regarding the broad experience of the individual with little insight into the specific factors that are contributing to the stressful state. This poses a challenge when trying to better understand the specific factors that contribute to stress, such as the role participating in intercollegiate athletes may play in adding pressure and demands on student-athletes.

Measures do exist that were designed to assess the unique stress associated with participating in athletics. One example is the Daily Analyses of Life Demands for Athletes (DALDA; Rushall, 1990). This measure examines causes and symptoms of stress in the athletes. The DALDA consists of nine prompts regarding the sources of stress and 25 prompts regarding the symptoms of stress. However, the DALDA was developed to assess stress in athletes more generally and was not designed to capture the specific stressors faced by student-athletes. Furthermore, the DALDA's primary function is to track intra-individual changes over an extended period of time. This limits the feasibility of using the DALDA for brief assessment and for making comparisons amongst individuals.

Another example of an athlete-specific stress measure is the Athletic Stress Inventory (ASI; Seggar, Pedersen, Hawkes, McGown, 1993). Originally developed in a sample of 148 female student-athletes, the four factors of the ASI have good reliability (Seggar et al., 1993). When examining the relationship of ASI scores with sport performance, only the factors associated with sport-specific stressors (Team Compatibility, Physical Well-Being) and academic stressors (Academic Efficacy) were related to interferences with sport performance, while more general stressors (Emotional Well-Being) were not related. While these relationships were only correlations, they suggest that sport-specific factors tend to be related to athlete-specific problems.

There have also been efforts to develop measures specific to the student-athlete population. One such measure is the Life Events Survey for Collegiate Athletes (LESCA; Petrie, 1992). The LESCA is a 69-item survey designed to assess the occurrence and the impact, either positive or negative, of major life events that student-athletes may have experienced within the previous year. LESCA was originally developed with a sample of 324 student-athletes and has psychometric support as a stable measure of stress (Petrie, 1992). However, the extended time frame measured by the LESCA could be problematic. Events that have occurred close to one year ago may have had a significant impact at the time but may no longer be concerning to the student-athlete at the time of assessment.

The College Student-Athlete Life Stress Scale (CSALSS; Lu et al., 2012) was developed to examine the life stressors that are unique to student-athletes. The CSALSS has 24 items and consists of eight factors, including Sports Injury, Performance Demands, Coach Relationships, Training Adaptation, Interpersonal Relationships, Romantic Relationships, Family Relationships, and Academic Requirements. These eight factors have shown suitable reliability, concurrent

validity, discriminate validity (Lu et al., 2012), and closely align with the common stressors reported by student-athletes (Humphrey et al., 2000). While the CSALSS shows promise as a measure of student-athlete stress, it is important to note that it was developed with a sample of student-athletes who were training and studying in Taiwan. Lu et al. (2012) acknowledge that the idiosyncrasies of the Taiwanese student-athlete development system may limit the applicability of this measure to student-athletes participating in other training systems such as the NCAA.

While validated measures of global stress levels are available, the continued exploration of the contributing factors that lead to stress in student-athlete populations and the development of appropriate measures to better understand these measures is warranted. Current measures that target athletes more generally may not capture the unique stressors associated with being both a student and an athlete. Furthermore, existing stress measures developed for student-athletes have limitations regarding their ability to assess acute stress and their applicability to the stressors of participating in NCAA athletics. Therefore, an additional aim of the current study is to develop a novel measure specific to the acute stressors associated with being a student-athlete. The development of this new measure will allow for a more detailed exploration of the relationship between student-athlete stress and alcohol use outcomes.

# CHAPTER 3

# METHOD

## Participants

Participants were 512 student-athletes participating in NCAA intercollegiate sports who consented for the study and initiated the study survey. One hundred seventy-eight (35%) competed at the Division I level, 234 (46%) competed at the Division II level, 99 (19%) competed at the Division III level, and one participant did not indicate competition level. Participants were from various sport backgrounds, including 89 who participated in outdoor track & field (17%), 74 who played soccer (15%), and 51 who played volleyball (10%; see Table 1 for complete sport demographics). Three hundred thirty-three (65%) identified as female, 178 (35%) identified as male, and one participant did not indicate gender. The mean age of all participants was 20.01 years (SD = 1.48). Three hundred seventy-nine (74%) identified as Caucasian, 54 (11%) identified as African American, 30 (6%) identified as Hispanic, 19 (4%) identified as Multiethnic/ Mixed, seven (1%) identified as Native American, six (1%) identified as Asian, one (< 1%) identified as Pacific Islander, 14 (3%) identified as other (i.e., ethnicity outside of the response options), and two (< 1%) did not report ethnicity.

## Procedure

Recruitment was initiated via email by contacting NCAA athletic departments to obtain permission to contact the student-athletes enrolled at their institutions (see Figure 1 for recruitment flow chart). The recruitment email included the estimated time of completion (30 minutes or less) for the survey questionnaires developed to assess experiences of stress related to being a student-athlete and experiences related to alcohol use.

Fifty-three athletic departments expressed interest in having their student-athletes participate in the study. Of the 53 athletic departments who expressed interest, 25 agreed to participate under the current study parameters and provided the necessary contact information to approach student-athletes at their institution. Twenty athletic departments agreed to forward an anonymous link to their student-athletes and five provided a roster of student-athlete email addresses, which allowed for recruitment emails to be sent directly to the student-athletes using the Qualtrics survey tool. In total, 2% of the athletic departments solicited facilitated the participation of their student-athletes and approximately 7% of student-athletes who were solicited consented to the study. Upon opening the survey link, the student-athletes were provided a brief description of the study, followed by a prompt to provide their informed consent if they so choose. Consenting student-athletes then completed the anonymous survey.

**Measures**

**Demographic questionnaire** (adapted from Loughran, 2015)**.** Each participant completed a brief demographic questionnaire to determine the participant's age, gender, sport, level in school, and other factors that were relevant to the study variables (see Appendix C for full questionnaire).

**Student-Athlete Stress Scale** (SASS; see Appendix D for full questionnaire). The SASS was specifically developed for this study to examine stressors faced by student-athletes. Based on a review of the literature and relevant clinical experiences working with student-athletes, common areas of student-athlete stress were identified. These areas included academic distress, relationships with teammates, relationships with coaches, general health, social distress, sport demands, injury, role conflict, and financial concerns. Relevant items for each area were generated. Feedback regarding item quality and relevance was obtained from one expert in

clinical psychology, one expert in psychometrics, and five graduate students with specific experiences in providing clinical services to student-athletes. Feedback was then incorporated, resulting in the 72 items included in this study. Participants rated each item on how concerning the item had been for them over the past 30 days (In the past 30 days, how concerned have you been by.…) on a 4-point Likert scale (0 = Not at All, 1 = A Little Concerned, 2 = Moderately Concerned, 3 = Very Concerned).

**The Brief Young Adult Alcohol Consequences Questionnaire** (B-YAACQ; Kahler, Strong, & Read, 2005). The B-YAACQ is a 24-item self-report inventory designed to assess the negative consequences associated with alcohol use commonly experienced by college students. Participants indicated for each item (e.g., I have taken foolish risks when I have been drinking) whether they have (yes) or have not (no) had this experience within the last 30 days. Psychometric evaluation supports the complete 24-item B-YAACQ as a reliable unidimensional measure of the consequences associated with college student drinking (Kahler, Hustad, Barnett, Strong, & Borsari, 2008). A total score of all B-YAACQ items endorsed yes was calculated (current sample Cronbach's $\alpha = .88$).

**Alcohol Use Measures.** Two questions were used to assess the total number of days each participant consumed alcohol and the total number of days they engaged in binge drinking over the last 30 days (White, Anderson, Ray, & Mun, 2016). Binge drinking was defined as four or more drinks in one sitting for a woman or five or more drinks for a man (Olson et al., 2015). Similar procedures have been used previously in web-based formats and have been shown to reliably measure alcohol use (Miller et al., 2002).

**Drinking Norms Measure.** Descriptive and injunctive norms were assessed using a modified version of the Drinking Norms Measure developed by Lac, Crano, Berger, and Alvaro

(2013). Descriptive norms were measured by asking how often different peer groups (e.g., typical students, friends, closest friends, typical student-athletes, teammates) drink alcohol. The peer group response options for typical student-athletes and teammates were added as they are important reference groups specific to student-athletes (Lewis & Paladino, 2008). Each peer group was rated on a 7-point scale (1 = never, 2 = less than once a month, 3 = once a month, 4 = 2–3 times a month, 5 = once a week, 6 = 2–3 times a week, and 7 = daily). Injunctive norms were measured by asking how much each peer group approves of drinking. Each peer group was rated on a 6-point scale (1 = strongly disapprove, 2 = disapprove, 3 = somewhat disapprove, 4 = somewhat approve, 5 = approve, 6 = strongly approve). This method of assessing drinking norms demonstrated adequate reliability in young adult populations (Lac et al., 2013). Separate mean composite scores were calculated for the five descriptive norms questions (current sample Cronbach's $\alpha = .84$) and the five injunctive norms questions (current sample Cronbach's $\alpha = .83$).

**Statistical Plan**

**Determining Multivariate Outliers.** Four hundred and fifty-six participants consented for the study and completed the SASS in full. To determine the presence of multivariate outliers**,** the Mahalanobis distance statistic was calculated for each participant who completed the SASS. Mahalanobis distance is distributed as a chi-square statistic, with the number of items functioning as the degrees of freedom to determine the appropriate critical value. Any case with a critical value at $p < .001$ will be considered a multivariate outlier and deleted from the analysis (Kline, 2016).

**Homogeneity of Variance.** The Bartlett-Box test (Box, 1949) was conducted to determine the presence of homogeneous subgroups within the overall sample. Based on the

demographic data collected, the largest subgroup was female student-athletes (see Participants section above). Thus, this procedure was conducted to determine if female and male participants should be analyzed together.

**Exploratory Factor Analysis.** Principal components analysis was conducted to determine the number and nature of factors of the SASS. Parallel Analysis (Horn, 1965: Cota, Longman, Holden, & Rekken, 1993), Minimum Average Partial test (MAP test; Velicer, 1976), and the scree test were used as the criteria to determine the number of factors. The areas of student-athlete stress determined from review of the literature and relevant clinical experiences with student-athletes were also used as a criterion to determine the number of factors of the SASS. Multiple rotations were examined to determine the rotation that comes closest to the ideal of simple structure. The criteria used were the number of complex items, the hyperplanar count, and the extent of correlation among the factors. These procedures are considered to be best practice when conducting exploratory factor analysis (Costello & Osborne, 2005).

**Reliability.** Coefficient alpha was calculated to evaluate the internal consistency of the SASS. The confidence interval for coefficient alpha was calculated using the method developed by Feldt (1965).

**Item Analysis.** Alpha-if-item-deleted and corrected-item total correlations were calculated to determine how each SASS items contribute to the overall internal consistency of the measure. An alpha-if-item-deleted value that was greater than the value of coefficient alpha indicated that the item reduces internal consistency. Corrected item-total correlations that were large and positive indicated that the content of the item was consistent with the rest of the test.

**Correlations and Descriptive Statistics.** Inter-correlations were calculated between each of the primary measures of interest, to determine if significant relationships were present

(see Table 2). The cutoff for significant correlations was $p < .05$. In addition to the inter-correlations, the means and standard deviations for these measures were also calculated for the sample (see Table 3).

**Structural Equation Model.** Structural Equation Modeling (SEM) was conducted using EQS 6.1 software (Bentler & Wu, 2002) to test the relationship between student-athlete stress, social norms, and risky alcohol use behavior (Model A) and, separately, the relationship between student-athlete stress, social norms, and negative alcohol-related consequences (Model B). In both models, interaction effects between student-athlete stress and social norms were tested by creating interaction terms between the indicators of student-athlete stress (SASS) and the indicators of social norms (Social Norms) (Kline, 2016; Little, Bovaird, & Widaman, 2006). Each indicator of the latent SASS variable (e.g. Balancing Responsibilities total score) was multiplied by each indicator of the latent Social Norms variable (e.g., descriptive norms mean composite score). Given that there were eight indicators of the SASS variable and two indicators of the Social Norms variable, 16 interaction terms were created. These 16 interaction terms were included as indicators of a latent variable (Interaction) that predicted the respective alcohol outcome variable in each model. Indicator variables for the latent SASS and latent Social Norms variables were mean-centered to reduce potential problems associated with multicollinearity between predictors and interaction terms. The hypothesized structural models (including interaction terms) for Model A and Model B are described graphically in Figures 2 and 3, respectively.

The Maximum Likelihood method was used to estimate the parameters of these models. For each model, Mardia's (1974) coefficient was used to examine the normality of the sample, where a coefficient greater than 3.00 (Bentler, 2005) would be indicative of a non-normal

sample. If the sample was determined to be non-normal, the Robust Maximum Likelihood method was used as recommended by Byrne (2006) and Kline (2016).

When conducting SEM, it is considered best practice to use multiple goodness of fit measures to evaluate model fit (Boomsma, 2000). If the data are normal, then the following measures of goodness of fit will be used: the model chi-square, the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), and the Comparative Fit Index (CFI; Bentler, 1990). If the data are non-normal, then the Satorra-Bentler scaled chi-square will be used in lieu of the model chi-square. For the model chi-square, Satorra-Bentler scaled chi-square, and RMSEA, higher values indicate worse model fit (Kline, 2016). Thus, a model chi-square or Satorra-Bentler scaled chi-square with a *p* value above .05 and an RMSEA value below .05 will be considered indicators of good model fit. For the CFI, scores greater than .95 were considered indicative of good model fit (Hu & Bentler, 1999).

A two-step modeling procedure (Kline, 2016) was used to determine potential model misspecification. The first step was to specify the hypothesized structural model as a confirmatory factor analysis measurement model and evaluate the measurement model using the goodness of fit criteria outlined above. If the measurement model was determined to be acceptable, the structural model would be evaluated as hypothesized.

In addition to model fit, the significance and valence of the parameter estimates were evaluated to determine the adequacy of the hypothesized models. Parameter estimates in SEM can be interpreted the same as regression coefficients (Kline, 2016). If the data fit the hypothesized interaction models, the amount of variance explained by the latent interaction will be determined using a method outlined by Maslowsky, Jager, and Hemken (2015). In this method, the change in the coefficient of determination ($R^2$) between the interaction model (e.g.,

Model A) and a model not including the interaction term (e.g., Model $A_1$) is calculated, yielding the total variance explained by latent interaction term. Furthermore, the chi-square difference test will be used to determine if the difference in fit between the models is statistically significant (Kline, 2016). If the data is non-normal, the scaled chi-square difference test (Satorra & Bentler, 2001) will be used in lieu of the traditional chi-square difference test. The scaled chi-square difference test will be calculated utilizing a macro developed by Bryant and Satorra (2013).

# CHAPTER 4

# RESULTS

## Missing Data

Of the 512 participants who initiated the study survey, 56 had missing data for the SASS, including 41 who did not complete any items of the SASS. The 41 participants who did not complete any items were treated as survey non-responders and deleted from the analysis. Therefore, only a small number of cases (3%) attempted to complete the SASS and had missing data. These cases were deleted from the analysis using listwise deletion. Listwise deletion is an acceptable method of addressing missing data when the amount of missing data is small (El-Masri & Fox-Wasylyshyn, 2005). Thus, a total of 456 participants completed the SASS in full.

## Multivariate Outliers

The Mahalanobis distance statistic was calculated for each participant who completed the SASS. Given that the SASS has 72 items, the critical value was 114.835. Seventy-seven cases were determined to be multivariate outliers evidenced by a Mahalanobis distance greater than the critical value.

Due to the large number of multivariate outliers per the Mahalanobis distance statistic, factor analysis procedures as outlined in the statistical plan were conducted with samples including (N = 456) and excluding (N = 379) cases indicated as multivariate outliers. The analyses were then compared to determine if the inclusion of outliers resulted in a different factor structure. For the analyses including outliers, the best solution for the SASS was a nine-factor structure using an oblique rotation with a Delta value of -2. However, this solution had four complex items, which resulted in six of the nine factors to have overlapping item content. The best solution when outliers were deleted had no complex items and was determined to be

more consistent with the ideal of simple structure when compared to the solution including outliers. Therefore, the SASS solution with outliers deleted was determined to be optimal and is discussed in more detail below.

**Factor Analysis of SASS**

Per the results of the Bartlett-Box test (Box, 1949), the variance-covariance matrices of the SASS were significantly different between female and male participants (Box's M (2628, 258695.811 = 5550.347, $p$ = .000). The significant difference in variance-covariance matrices suggests that separate gender-specific analyses be conducted. However, after outliers were deleted, both the female (N = 240) and male (N = 139) samples were below the recommended 300 participants to conduct factor analysis (Tabachnick & Fidell, 2007). Due to the lower than recommended sample sizes for each subgroup, female and male participants were analyzed together. There was a significant difference between the average scores of males and females on the items of the SASS (F(1, 377)= 13.737, $p$=.000). These results indicate that the data for males and females should be mean-deviated prior to conducting factor analysis. Mean-deviated scores were calculated and used for all subsequent analyses.

The first principal component was calculated to evaluate whether all SASS items measured the same construct. Any coefficient greater than .40 or less than -.40 was considered salient. Table 4 contains the pattern matrix coefficients for the first principal component. All SASS items had a positive pattern matrix coefficient on the first principal component. Fifty-three of the 72 items of the SASS had salient pattern matrix coefficients on the first principal component and no item had a coefficient lower than .25. This indicates that all SASS items were at least somewhat related to the overall construct of student-athlete stress. The first principal component of the SASS has excellent internal consistency (Cronbach's $\alpha$ = .95).

To determine the number and nature of the factors underlying the SASS, principal components analysis was conducted with multiple factors. Four criteria were used to determine the number of factors. The first criterion was Parallel Analysis (Horn, 1965: Cota et al., 1993), the second criterion was the Minimum Average Partial test (MAP test; Velicer, 1976), the third criterion was the scree test, and the fourth criterion was comparison to the areas of student-athlete stress determined by review of the literature and relevant clinical experiences with student-athletes. There were six factors based on Parallel Analysis, ten factors according to the MAP test, seven factors according to the scree test, and nine factors based on the areas of student-athlete stress. Due to the lack of agreement between these criteria, multiple factor solutions of the SASS were extracted, rotated, and interpreted to determine the factor solution that came closest to the ideal of simple structure. Thus, solutions consisting of six, seven, eight, nine, and ten factors were examined. After examining multiple solutions, it was determined that the ten-factor structure of the SASS using an oblique rotation with a Kappa value of 2 came closest to the ideal of simple structure as evidenced by the highest hyperplanar count, no complex items, and a moderately low correlation among factors (see Table 5). Furthermore, the dimensions extracted from this solution were highly consistent with the areas of student-athlete stress determined by review of the literature and relevant clinical experiences with student-athletes.

For factor 1, items 1, 3, 4, 6, 10, 12, 13, 19, 21, 28, and 66 had salient positive coefficients. All the items with salient coefficients on factor 1 were related to stress associated with balancing the demands of sport with the demands of everyday life (e.g. schoolwork, socializing, self-care). As a result, factor 1 was named Balancing Responsibilities (Cronbach's $\alpha = .89$). While it did not have a salient loading on any factor, item 31 (missing out on the college

experience because of playing sports) had a loading on factor 1 that approached salience (.39) and the item content is conceptually related to the stress of balancing sport and life demands.

For factor 2, items 8, 17, 22, 26, 30, 35, 40, 44, 58, and 71 had salient positive coefficients. Some of the items on factor 2 are related to cognitive stress associated with being in the student-athlete role (e.g. feeling like an outcast because you are an athlete) and some of the items are related to behavioral stress associated with being in the student-athlete role (e.g. fitting in with non-athletes). However, all of these items are related to worry or concern about identifying with the role of being an athlete. Therefore, factor 2 was named Athlete Identity (Cronbach's $\alpha = .84$).

For factor 3, items 7, 16, 25, 34, 43, 52, 61, and 70 had salient positive coefficients. All the items with salient coefficients on factor 3 related to worry or concern associated with being injured during sport and/or recovering from sport injury. Therefore, factor 3 was named Sport Injury (Cronbach's $\alpha = .90$).

For factor 4, items 2, 11, 20, 29, 47, 56, and 65 had salient positive coefficients. All the items with salient coefficients on factor 4 related to worry or concern associated with coach-athlete relationships. Therefore, factor 4 was named Coach-Athlete Relationships (Cronbach's $\alpha = .87$).

For factor 5, items 5, 14, 23, 41, 50, and 68 had salient positive coefficients. All the items with salient coefficients on factor 5 related to worry or concern associated with relationships between athletes and their teammates. Therefore, factor 5 was named Teammate-Athlete Relationships (Cronbach's $\alpha = .80$).

For factor 6, items 42, 53, 62, and 69 had salient positive coefficients. All the items with salient coefficients on factor 6 were related to worry or concern associated with motivational

factors in sport. Therefore, factor 6 was named Sport Motivation (Cronbach's α = .81).

For factor 7, items 9, 18, 45, 54, and 72 had salient positive coefficients. All the items with salient coefficients on factor 7 were related to worry or concern associated with supporting oneself or meeting financial obligations. Therefore, factor 7 was named Personal Finances (Cronbach's α = .74).

For factor 8, items 37, 46, 55, and 64 had salient positive coefficients. All the items with salient coefficients on factor 8 related to worry or concern associated with sport participation interfering with academic performance. Therefore, factor 8 was named Academic Performance (Cronbach's α = .90).

For factor 9, item 36, 63, and 67 had salient positive coefficients. There are two distinct concepts represented in the items of this factor. Items 36 and 63 were related to worry or concern about other people providing financial assistance. Item 67 was related to arguing with friends who are not athletes. While it is possible that money would elicit arguments between friends, money is likely not exclusively responsible for such arguments. While these items are statistically linked, there does not appear to be a clear connection between the content of these items. Furthermore, the Cronbach's α for factor 9 was .61, which is below the acceptable level for research purposes. Thus, factor 9 was determined to be weak and therefore uninterpretable.

For factor 10, items 15 and 59 had salient positive coefficients and items 32 and 38 had salient negative coefficients. The common theme amongst these four items appears to reflect insecurities about the team environment. However, the Cronbach's α for factor 10 was .33, which is well below the acceptable level for research purposes. Therefore, factor 10 was excluded from further analyses.

Given that there was not a clear connection between the content of the items that loaded

on factor 9, the Cronbach's α for factor 10 was well below acceptable limits, and ten items did not load on any factor in the ten-factor solution of the SASS, further analyses were conducted to determine if alternative factor solutions without these concerns were possible. Costello and Osborne (2005) indicate that deleting problematic items (e.g. free-standing items) and re-running analyses may improve the interpretability of factor structures. Therefore, the ten items that did not load on any factor (e.g. items 24, 27, 31, 33, 39, 48, 49, 51, 57, 60) and the seven items from factors 9 and 10 were removed, and exploratory procedures identical to those described above were conducted for the remaining 55 items.

Solutions of eight, nine, and ten factors were extracted, rotated, and interpreted. An eight-factor solution with an oblique rotation with a Kappa value of 2 came closest to the ideal of simple structure. The item content of the factors of the 55-item solution were identical to the corresponding factors of the 72-item solution (e.g. items 1, 3, 4, 6, 10, 12, 13, 19, 21, 28, and 66 were salient on factor 1 for both solutions, items 8, 17, 22, 26, 30, 35, 40, 44, 58, and 71 were salient on factor 2 for both solutions, etc.). Since the removal of the problematic items resulted in eight factors that were identical in item content to the eight interpretable factors of the original ten-factor solution, it was determined that the original ten-factor solution was optimal. Therefore, the eight factors (factors 1, 2, 3, 4, 5, 6, 7, and 8) that had acceptable reliabilities and represented clear, distinguishable constructs were considered interpretable. For each interpretable factor, total scores of the mean-deviated items were calculated to be used in the SEM analyses. Since the items of these total scores were already mean-deviated, they did not need to be mean-centered again for the SEM analysis.

**SASS Reliability**

Coefficient alpha of the SASS was .95. The confidence interval for coefficient alpha of the SASS was calculated using the method developed by Feldt (1965). The 95% confidence interval for coefficient alpha of the SASS was .94 to .95. This displays that the SASS has excellent internal consistency. Coefficient alpha was also calculated to estimate the internal consistency in males ($\alpha$ = .96) and females ($\alpha$ = .94) separately. The 95% confidence interval for coefficient alpha for males was .95 to .97. For females, the 95% confidence interval was .93 to .95. Results show that the SASS had excellent internal consistency across genders.

**SASS Item Analysis**

All SASS items had equal or lower alpha-if-item-deleted values compared to the value of coefficient alpha for the SASS (see Table 6). Therefore, the results of the alpha-if-item-deleted analysis suggest that no items negatively affected internal consistency. Most of SASS items had moderate to high positive corrected item-total correlations (see Table 6). However, item 1 (.29), item 14 (.28), item 27 (.27), item 32 (.26), item 36 (.23), item 38 (.24), item 54 (.27), item 63 (.25), and item 68 (.29) had small positive corrected item-total correlations.

**Structural Equation Modeling Analysis for Model A**

**Model fit.** Of the 456 cases who completed the SASS in full, 77 were determined to be multivariate outliers on the SASS based on the Mahalanobis distance statistic and deleted from the SEM analysis. Six cases were deleted from the analysis due to completing the SASS but not attempting to complete the B-YAACQ or the social norms measures. A small percentage (5%) of the remaining cases had missing data for at least one of the SEM variables and were deleted from the analysis using listwise deletion. Two cases were determined to significantly contribute to the non-normality of the data per EQS and were deleted (Byrne, 2006). Therefore, a total of 353 cases were included in the SEM analysis of Model A. The Marida's (1974) coefficient for Model

A with 353 cases was 160.49, indicating that the data were non-normal. Therefore, the Satorra-Bentler scaled chi-square was used to evaluate model fit.

Model A hypothesized that student-athlete stress (SASS) predicts risky alcohol use (Alcohol Use) and this relationship is moderated by social norms (Social Norms). The model fit statistics for the measurement model of Model A included a significant Satorra-Bentler $\chi^2$ [$\chi^2(280, N = 353) = 428.66, p < .001$], a CFI value of .92, an RMSEA value of .04, and the 90% confidence interval of the RMSEA was .03 to .05. While the Satorra-Bentler $\chi^2$ was significant and the CFI value was below the suggested .95 cut-off as recommended by Hu and Bentler (1999), the CFI value of .92 approached the recommended cut-off for good model fit. Furthermore, the RMSEA value, including both the upper and lower bounds of the RMSEA 90% confidence intervals, was below .05 which is suggestive of good model fit. Considering all the model fit statistics together, it was determined that the fit for the measurement model for Model A was adequate and therefore the structural model would be evaluated without re-specification.

The structural model also had a significant Satorra-Bentler chi-square statistic ($\chi^2(282, N = 353) = 443.99, p < .001$) and a CFI value (.91) that was approaching the suggested cut-off for good model fit. The RMSEA value of .04 and the 90% confidence intervals of the RMSEA (.03 - .05) were indicative of good model fit. These results suggest that the fit for the structural model of Model A was adequate. Due to adequate fit to the model, no post-hoc modifications were made, and the individual parameter estimates were interpreted.

**Direct and interaction effects.** In Model A, student-athlete stress (SASS; standardized coefficient = .09) was not a statistically significant predictor of risky alcohol use (Alcohol Use). Social norms (Social Norms; standardized coefficient = .60) was a statistically significant predictor of risky alcohol use, meaning that higher levels of social norms were related to higher

levels of risky alcohol use. The interaction term (Interaction) between SASS indicators and Social Norms indicators was also predictive of Alcohol Use (standardized coefficient = .21). To better understand the nature of this relationship, this interaction was plotted using a procedure outlined by Dawson (2014) (see Figure 4). A partial reversal interaction was found between social norms and student-athlete stress, such that at low levels of social norms, student-athletes with high levels of stress were slightly less likely to engage in risky alcohol use. In contrast, at high levels of social norms, student-athletes with high levels of stress were more likely to engage in risky alcohol use. The standardized total effect of Model A was .43, which indicates that this model explains 43% of the variance in alcohol use. All estimated parameters for Model A are included in Figure 2.

A structural model not including the interaction term (Model $A_1$) was analyzed and compared to Model A (see Table 7 for model fit indices). The $R^2$ for Model $A_1$ was .36. The difference between the $R^2$ of Model A and Model $A_1$ was .07. This indicates that an additional 7% of the total variance in alcohol use behavior is accounted for by the interaction between student-athlete stress and social norms. Due to the non-normality of the data, the scaled chi-square difference test was used to test the difference in fit between the models. The scaled chi-square difference test was not significant [$\chi^2(1) = .82$, $p = .37$, which indicates that the inclusion of the latent interaction variable in the model does not provide a statistically significant increase in model fit compared to a model that does not include the latent interaction variable.

**Structural Equation Modeling Analysis for Model B**

**Model fit.** Of the 456 cases who completed the SASS in full, 77 were determined to be multivariate outliers on the SASS based on the Mahalanobis distance statistic and deleted from the SEM analysis. Eight cases were deleted from the analysis due to completing the SASS but

not attempting to complete the B-YAACQ or the social norms measures. A small percentage (4%) of remaining cases had missing data for at least one of the SEM variables and were deleted using listwise deletion. Two cases were determined to significantly contribute to the non-normality of the data per EQS and were deleted (Byrne, 2006), resulting in a total of 353 cases included in the SEM analysis of Model B. The Marida's (1974) coefficient for Model B with 353 cases was 167.50, indicating that the data were non-normal. Due to the non-normality of the data, the Satorra-Bentler scaled chi-square was used to evaluate model fit.

Model B hypothesized that SASS predicts negative alcohol-related consequences (B-YAACQ) and this relationship is moderated by Social Norms. The measurement model for Model B [$\chi^2(255, N = 353) = 381.62, p < .001$; RMSEA = .04; CFI= .99] appeared to have good model fit without a need for re-specification. Despite a significant Satorra-Bentler chi-square statistic ($\chi^2(257, N = 353) = 403.94, p < .001$), the structural model appeared to have good model fit evidenced by an RMSEA of .04 and a CFI score of .98. Due to good fit to the model, no post-hoc modifications were made. These results support the hypothesis that social norms strengthen the relationship between student-athlete stress and negative consequences from alcohol use in student-athletes.

**Direct and interaction effects.** Both SASS (standardized coefficient = .16) and Social Norms (standardized coefficient = .44) were significant predictors of B-YAACQ in model B, indicating both student-athlete stress and social norms had positive relationships with alcohol consequences. The interaction term was also a significant predictor of B-YAACQ (standardized coefficient = .16). Figure 5 shows the nature of the interaction between student-athlete stress and social norms is one of amplification, such that social norms strengthen the positive relationship between student-athlete stress and alcohol consequences. The standardized total effect of Model

B was .27, which indicates that this model explains 27% of the variance in predicting negative alcohol-related consequences. See Figure 3 for the estimated parameters for Model B.

A structural model not including the interaction term (Model $B_1$) was analyzed and compared to Model B (see Table 7 for model fit indices). The $R^2$ for Model $B_1$ was .24. The difference between the $R^2$ of Model B and Model $B_1$ was .03. This result indicates that an additional 3% of the total variance in negative alcohol-related consequences was accounted for by the interaction between student-athlete stress and social norms. Due to the non-normality of the data, the scaled chi- square difference test was used to determine if the difference in fit between Model B and Model $B_1$ was statistically significant. The scaled chi-square difference test between these models was not significant [$\chi^2(1) = .21$, $p = .65$].

# CHAPTER 5

# DISCUSSION

Student-athletes are a unique population on college campuses. Participation in athletics exposes student-athletes to added demands and stressors compared to non-athlete peers. Likewise, student-athletes are at particular risk to binge drink and experience the negative consequences associated with alcohol use. Hence, the purpose of the current study was to develop a reliable measure of student-athlete stress using exploratory factor analysis (EFA) and to investigate the relationship between alcohol outcome variables and student-athlete stress using structural equation modelling (SEM). Two SEM models were tested. In the examination of Model A, it was hypothesized that higher levels of student-athlete stress would significantly predict an increased frequency of alcohol use and binge drinking. In the examination of Model B, it was hypothesized that higher levels of student-athlete stress would significantly predict higher endorsement of negative alcohol-related consequences. It was also expected that student-athlete's perceptions of the frequency (descriptive norms) and approval (injunctive norms) of alcohol use by their peers would act as a moderating variable, strengthening the stress-alcohol relationships in both models.

Results indicated that the Student-Athlete Stress Scale (SASS) evidenced excellent internal consistency for the overall sample ($\alpha$ = .95). A total of 10 factors were extracted from the SASS, eight of which were determined to be indicative of clear, theoretically interpretable constructs related to the student-athlete experience and evidenced acceptable internal consistency. These eight factors included 55 of the original 72 items generated for the SASS and were named Balancing Responsibilities ($\alpha$ = .89), Athlete Identity ($\alpha$ = .84), Sport Injury ($\alpha$ = .90), Coach-Athlete Relationships ($\alpha$ = .87), Teammate-Athlete Relationships ($\alpha$ = .80), Sport

Motivation ($\alpha$ = .81), Personal Finances ($\alpha$ = .74), and Academic Performance ($\alpha$ = .90). The Athlete Identity, Sport Injury, Coach-Athlete Relationships, Teammate-Athlete Relationships, Sport Motivation, Personal Finances, and Academic Performance factors were highly consistent with areas of student-athlete stress identified during item generation. The items represented on the Balancing Responsibilities factor captured the specific challenges of juggling the multiple responsibilities of being both a student and an athlete and appeared to be independent of the academic stress represented on the Academic Performance factor. Of the nine areas outlined during the initial item generation of the SASS, only the general health area was not represented by the eight interpretable factors. This makes conceptual sense as many of the items generated within this area were not specific to athletic participation (e.g., feeling irritable). Taken together, these results provide support for the SASS as a reliable measure of the different domains of stress that student-athletes encounter specific to the student-athlete experience.

The results of the SEM analyses for Model A did not support the hypothesis that student-athlete stress is predictive of risky alcohol use behavior. Model fit was adequate, as the Satorra-Bentler $\chi^2$ statistic was significant and the CFI value (.91) only approached the recommended cut-off value of .95, but the RMSEA value was below .05 which is indicative of good model fit. Evaluation of the individual parameter estimates indicated that student-athlete stress was not a statistically significant predictor of the risky alcohol use. Nonetheless, social norms were a strong predictor of the risky alcohol use and the latent interaction term between student-athlete stress and social norms was also a significant predictor. Taken together, Model A explains 43% of the variance in risky alcohol use. While the interaction between student-athlete stress and social norms was a significant predictor within Model A, inclusion of this interaction in the model did not provide a significant improvement in model fit compared to a model that only

included the direct effects of student-athlete stress and social norms on risky alcohol use.

The evaluation of the fit statistics for Model B indicated good fit. Despite a Satorra-Bentler $\chi^2$ statistic that was significant, the RMSEA value was below .05 and the CFI value was above .95. Consistent with the study hypotheses, student-athlete stress, social norms, and the interaction term were all significant predictors of the negative consequences associated with alcohol use, with social norms being the strongest predictor. Taken together, Model B explained 27% of the variance in negative consequences for alcohol use. However, like Model A, the results of the scaled chi-square difference test for Model B indicated that inclusion of the interaction term does not significantly improve model fit compared to a model without the interaction term.

This investigation further advances the understanding of student-athlete alcohol use in multiple ways. First, various dimensions of stress specific to the experience of being a student-athlete were established (i.e., competing demands of school, social life, athletic performance, team dynamics, insufficient finances) and these dimensions were determined to be significant predictors of the negative consequences from alcohol use. This result is consistent with previous findings in the general student population that stress predicts alcohol outcomes (Bodenlos et al., 2013; Corbin et al., 2013; Metzger et al., 2017). While there was no non-athlete comparison group, these results suggest that the stressors associated with athletic participation are a potential explanation for why student-athletes tend to experience more negative consequences from alcohol use than non-athletes. Furthermore, drinking to cope has previously been established as one of the motivators for student-athlete alcohol use (Martens et al., 2005) and previous findings support that student-athletes who drink to cope with sport-related stress experience more alcohol-related problems (Doumas & Midgett, 2015; Martens et al., 2003; Martens & Martin, 2010;

Wahesh et al, 2013; Yusko et al., 2008). The results of Model B that showed student-athlete stress significantly predicted negative alcohol-related consequences are consistent with these previous findings, and although causal inferences cannot be made due to the cross-sectional nature of the data, the negative consequences experienced by student-athletes in this study may be due to using alcohol as a coping mechanism for stress. This implies that interventions which target the development and utilization of healthy coping skills may be effective strategies in reducing risky alcohol use in student-athlete populations.

Second, this study provides further evidence of the influence of social norms on alcohol use outcomes. The latent social norms variable was a significant predictor of both risky alcohol use and negative alcohol-related consequences. This suggests that if student-athletes have perceptions that alcohol use is normalized amongst their peers, they are more likely to drink themselves and more likely to face the consequences associated with drinking. These findings are consistent with previous research showing descriptive and injunctive social norms to be predictors of alcohol use (Hummer et al., 2009; Olthuis et al., 2011; Seitz et al., 2014). The emergence of the latent social norms variable as a strong predictor of risky alcohol use and a strong predictor of the negative consequences associated with alcohol use has significant implications for the prevention and intervention of alcohol use, as intervention techniques that target social norms have shown promise in reducing student-athletes misconceptions regarding peer group drinking (Fearnow-Kenney, Wrick, Milroy, Reifsteck, Day, & Kelly, 2016; Perkins & Craig, 2006; Thombs & Hamilton, 2002).

The establishment of both environmental and social factors as predictors of alcohol outcomes in the current study supports the need for more holistic treatment modalities that account for the multitude of factors influencing student-athlete behavior. Integrated treatment

approaches are a growing trend in healthcare and are similarly recommended in athletic settings to reduce barriers to care (Sudano, Collins, & Miles, 2017). Thus, integration of interventions that simultaneously target the specific stressors associated with being a student-athlete and the cultural norms around drinking may be particular effective in reducing the risks faced by student-athletes. Along these lines, Donohue et al. (2018) have developed an innovative optimization approach to student-athlete wellness that incorporates these elements.

**Limitations and Strengths**

One potential limitation of this study was related to the results of the Barlett-Box test (Box, 1949). Results of this test established the presence of homogenous subgroups within the sample as indicated by the significant differences in the variance-covariance matrices of the SASS between male and female student-athletes. While these results indicate that separate gender-specific analyses are most appropriate, the sample sizes for each sub-group were below recommended limits for factor analysis (Tabachnick & Fidell, 2007). Accordingly, independent analyses were not conducted. By analyzing all participants together, a more nuanced understanding of student-athlete stress, and subsequently, student-athlete alcohol use, was not possible. In future research, it will be important to recruit large enough samples of male and female athletes to allow for independent analyses.

Another limitation of this study is the low response rates to the online survey. The response rate of university athletic departments (2%) was comparable to a previous study that utilized an intermediary to facilitate recruitment (Loughran, 2015). However, the response rate of student-athletes (7%) in the current study was well below that of the Loughran (2015) study (27%). Low response rates increase the risk that real differences between respondents and non-respondents will bias the data (Porter, 2004). Potential explanations for the low response rates in

the current study include lack of an incentive for participation and the possibility of survey fatigue (Olson, 2014).

The significant relationship between student-athlete stress and the negative consequences from alcohol use sheds new light on potential factors that differentiate the drinking behavior of student-athletes and non-athletes. However, the current study only examined the stress-alcohol relationship in a student-athlete population and did not include a comparison group of non-athletes. Thus, the results of this study do not provide evidence that student-athletes experience higher levels of stress or different types of stressors than non-athlete students. Future research comparing the influence of stress on these two groups directly will allow for stronger conclusions to be made regarding the role of student-athlete specific stress in predicting alcohol use and negative alcohol-related consequences.

Despite these limitations, the current study has several strengths. First, a rigorous development process was used to create the SASS. This included the generation of items based on the available literature on student-athlete stress, refinement of these items based on the feedback of multiple content area and psychometric experts, and an exploratory factor analysis that was consistent with EFA best practice. These procedures resulted in a reliable measure that captures a wide range of potentially stressful experiences unique to student-athletes. Second, SEM was used to examine the relationships between student-athlete stress, social norms, and alcohol use outcomes. SEM analysis allows for the analysis of latent constructs, which in this investigation included the global student-athlete stress variable, the social norms variable, and risky alcohol use variable. Furthermore, unlike other analytic techniques (e.g., multiple regression), SEM accounts for measurement error within the analysis, which provides a more accurate representation of the variance explained by the variables included in the model (Kline,

2016). Third, every NCAA member institution was provided the opportunity for participation in this study. While very few institutions chose to participate, this recruitment method contributed to a more nationally representative sample of student-athletes. The inclusion of a wider range of participants increases the generalizability of these results to the broader student-athlete population. Most importantly, this was the first known study to explicitly examine the stressors associated with intercollegiate athletic participation as a potential predictor of risky alcohol use and the negative consequences associated with alcohol use.

**Future Directions**

The results of the current study warrant further investigation into both the development of the SASS and the relationship between stress and alcohol outcomes. While these results support the SASS as a promising tool for the assessment of student-athlete stress, continued psychometric exploration via replication analysis of the SASS factor structure is recommended. Replication analysis of EFA models are an essential part of the test development process; helping to increase the generalizability of EFA outcomes and to gain a clearer picture of problematic test items (Osborne & Fitzpatrick, 2012). Additionally, further examination of the SASS may reveal its potential utility as an assessment tool in clinical settings. Replication analysis of the current SEM models in independent samples is also warranted. It is best practice to replicate SEM analyses in independent samples, as it allows for greater scrutiny of the results to determine if they support true theoretical trends rather than statistical anomalies (Kline, 2016).

Student-athletes in this study generally endorsed low levels of alcohol use, binge drinking, and negative alcohol-related consequences, which is consistent with previous reports that student-athletes are a population that tends to underreport alcohol use behavior (Druckman, Gilli, Klar & Robison, 2015). The potential for underreporting may have been increased in the

current sample due to student-athletes being recruited through athletic departments. Even though it was clearly stated in the informed consent that responses were anonymous, the participants in this study may have felt pressure to underreport their experience of stress and alcohol use behavior due to a perceived risk of repercussions or undue attention from their athletic department. Thus, socially desirable responding may be a confounding factor in the stress-alcohol relationship. Future research studies that examine student-athlete stress and alcohol outcomes may benefit from the inclusion of measures assessing socially desirable responding and/or more direct efforts to reduce the stigma associated with these experiences.

As mentioned before, a cross-sectional design was used for this study. The limitations of interpretations from cross-sectional data support the need for future studies of student-athlete stress and alcohol use outcomes to evaluate longitudinal data. This will allow for the exploration of potential causal relationships between these variables. Results of a longitudinal study of other high-risk drinking groups on college campuses (e.g., fraternity/sorority members) indicate that perceived stress does not predict same day alcohol use, but does predict next day alcohol use (Luk, Fairlee, & Lee, 2018). Similar relationships may exist for student-athletes and could be revealed from longitudinal analysis.

In conclusion, this investigation has contributed important new information to the understanding of student-athlete alcohol use. A reliable new measure of student-athlete stress was established using exploratory factor analysis. The results of the SEM analyses revealed that student-athlete stress was a significant predictor of negative alcohol-related consequences, but not risky alcohol use. Social norms were the strongest predictor of both risky alcohol use and negative alcohol-related consequences, and the interaction between student-athlete stress and social norms was a significant predictor of the respective alcohol outcome in each model.

However, in neither model did the inclusion of the interaction term significantly improve model fit above and beyond the direct effects of student-athlete stress and social norms. Despite limitations related to the cross-sectional nature of the data, small sample size, potential under-reporting, and low survey response rates, this was the first known study to examine the link between the stressors specific to athletic participation and alcohol outcomes. Thus, interpretations of these results serve as a starting point for the future exploration of these concepts.

# APPENDIX A

## TABLES

Table 1
*Frequency of Sport Backgrounds*

| Sport Background | Number of Participants (Total Sample N = 512) | % |
|---|---|---|
| Baseball | 22 | 4.3 |
| Basketball | 19 | 3.7 |
| Cross-Country | 35 | 6.8 |
| Field Hockey | 15 | 2.9 |
| Football | 43 | 8.4 |
| Golf | 16 | 3.1 |
| Gymnastics | 1 | .2 |
| Ice Hockey | 1 | .2 |
| Lacrosse | 35 | 6.8 |
| Rifle | 3 | .6 |
| Rowing | 12 | 2.3 |
| Soccer | 74 | 14.5 |
| Softball | 32 | 6.3 |
| Swimming & Diving | 25 | 4.9 |
| Tennis | 19 | 3.7 |
| Track & Field (Indoor) | 12 | 2.3 |
| Track & Field (Outdoor) | 89 | 17.4 |
| Volleyball | 51 | 10.0 |
| Women's Rugby | 3 | .6 |
| Wrestling | 4 | .8 |
| Did not report sport | 1 | .2 |

Table 2

*Correlations Between Primary Measures of Interest*

| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | | | | | | | | | |
| **2** | .78** | 1.00 | | | | | | | | | | | | |
| **3** | .70** | .44** | 1.00 | | | | | | | | | | | |
| **4** | .56** | .23** | .32** | 1.00 | | | | | | | | | | |
| **5** | .68** | .49** | .35** | .21** | 1.00 | | | | | | | | | |
| **6** | .48** | .19** | .29** | .20** | .39** | 1.00 | | | | | | | | |
| **7** | .65** | .44** | .45** | .23** | .50** | .30** | 1.00 | | | | | | | |
| **8** | .59** | .41** | .37** | .31** | .25** | .19** | .34** | 1.00 | | | | | | |
| **9** | .69** | .64** | .44** | .27** | .41** | .17** | .39** | .34** | 1.00 | | | | | |
| **10** | .25** | .23** | .12* | .06 | .16** | .04 | .17** | .21** | .18** | 1.00 | | | | |
| **11** | .11* | .15** | .02 | .03 | .06 | .03 | .07 | .12* | .02 | .40** | 1.00 | | | |
| **12** | .16** | .20** | .04 | .06 | .13* | -.05 | .10 | .19** | .08 | .34** | .71** | 1.00 | | |
| **13** | .17** | .16** | .09 | .04 | .16** | .03 | .12* | .17** | .16** | .60** | .54** | .39** | 1.00 | |
| **14** | .14** | .15** | .05 | .00 | .15** | .01 | .07 | .14** | .11* | .68** | .50** | .37** | .84** | 1.00 |

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

*Note.* All SASS variables in this table were created with items mean-deviated based on gender. 1 = SASS Total Score, 1 = Balancing Responsibilities Total Score, 3 = Athlete Identity Total Score, 4 = Sport Injury Total Score, 5 = Coach-Athlete Relationships Total Score, 6 = Teammate-Athlete Relationships Total Score, 7 = Sport Motivation Total Score, 8 = Personal Finances Total Score, 9 = Academic Performance Total Score, 10 = BYAACQ Total Score, 11 = Descriptive Norms Mean Composite Score, 12 = Injunctive Norms Mean Composite Score, 13 = # Days Using Alcohol Total Score, 14 = # Days Binge Drinking Total Score.

Table 3

*Means and Standard Deviations of Primary Variables of Interest*

| Measure | Mean | Standard Deviation |
|---|---|---|
| SASS Mean Total Score* | .49 | .33 |
| SASS Balancing Responsibilities Mean Total Score* | .89 | .60 |
| SASS Athlete Identity Mean Total Score* | .29 | .36 |
| SASS Sport Injury Mean Total Score* | .45 | .59 |
| SASS Coach-Athlete Relationship Mean Total Score* | .39 | .51 |
| SASS Teammate-Athlete Relationship Mean Total Score* | .31 | .44 |
| SASS Sport Motivation Mean Total Score* | .41 | .56 |
| SASS Personal Finances Mean Total Score * | .70 | .62 |
| SASS Academic Performance Mean Total Score* | .43 | .62 |
| B-YAACQ Total Score | 1.83 | 3.14 |
| Descriptive Norm Mean Composite Score | 4.31 | 1.13 |
| Injunctive Norm Mean Composite Score | 4.36 | .96 |
| Alcohol Use Frequency Total Score | 2.76 | 3.75 |
| Binge Drinking Frequency Total Score | 1.48 | 2.44 |

* These variables were calculated with raw scores on SASS items.

Table 4
*First Principal Component of Student-Athlete Stress Scale*

| Item | | Pattern Matrix Coefficient |
|---|---|---|
| 1 | missing class due to your sport | .32 |
| 2 | being criticized by your coaches | **.59** |
| 3 | being unable to find time to relax | **.55** |
| 4 | not having time to do things other than play your sport | **.60** |
| 5 | being criticized by your teammate(s) | .34 |
| 6 | feeling your training schedule is too demanding | **.53** |
| 7 | feeling sorry for yourself because of sport injury | .29 |
| 8 | feeling like playing sports is the only thing that makes you unique | **.45** |
| 9 | being eligible for scholarships | .38 |
| 10 | catching up on schoolwork because of your sport | **.52** |
| 11 | having disagreements with your coach(es) | **.41** |
| 12 | feeling exhausted | **.54** |
| 13 | not having a social life because of playing sport | **.63** |
| 14 | having disagreements with teammate(s) | .29 |
| 15 | worrying about losing your spot on the team | **.42** |
| 16 | having difficulty in school due to sport injury | .37 |
| 17 | being viewed as "just" an athlete | **.43** |
| 18 | difficulty supporting yourself financially | .37 |
| 19 | not having enough time to study due to your sport | **.62** |
| 20 | feeling misunderstood by your coach(es) | **.56** |
| 21 | not having enough energy to get through the day | **.61** |
| 22 | fitting in with non-athletes | **.45** |
| 23 | feeling misunderstood by your teammate(s) | .33 |
| 24 | not being able to perform well in sport | **.55** |
| 25 | feeling isolated because you are injured | .34 |
| 26 | feeling judged because you are an athlete | **.42** |
| 27 | other people asking you for money | .28 |
| 28 | feeling overwhelmed by your schoolwork | **.57** |
| 29 | feeling disrespected by your coaches | **.46** |
| 30 | feeling lonely | **.52** |
| 31 | missing out on the college experience because of playing sports | **.66** |
| 32 | feeling your teammate(s) aren't competitive enough | .27 |
| 33 | feeling your sport is too challenging | **.52** |
| 34 | taking longer than expected to recover from sport injury | .35 |
| 35 | being stereotyped as an athlete | **.47** |
| 36 | other people offering you money | .25 |
| 37 | feeling unable to succeed in school due to your sport | **.65** |
| 38 | feeling your coach(es) aren't competitive enough | .26 |
| 39 | feeling irritable | **.59** |
| 40 | having trouble making friends with non-athletes | **.49** |

| Item | | Pattern Matrix Coefficient |
|---|---|---|
| 41 | difficulty relating to your teammate(s) | .31 |
| 42 | having trouble concentrating in your sport | **.54** |
| 43 | getting injured while playing your sport | **.47** |
| 44 | being treated differently because you are an athlete | **.54** |
| 45 | having enough money | **.41** |
| 46 | getting bad grades due to your sport | **.61** |
| 47 | feeling your coach(es) are too competitive | **.46** |
| 48 | having poor nutrition | **.51** |
| 49 | spending too much time socializing with teammates | **.43** |
| 50 | feeling pressure from your teammate(s) | **.45** |
| 51 | worrying about others judging your sport performance | **.57** |
| 52 | worrying about losing your spot on the team due to sport injury | **.44** |
| 53 | feeling obligated to play your sport | **.57** |
| 54 | having to support other people financially | .27 |
| 55 | doing poorly in school due to your sport | **.65** |
| 56 | feeling pressure from your coach(es) | **.60** |
| 57 | being out of shape | **.40** |
| 58 | feeling disconnected from other students on campus | **.59** |
| 59 | feeling your teammate(s) are too competitive | .32 |
| 60 | making mistakes during your sport performance | **.57** |
| 61 | not following through with sports injury rehab | **.43** |
| 62 | losing interest in your sport | **.49** |
| 63 | feeling pressure to take money from others | .28 |
| 64 | having a low grade-point-average due to your sport | **.58** |
| 65 | difficulty relating to your coach(es) | **.56** |
| 66 | having trouble sleeping | **.51** |
| 67 | arguing with non-athlete friends | **.40** |
| 68 | feeling disrespected by your teammate(s) | .29 |
| 69 | lacking motivation to participate in your sport | **.53** |
| 70 | pain from sports injuries | **.42** |
| 71 | feeling like an outcast because you are an athlete | **.49** |
| 72 | not being able to have a job due to playing sports | **.52** |

*Note*. Coefficient alpha for the first principal component is .95. Items with a salient pattern matrix coefficient are indicated in bold.

Table 5

*Factor Analysis Results for Student-Athlete Stress Scale Rotated Factors*

| | Factor | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | $h^2$ |
| 12. feeling exhausted | **.75** | .00 | .00 | -.01 | -.05 | .08 | .15 | -.08 | .05 | -.03 | .60 |
| 3. being unable to find time to relax | **.69** | .03 | -.06 | .02 | .01 | .08 | .07 | .00 | -.07 | .02 | .55 |
| 21. not having enough energy to get through the day | **.68** | .05 | .01 | .04 | -.08 | .18 | .08 | .01 | .02 | -.05 | .60 |
| 10. catching up on schoolwork because of your sport | **.67** | -.07 | -.04 | -.05 | .02 | -.15 | .11 | .36 | -.02 | -.11 | .66 |
| 19. not having enough time to study due to your sport | **.65** | -.01 | -.03 | .05 | .02 | -.03 | .01 | .35 | .00 | -.05 | .66 |
| 28. feeling overwhelmed by your schoolwork | **.59** | .08 | -.04 | -.02 | .01 | -.07 | .11 | .23 | -.06 | .03 | .53 |
| 4. not having time to do things other than play your sport | **.59** | -.06 | -.01 | .19 | .04 | .04 | -.06 | .18 | -.02 | .18 | .59 |
| 6. feeling your training schedule is too demanding | **.56** | -.14 | .06 | .21 | -.02 | .28 | -.13 | .02 | .17 | .09 | .60 |
| 66. having trouble sleeping | **.55** | .16 | .13 | -.11 | .04 | .07 | .19 | -.17 | -.03 | -.15 | .49 |
| 13. not having a social life because of playing sport | **.52** | .17 | -.04 | .15 | -.05 | .16 | .02 | .05 | -.03 | .04 | .52 |
| 1. missing class due to your sport | **.50** | .06 | .00 | -.16 | .09 | -.12 | -.14 | .21 | .08 | -.03 | .34 |
| 31. missing out on the college experience because of playing sports | .39 | .22 | .04 | .20 | -.02 | .17 | -.07 | .12 | -.11 | .05 | .52 |
| 39. feeling irritable | .37 | .24 | .04 | .20 | .12 | .10 | .15 | -.22 | -.01 | -.11 | .48 |
| 22. fitting in with nonathletes | -.04 | **.79** | -.11 | -.01 | -.06 | .05 | .00 | .00 | .05 | .04 | .59 |
| 40. having trouble making friends with nonathletes | -.06 | **.68** | -.04 | .10 | -.08 | .04 | .01 | .06 | .02 | .16 | .53 |
| 26. feeling judged because you are an athlete | .05 | **.67** | .02 | .01 | .02 | -.07 | -.02 | -.02 | .11 | -.16 | .47 |
| 35. being stereotyped as an athlete | .05 | **.67** | .00 | .02 | -.03 | -.03 | .04 | .02 | .07 | -.23 | .52 |
| 17. being viewed as "just" an athlete | .01 | **.67** | .07 | -.02 | -.04 | .01 | -.01 | -.05 | .23 | .05 | .48 |
| 44. being treated differently because you are an athlete | .05 | **.66** | .10 | .03 | -.10 | -.01 | .06 | .07 | .21 | -.08 | .56 |
| 71. feeling like an outcast because you are an athlete | .01 | **.61** | .04 | -.01 | .01 | .12 | -.03 | .08 | .35 | -.14 | .57 |
| 58. feeling disconnected from other students on campus | .12 | **.59** | .00 | .05 | .01 | .07 | -.06 | .15 | -.13 | .08 | .55 |
| 30. feeling lonely | .06 | **.41** | .24 | -.03 | .22 | .20 | -.06 | -.06 | -.27 | -.08 | .54 |

| Item | Factor | | | | | | | | | | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 8. feeling like playing sports is the only thing that makes you unique | .20 | **.40** | .03 | -.11 | .16 | .10 | .07 | -.10 | .15 | .05 | .33 |
| 49. spending too much time socializing with teammates | .08 | .36 | -.10 | .01 | .25 | .04 | -.07 | .16 | .12 | .05 | .32 |
| 60. making mistakes during your sport performance | .10 | .30 | .00 | .19 | .20 | -.09 | .15 | .11 | -.26 | .17 | .53 |
| 34. taking longer than expected to recover from sport injury | .00 | -.04 | **.88** | .06 | -.07 | .00 | -.06 | -.03 | .00 | .01 | .74 |
| 25. feeling isolated because you are injured | -.07 | -.02 | **.86** | -.05 | .07 | .11 | -.05 | -.06 | .06 | .04 | .75 |
| 7. feeling sorry for yourself because of sport injury | .00 | -.05 | **.81** | -.01 | .06 | -.03 | -.05 | -.09 | .09 | .05 | .65 |
| 70. pain from sports injuries | .10 | .05 | **.80** | -.02 | -.06 | .02 | -.02 | -.01 | .01 | -.10 | .68 |
| 43. getting injured while playing your sport | .05 | .03 | **.77** | .01 | .03 | -.04 | .05 | .09 | -.06 | -.03 | .68 |
| 52. worrying about losing your spot on the team due to sport injury | -.01 | -.06 | **.69** | .10 | -.10 | .07 | .14 | .10 | .05 | .08 | .59 |
| 16. having difficulty in school due to sport injury | .01 | .04 | **.61** | -.05 | .03 | -.06 | .06 | .14 | .29 | .05 | .50 |
| 61. not following through with sports injury rehab | .04 | .07 | **.50** | .03 | .02 | -.09 | .21 | .10 | .06 | -.04 | .41 |
| 57. being out of shape | -.18 | .12 | .36 | -.09 | .09 | .25 | .21 | .22 | -.17 | .00 | .46 |
| 24. not being able to perform well in sport | .13 | .12 | .27 | .16 | .19 | -.02 | .10 | .06 | -.24 | .16 | .46 |
| 27. other people asking you for money | -.09 | .01 | .26 | .13 | -.04 | .06 | .13 | .17 | .30 | -.12 | .27 |
| 29. feeling disrespected by your coaches | -.11 | .01 | -.03 | **.81** | .06 | .07 | .01 | .04 | .01 | -.14 | .69 |
| 11. having disagreements with your coach(es) | .01 | -.08 | .00 | **.80** | -.03 | -.10 | .04 | .04 | .09 | -.20 | .65 |
| 20. feeling misunderstood by your coach(es) | .06 | -.02 | .02 | **.69** | .15 | .17 | -.04 | -.04 | .05 | -.02 | .66 |
| 56. feeling pressure from your coach(es) | .13 | .02 | .06 | **.67** | .05 | .17 | -.03 | -.07 | -.08 | .17 | .68 |
| 65. difficulty relating to your coach(es) | .03 | .10 | -.08 | **.67** | .04 | .18 | .04 | .01 | .02 | -.13 | .63 |
| 2. being criticized by your coaches | .25 | .05 | .09 | **.52** | .10 | -.16 | -.01 | .05 | .00 | .27 | .61 |
| 47. feeling your coach(es) are too competitive | .09 | .03 | .05 | **.52** | -.12 | .15 | -.08 | .03 | .01 | .33 | .52 |
| 5. being criticized by your teammate(s) | .11 | -.18 | .06 | .07 | **.78** | -.09 | -.02 | .04 | .05 | .13 | .66 |
| 68. feeling disrespected by your teammate(s) | -.09 | -.01 | -.01 | .08 | **.71** | .04 | .06 | -.01 | .10 | -.15 | .57 |
| 14. having disagreements with teammate(s) | .10 | -.07 | -.01 | .10 | **.67** | -.06 | -.02 | -.06 | .17 | -.13 | .53 |

| Item | Factor | | | | | | | | | | $h^2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 23. feeling misunderstood by your teammate(s) | -.05 | .02 | .08 | .00 | **.66** | .22 | .01 | -.09 | .01 | -.10 | .53 |
| 50. feeling pressure from your teammate(s) | .11 | .19 | -.11 | .04 | **.61** | .03 | -.06 | .00 | .14 | .27 | .58 |
| 41. difficulty relating to your teammate(s) | -.18 | .04 | .03 | -.08 | **.59** | .26 | .11 | .11 | -.13 | -.06 | .51 |
| 51. worrying about others judging your sport performance | .16 | .28 | .08 | .08 | .34 | .01 | .10 | -.07 | -.12 | .29 | .53 |
| 62. losing interest in your sport | .07 | .02 | -.02 | .13 | .01 | **.77** | .07 | -.02 | .02 | .02 | .72 |
| 69. lacking motivation to participate in your sport | .11 | .00 | -.01 | .09 | .06 | **.76** | .04 | .10 | -.07 | -.05 | .71 |
| 53. feeling obligated to play your sport | .11 | .07 | .00 | .2 | -.01 | **.58** | .16 | .02 | .05 | .06 | .59 |
| 42. having trouble concentrating in your sport | .06 | .17 | .03 | -.02 | .24 | **.48** | -.01 | .16 | -.13 | -.01 | .49 |
| 33. feeling your sport is too challenging | .25 | .13 | .16 | .01 | .10 | .31 | -.14 | .08 | .09 | .22 | .42 |
| 18. difficulty supporting yourself financially | .05 | -.09 | .03 | .05 | .01 | .05 | **.83** | -.03 | .11 | .03 | .70 |
| 45. having enough money | .06 | .00 | .06 | .01 | .03 | .02 | **.81** | -.06 | -.02 | .02 | .72 |
| 72. not being able to have a job due to playing sports | .25 | .12 | .00 | .07 | -.12 | .05 | **.51** | .05 | .07 | .16 | .50 |
| 54. having to support other people financially | .02 | -.06 | -.01 | -.04 | .14 | .07 | **.50** | .08 | .28 | -.04 | .35 |
| 9. being eligible for scholarships | .02 | .12 | .03 | -.11 | .00 | .07 | **.49** | .17 | .15 | .21 | .39 |
| 48. having poor nutrition | .17 | .21 | .17 | .09 | .04 | -.13 | .29 | .10 | -.24 | -.05 | .45 |
| 46. getting bad grades due to your sport | .24 | .02 | .02 | .04 | -.03 | .06 | .10 | **.72** | .01 | -.02 | .75 |
| 64. having a low grade-point-average due to your sport | .16 | .09 | .03 | .05 | .00 | .07 | -.02 | **.71** | .07 | .04 | .70 |
| 55. doing poorly in school due to your sport | .32 | .01 | .07 | .02 | -.03 | .11 | .04 | **.68** | .03 | -.03 | .75 |
| 37. feeling unable to succeed in school due to your sport | .35 | .11 | .13 | .04 | -.02 | .04 | -.06 | **.56** | .05 | -.03 | .66 |
| 63. feeling pressure to take money from others | -.01 | .20 | .06 | .00 | .04 | -.01 | .13 | .06 | **.67** | .11 | .51 |
| 67. arguing with nonathlete friends | .08 | .23 | .06 | .03 | .25 | -.03 | -.01 | .11 | **.56** | -.05 | .49 |
| 36. other people offering you money | -.04 | .24 | .09 | .06 | .12 | -.13 | .15 | -.09 | **.50** | .10 | .35 |
| 32. feeling your teammate(s) aren't competitive enough | .10 | .20 | .06 | .13 | .23 | -.15 | -.08 | .09 | -.16 | **-.56** | .51 |
| 38. feeling your coach(es) aren't competitive enough | -.03 | .05 | -.07 | .34 | .16 | .15 | -.03 | .05 | .11 | **-.52** | .49 |

| | Factor | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | $h^2$ |
| 15. worrying about losing your spot on the team | -.07 | .10 | .14 | .32 | .11 | -.06 | .16 | .02 | -.01 | **.41** | .41 |
| 59. feeling your teammate(s) are too competitive | -.02 | -.03 | -.08 | .02 | .39 | .04 | .09 | .21 | .19 | **.40** | .39 |

| Factor Intercorrelations | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Factor 1 | 1.00 | | | | | | | | | |
| Factor 2 | .27 | 1.00 | | | | | | | | |
| Factor 3 | .16 | .22 | 1.00 | | | | | | | |
| Factor 4 | .32 | .23 | .13 | 1.00 | | | | | | |
| Factor 5 | .13 | .21 | .16 | .27 | 1.00 | | | | | |
| Factor 6 | .16 | .22 | .13 | .23 | .08 | 1.00 | | | | |
| Factor 7 | .18 | .25 | .20 | .13 | .13 | .11 | 1.00 | | | |
| Factor 8 | .24 | .25 | .11 | .22 | .09 | .08 | .13 | 1.00 | | |
| Factor 9 | .01 | -.08 | -.05 | -.02 | -.06 | .05 | -.11 | .01 | 1.00 | |
| Factor 10 | .11 | .06 | .07 | .06 | -.01 | .03 | -.06 | .05 | -.08 | 1.00 |

*Note.* $h^2$ = communality. No items were reversed-scored for this analysis. Salient factor pattern matrix coefficients are in boldface. Factor 1= Balancing Responsibilities, Factor 2= Athlete Identity, Factor 3= Sport Injury, Factor 4= Coach-Athlete Relationships, Factor 5 = Teammate-Athlete Relationships, Factor 6 = Sport Motivation, Factor 7 = Personal Finances, Factor 8 = Academic Performance.

Table 6

*Item Analysis to Improve Internal Consistency of the Student-Athlete Stress Scale*

| | Item | Corrected Item-Total Correlation | Alpha if Item Deleted |
|---|---|---|---|
| 1 | missing class due to your sport | .29 | .95 |
| 2 | being criticized by your coaches | .56 | .95 |
| 3 | being unable to find time to relax | .52 | .95 |
| 4 | not having time to do things other than play your sport | .56 | .95 |
| 5 | being criticized by your teammate(s) | .34 | .95 |
| 6 | feeling your training schedule is too demanding | .50 | .95 |
| 7 | feeling sorry for yourself because of sport injury | .31 | .95 |
| 8 | feeling like playing sports is the only thing that makes you unique | .42 | .95 |
| 9 | being eligible for scholarships | .37 | .95 |
| 10 | catching up on schoolwork because of your sport | .50 | .95 |
| 11 | having disagreements with your coach(es) | .37 | .95 |
| 12 | feeling exhausted | .51 | .95 |
| 13 | not having a social life because of playing sport | .59 | .95 |
| 14 | having disagreements with teammate(s) | .28 | .95 |
| 15 | worrying about losing your spot on the team | .40 | .95 |
| 16 | having difficulty in school due to sport injury | .38 | .95 |
| 17 | being viewed as "just" an athlete | .39 | .95 |
| 18 | difficulty supporting yourself financially | .38 | .95 |
| 19 | not having enough time to study due to your sport | .58 | .95 |
| 20 | feeling misunderstood by your coach(es) | .52 | .95 |
| 21 | not having enough energy to get through the day | .57 | .95 |
| 22 | fitting in with non-athletes | .40 | .95 |
| 23 | feeling misunderstood by your teammate(s) | .32 | .95 |
| 24 | not being able to perform well in sport | .54 | .95 |
| 25 | feeling isolated because you are injured | .36 | .95 |
| 26 | feeling judged because you are an athlete | .38 | .95 |
| 27 | other people asking you for money | .27 | .95 |
| 28 | feeling overwhelmed by your schoolwork | .53 | .95 |
| 29 | feeling disrespected by your coaches | .43 | .95 |
| 30 | feeling lonely | .50 | .95 |
| 31 | missing out on the college experience because of playing sports | .62 | .95 |
| 32 | feeling your teammate(s) aren't competitive enough | .26 | .95 |
| 33 | feeling your sport is too challenging | .49 | .95 |
| 34 | taking longer than expected to recover from sport injury | .37 | .95 |
| 35 | being stereotyped as an athlete | .43 | .95 |
| 36 | other people offering you money | .23 | .95 |
| 37 | feeling unable to succeed in school due to your sport | .61 | .95 |
| 38 | feeling your coach(es) aren't competitive enough | .24 | .95 |
| 39 | feeling irritable | .56 | .95 |
| 40 | having trouble making friends with non-athletes | .44 | .95 |

| | | | |
|---|---|---|---|
| 41 | difficulty relating to your teammate(s) | .31 | .95 |
| 42 | having trouble concentrating in your sport | .50 | .95 |
| 43 | getting injured while playing your sport | .48 | .95 |
| 44 | being treated differently because you are an athlete | .49 | .95 |
| 45 | having enough money | .42 | .95 |
| 46 | getting bad grades due to your sport | .57 | .95 |
| 47 | feeling your coach(es) are too competitive | .42 | .95 |
| 48 | having poor nutrition | .50 | .95 |
| 49 | spending too much time socializing with teammates | .39 | .95 |
| 50 | feeling pressure from your teammate(s) | .42 | .95 |
| 51 | worrying about others judging your sport performance | .55 | .95 |
| 52 | worrying about losing your spot on the team due to sport injury | .45 | .95 |
| 53 | feeling obligated to play your sport | .54 | .95 |
| 54 | having to support other people financially | .27 | .95 |
| 55 | doing poorly in school due to your sport | .62 | .95 |
| 56 | feeling pressure from your coach(es) | .56 | .95 |
| 57 | being out of shape | .40 | .95 |
| 58 | feeling disconnected from other students on campus | .54 | .95 |
| 59 | feeling your teammate(s) are too competitive | .30 | .95 |
| 60 | making mistakes during your sport performance | .54 | .95 |
| 61 | not following through with sports injury rehab | .43 | .95 |
| 62 | losing interest in your sport | .46 | .95 |
| 63 | feeling pressure to take money from others | .25 | .95 |
| 64 | having a low grade-point-average due to your sport | .53 | .95 |
| 65 | difficulty relating to your coach(es) | .52 | .95 |
| 66 | having trouble sleeping | .49 | .95 |
| 67 | arguing with non-athlete friends | .36 | .95 |
| 68 | feeling disrespected by your teammate(s) | .29 | .95 |
| 69 | lacking motivation to participate in your sport | .50 | .95 |
| 70 | pain from sports injuries | .44 | .95 |
| 71 | feeling like an outcast because you are an athlete | .44 | .95 |
| 72 | not being able to have a job due to playing sports | .50 | .95 |

*Note.* Coefficient alpha for the 72-item test is .95.

Table 7

*Model-Data Fit Statistics for Structural Equation Models*

| Model | *df* | Model $\chi^2$ | Satorra-Bentler $\chi^2$ | CFI | RMSEA | RMSEA 90% Confidence Interval |
|---|---|---|---|---|---|---|
| Measurement Model A | 280 | 633.77* | 428.66* | .92 | .04 | .03 - .05 |
| Structural Model A | 282 | 657.91* | 443.99* | .91 | .04 | .03 - .05 |
| Structural Model $A_1$ | 283 | 677.19* | 434.21* | .92 | .04 | .03 - .05 |
| Measurement Model B | 255 | 587.21* | 381.62* | .98 | .04 | .03 - .05 |
| Structural Model B | 257 | 622.43* | 403.94* | .98 | .04 | .03 - .05 |
| Structural Model $B_1$ | 258 | 631.35* | 371.48* | .99 | .04 | .03 - .04 |

* $p < .001$.

APPENDIX B

FIGURES

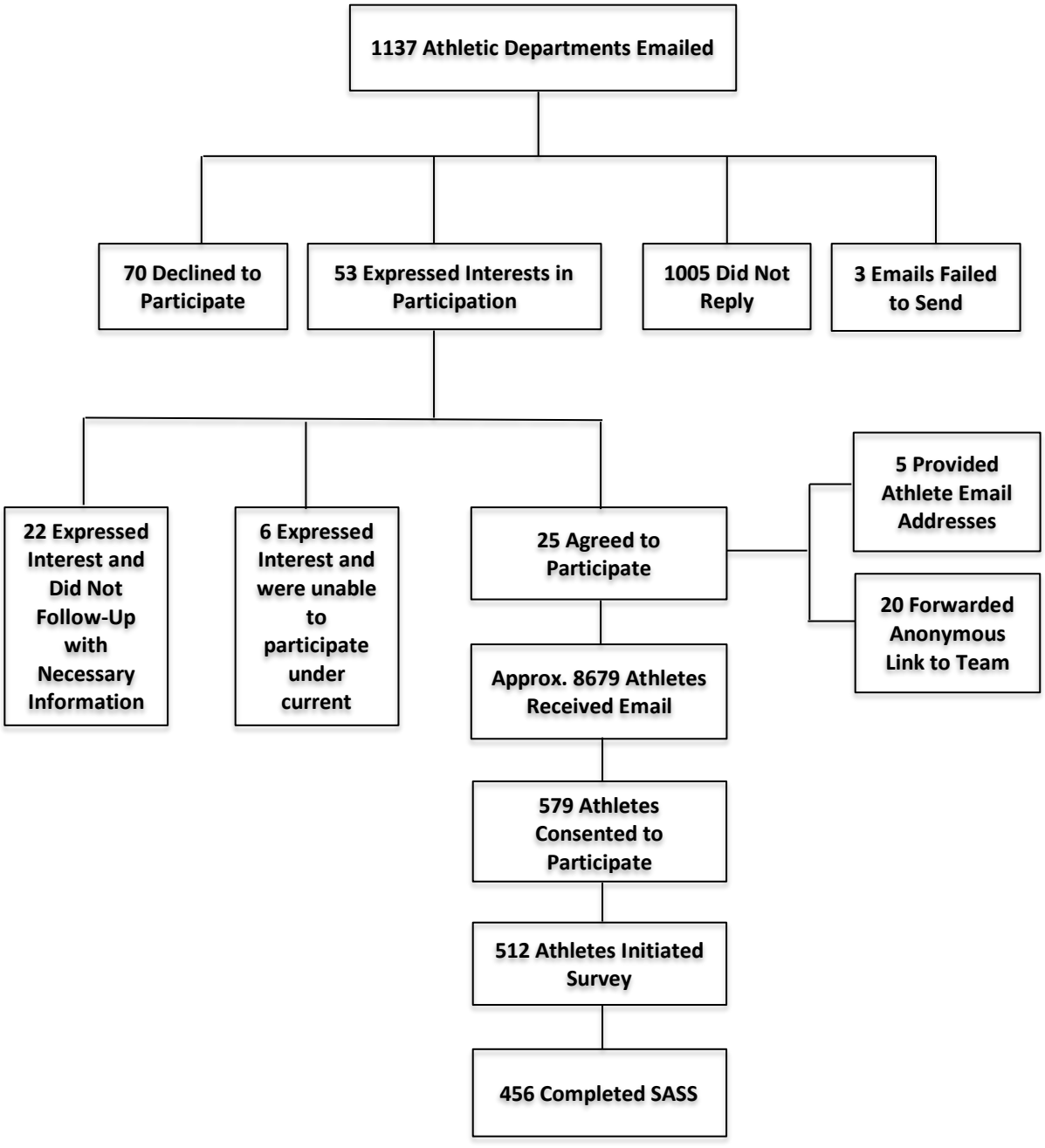


*Figure 1*. Recruitment flow-chart. This figure illustrates how participants were recruited into the study.

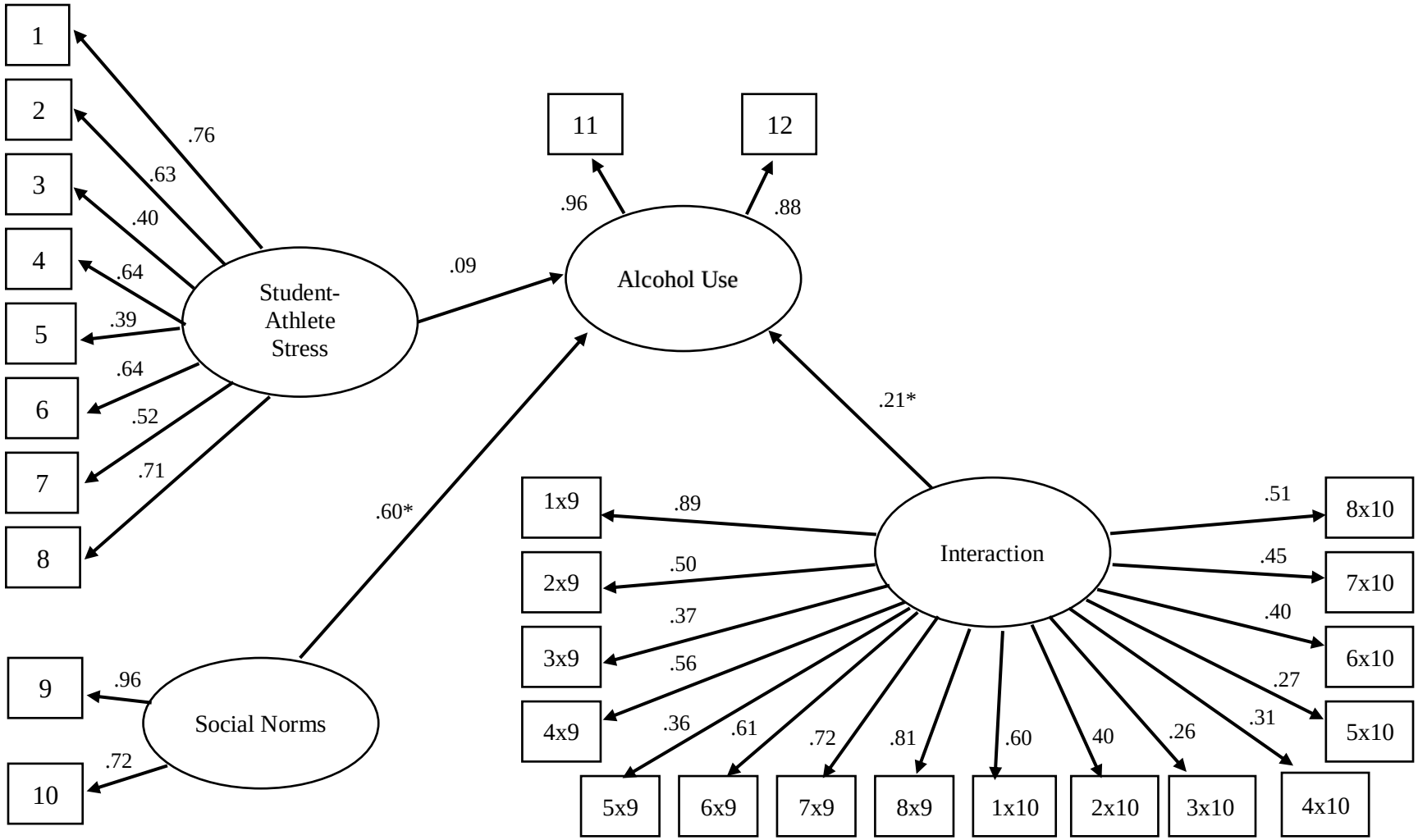


*Figure 2.* Model A and estimated parameters. All of the estimated path weights are standardized. 1 = Balancing Responsibilities Total, 2 = Athlete Identity Total, 3 = Sport Injury Total, 4 = Coach-Athlete Relationships Total, 5 = Teammate-Athlete Relationships Total, 6 = Sport Motivation Total, 7 = Personal Finances Total, 8 = Academic Performance Total, 9 = Descriptive Norms Composite Score, 10 = Injunctive Norms Composite Score, 11 = # Days Drinking, 12 = # Days Binge Drinking.

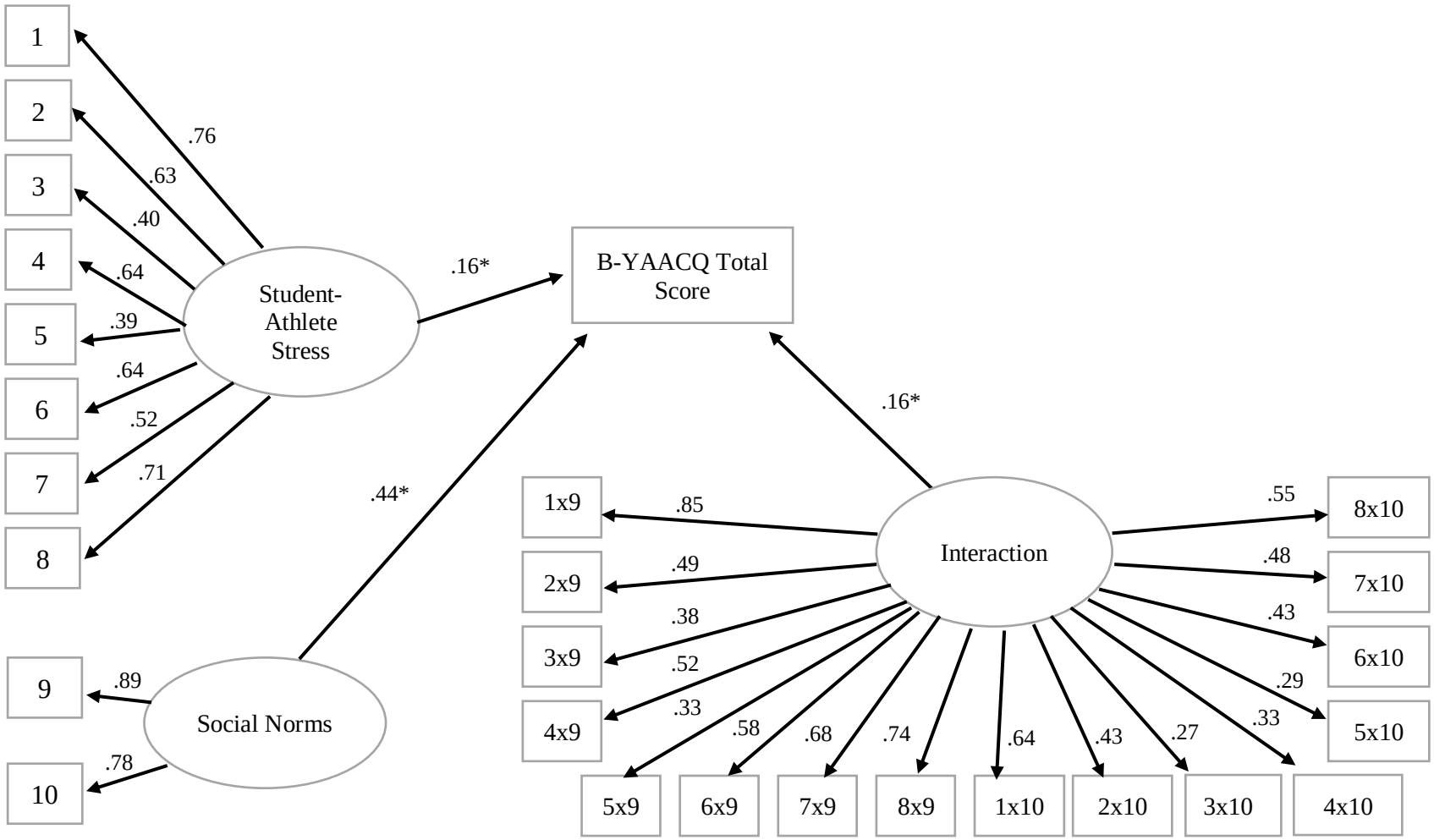


*Figure 3.* Model B and estimated parameters. All estimated path weights are standardized. 1 = Balancing Responsibilities Total, 2 = Athlete Identity Total, 3 = Sport Injury Total, 4 = Coach-Athlete Relationships Total, 5 = Teammate-Athlete Relationships Total, 6 = Sport Motivation Total, 7 = Personal Finances Total, 8 = Academic Performance Total, 9 = Descriptive Norms Composite Score, 10 = Injunctive Norms Composite Score.

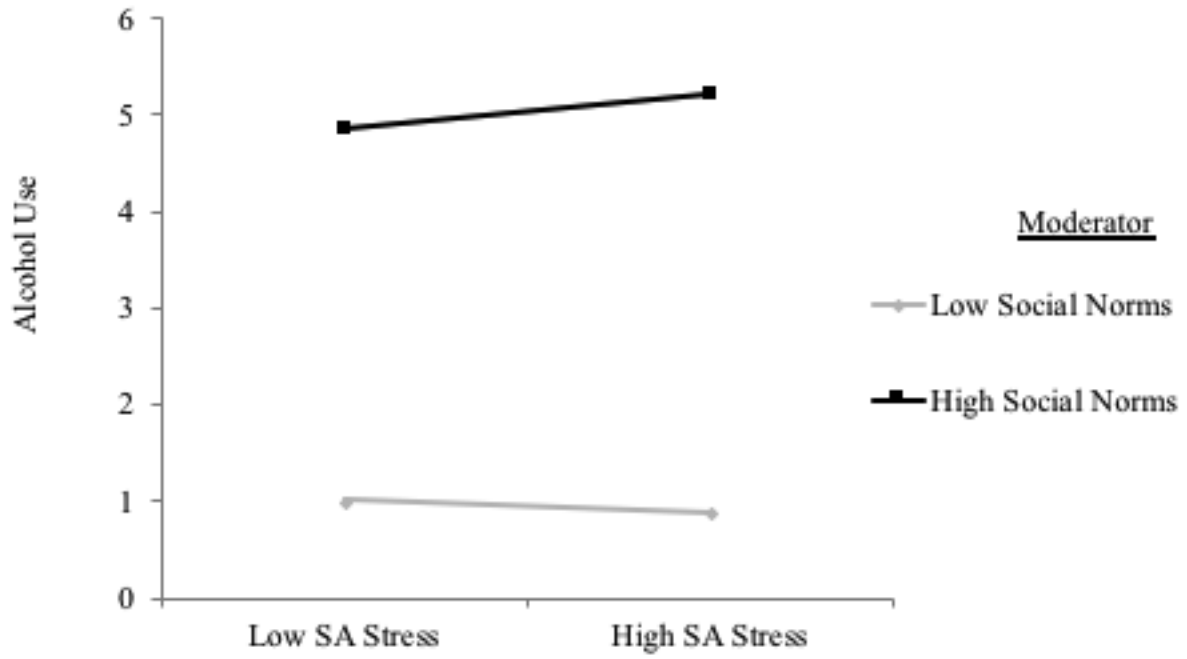


*Figure 4.* Alcohol use and student-athlete stress by social norms.

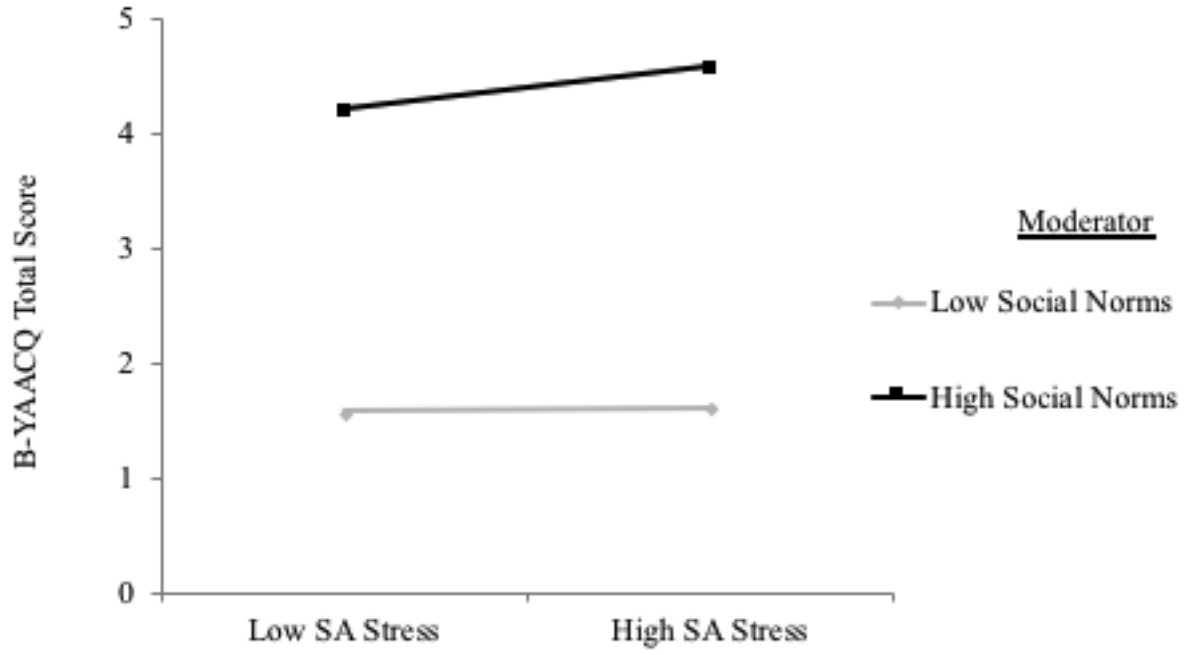


*Figure 5.* B-YAACQ total score and student-athlete stress by social norms.

## APPENDIX C

## DEMOGRAPHIC QUESTIONNAIRE ITEMS AND RESPONSE OPTIONS

- College attending: [Please write-out the full name of your COLLEGE here]
- Gender: [Male; Female; Other]
- Age: [Please write in your age in years]
- What is your primary sport: [NCAA Football; NCAA Baseball; NCAA Track & Field (Outdoor); NCAA Cross-Country, NCAA Volleyball; NCAA Basketball; NCAA Softball; NCAA Golf; NCAA Soccer; NCAA Swimming & Diving; NCAA Tennis; NCAA Water Polo; NCAA Field Hockey; NCAA Bowling; NCAA Fencing; NCAA Gymnastics; NCAA Ice Hockey; NCAA Rifle; NCAA Skiing; NCAA Wrestling; NCAA Rowing; NCAA Lacrosse; NCAA Track & Field (Indoor); NCAA Women's Rugby]
- Are you currently in competition season for your primary sport? [Yes; No]
- What is your secondary sport? [I only play one sport; NCAA Football; NCAA Baseball; NCAA Track & Field (Outdoor); NCAA Cross-Country, NCAA Volleyball; NCAA Basketball; NCAA Softball; NCAA Golf; NCAA Soccer; NCAA Swimming & Diving; NCAA Tennis; NCAA Water Polo; NCAA Field Hockey; NCAA Bowling; NCAA Fencing; NCAA Gymnastics; NCAA Ice Hockey; NCAA Rifle; NCAA Skiing; NCAA Wrestling; NCAA Rowing; NCAA Lacrosse; NCAA Track & Field (Indoor); NCAA Women's Rugby]
- Are you currently in competition season for your secondary sport? [Yes; No; I only play one sport]
- Ethnicity: [Caucasian; African American; Asian; Hispanic; American Indian; Pacific Islander; Middle Eastern, Other; Multiethnic/Mixed]

- Class Status: [Freshman; Sophomore; Junior; Senior; 5th year; Graduate Student]
- NCAA Division: [I; II; III]
- Total number of years playing your primary sport: [1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26; 27; 28; 29; 30; >30]
- Are you Red-shirting this year? [Yes; No]
- This year, are you typically a: [Starter; Non-Starter; N/A]
- Number of years playing your primary sport at this college (including this year): [1; 2; 3; 4; 5; 6]
- Are you a team captain this year? [Yes; No]
- Do you consider yourself to be a leader on this team? [Yes; No]
- Are you considered an in-state or out-of-state student? [In-state; Out-of-State]
- What was your GPA last semester? (If a freshman, provide last high school GPA): [Write in]
- How many credits are you enrolled in this semester? [Write in]
- On average, how many hours per week do you spend in team related activities (i.e., practice, competitions, weight training, team meetings)? [Write in]
- Have you ever met with a sport psychologist? [Yes; No]
- Have you ever seen a mental health professional? [Yes; No]
- Have you ever received counseling/therapy due to alcohol use? [Yes; No]

APPENDIX D

STUDENT-ATHLETE STRESS SCALE

| **Below is a list of experiences that student-athletes sometimes have. Please read each one carefully and indicate how CONCERNED you have been by each item OVER THE PAST 30 DAYS.** | | | | |
|---|---|---|---|---|
| **In the past 30 days, how concerned have you been by:** | **Not at All** | **A Little Concerned** | **Moderately Concerned** | **Very Concerned** |
| missing class due to your sport | **0** | **1** | **2** | **3** |
| being criticized by your coaches | **0** | **1** | **2** | **3** |
| being unable to find time to relax | **0** | **1** | **2** | **3** |
| not having time to do things other than play your sport | **0** | **1** | **2** | **3** |
| being criticized by your teammate(s) | **0** | **1** | **2** | **3** |
| feeling your training schedule is too demanding | **0** | **1** | **2** | **3** |
| feeling sorry for yourself because of sport injury | **0** | **1** | **2** | **3** |
| feeling like playing sports is the only thing that makes you unique | **0** | **1** | **2** | **3** |
| being eligible for scholarships | **0** | **1** | **2** | **3** |
| catching up on schoolwork because of your sport | **0** | **1** | **2** | **3** |
| having disagreements with your coach(es) | **0** | **1** | **2** | **3** |
| feeling exhausted | **0** | **1** | **2** | **3** |
| not having a social life because of playing sport | **0** | **1** | **2** | **3** |
| having disagreements with teammate(s) | **0** | **1** | **2** | **3** |
| worrying about losing your spot on the team | **0** | **1** | **2** | **3** |
| having difficulty in school due to sport injury | **0** | **1** | **2** | **3** |
| being viewed as "just" an athlete | **0** | **1** | **2** | **3** |
| difficulty supporting yourself financially | **0** | **1** | **2** | **3** |
| not having enough time to study due to your sport | **0** | **1** | **2** | **3** |
| feeling misunderstood by your coach(es) | **0** | **1** | **2** | **3** |
| not having enough energy to get through the day | **0** | **1** | **2** | **3** |

| | | | | |
|---|---|---|---|---|
| fitting in with non-athletes | **0** | **1** | **2** | **3** |
| feeling misunderstood by your teammate(s) | **0** | **1** | **2** | **3** |
| not being able to perform well in sport | **0** | **1** | **2** | **3** |
| feeling isolated because you are injured | **0** | **1** | **2** | **3** |
| feeling judged because you are an athlete | **0** | **1** | **2** | **3** |
| other people asking you for money | **0** | **1** | **2** | **3** |
| feeling overwhelmed by your schoolwork | **0** | **1** | **2** | **3** |
| feeling disrespected by your coaches | **0** | **1** | **2** | **3** |
| feeling lonely | **0** | **1** | **2** | **3** |
| missing out on the college experience because of playing sports | **0** | **1** | **2** | **3** |
| feeling your teammate(s) aren't competitive enough | **0** | **1** | **2** | **3** |
| feeling your sport is too challenging | **0** | **1** | **2** | **3** |
| taking longer than expected to recover from sport injury | **0** | **1** | **2** | **3** |
| being stereotyped as an athlete | **0** | **1** | **2** | **3** |
| other people offering you money | **0** | **1** | **2** | **3** |
| feeling unable to succeed in school due to your sport | **0** | **1** | **2** | **3** |
| feeling your coach(es) aren't competitive enough | **0** | **1** | **2** | **3** |
| feeling irritable | **0** | **1** | **2** | **3** |
| having trouble making friends with non-athletes | **0** | **1** | **2** | **3** |
| difficulty relating to your teammate(s) | **0** | **1** | **2** | **3** |
| having trouble concentrating in your sport | **0** | **1** | **2** | **3** |
| getting injured while playing your sport | **0** | **1** | **2** | **3** |
| being treated differently because you are an athlete | **0** | **1** | **2** | **3** |
| having enough money | **0** | **1** | **2** | **3** |
| getting bad grades due to your sport | **0** | **1** | **2** | **3** |
| feeling your coach(es) are too competitive | **0** | **1** | **2** | **3** |
| having poor nutrition | **0** | **1** | **2** | **3** |
| spending too much time socializing with teammates | **0** | **1** | **2** | **3** |

| | | | | |
|---|---|---|---|---|
| feeling pressure from your teammate(s) | **0** | **1** | **2** | **3** |
| worrying about others judging your sport performance | **0** | **1** | **2** | **3** |
| worrying about losing your spot on the team due to sport injury | **0** | **1** | **2** | **3** |
| feeling obligated to play your sport | **0** | **1** | **2** | **3** |
| having to support other people financially | **0** | **1** | **2** | **3** |
| doing poorly in school due to your sport | **0** | **1** | **2** | **3** |
| feeling pressure from your coach(es) | **0** | **1** | **2** | **3** |
| being out of shape | **0** | **1** | **2** | **3** |
| feeling disconnected from other students on campus | **0** | **1** | **2** | **3** |
| feeling your teammate(s) are too competitive | **0** | **1** | **2** | **3** |
| making mistakes during your sport performance | **0** | **1** | **2** | **3** |
| not following through with sports injury rehab | **0** | **1** | **2** | **3** |
| losing interest in your sport | **0** | **1** | **2** | **3** |
| feeling pressure to take money from others | **0** | **1** | **2** | **3** |
| having a low grade-point-average due to your sport | **0** | **1** | **2** | **3** |
| difficulty relating to your coach(es) | **0** | **1** | **2** | **3** |
| having trouble sleeping | **0** | **1** | **2** | **3** |
| arguing with non-athlete friends | **0** | **1** | **2** | **3** |
| feeling disrespected by your teammate(s) | **0** | **1** | **2** | **3** |
| lacking motivation to participate in your sport | **0** | **1** | **2** | **3** |
| pain from sports injuries | **0** | **1** | **2** | **3** |
| feeling like an outcast because you are an athlete | **0** | **1** | **2** | **3** |
| not being able to have a job due to playing sports | **0** | **1** | **2** | **3** |

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CURRICULUM VITAE

**Travis Loughran, M.A.**

email: travis.a.loughran@gmail.com

## EDUCATION

**Ph.D.,** Clinical Psychology, University of Nevada, Las Vegas (APA-Accredited) **Expected 2018**

**Dissertation:** An examination of student-athlete stress and risky alcohol use

Chair: Bradley Donohue, Ph.D.

**M.A.,** Psychology, University of Nevada, Las Vegas **2015**

**Thesis:** Factor analysis of the Sport Interference Checklist with collegiate athletes

Chair: Bradley Donohue, Ph.D.

**M.A.,** Psychology, Medaille College **2009**

**B.A.,** Psychology, Clemson University **2007**

## PRE-DOCTORAL INTERNSHIP

**Durham VA Medical Center (APA-Accredited)** **2017-2018**

Durham, NC *Training Director: R. Keith Shaw, Ph.D.*

- Provided clinical service to a Veteran population across multiple settings in an interdisciplinary VA hospital. The Veteran population was diverse regarding service era (OEF/OIF/OND, Gulf War, and Vietnam), race, ethnicity, gender, sexual orientation, and rural populations. Common presenting problems included combat trauma, military sexual trauma, and childhood trauma, as well as complex cases involving substance use, traumatic brain injury, cognitive impairments, and personality disorder features.
- Completed didactic trainings and supervision in a variety of evidence-based treatments, as well as, participate in regular didactic seminars related to research, diversity, supervision and professional development.

***Addictions Rotation*** *Supervisors: Murray McNiel, Ph.D. & Amy Mistler, Ph.D., ABPP*

- Provided assessment, consultation, and evidence-based group and individual psychotherapies to address substance use disorders and co-occurring mental health disorders on an interdisciplinary substance use disorders treatment team.
- Received training and supervision in providing Motivational Interviewing/Motivational Enhancement Therapy, Cognitive Behavioral Therapy for substance use disorders, Acceptance and Commitment Therapy (ACT), Cognitive Processing Therapy (CPT), and *QuitSmart* Stop Smoking Program.
- Served Veterans experiencing Cocaine, Alcohol, Opioid, Cannabis, and/or Tobacco Use Disorders, as well as, co-occurring mental health disorders.

***Neuropsychology Rotation*** *Supervisor: Karen Tucker, Ph.D.*

- Conducted comprehensive clinical interviews for traumatic brain injury, ADHD, PTSD, personality disorder features, and other co-occurring mental health disorders.
- Conducted appropriate review of medical records and incorporated relevant data from medical records into testing procedures.
- Generated diagnostic hypotheses, case formulations and initial recommendations based on neuropsychological test data.
- Completed integrated reports based on neuropsychological testing data, information from clinical interview, and relevant medical history.
- Received supervision and training in clinical interviewing, test administration procedures, neuropsychological data interpretation, and integrated report writing.

***Operation Enduring Freedom / Iraqi Freedom /*** *Supervisor: Jay Gregg, Ph.D*

***New Dawn Rotation***

- Provided empirically supported assessment and treatment of common post-deployment concerns for Veteran's returning from ongoing conflicts in Iraq and Afghanistan as part of a multidisciplinary treatment team.
- Received training and supervision in full-model DBT, ACT, and CPT.
- Utilized treatment monitoring assessments such as the PHQ-9, GAD-7, and PCL-5.
- Presenting problems include physical, cognitive, and/or mental health concerns.

***Outpatient Mental Health Rotation*** *Supervisor: Jeffrey White, Ph.D.*

- Provided diagnostic/personality assessment and evidence-based individual psychotherapy in a general outpatient mental health clinic.
- Received training and supervision in empirically-supported treatment protocols, acute crisis management, brief psychotherapies, positive psychology interventions and psychoeducational programs with an emphasis on treating severe mental illness.
- Veterans presenting problems common to this rotation are depression, panic, mood and anxiety dysregulation, PTSD, personality disorders, problematic anger and aggression, couple/marital conflict, acute psychological distress, psychosis, and sexual dysfunction.

## PRACTICUM EXPERIENCE

**VA Southern Nevada Healthcare System** **2016-2017**

*Evidence-Based Psychotherapy Clinic* *Supervisor: Robert Mirabella, Ph.D.*

Las Vegas, NV

- Implemented CPT and Prolonged Exposure for male and female veterans with PTSD related to complex trauma, combat trauma, and military sexual trauma.

- Conducted assessments using Clinically Administered PTSD Scale for DSM-5.
- Utilized the BDI-II and PCL-5 as screening and treatment monitoring assessments.
- Received weekly individual and group supervision of diagnostic assessment and evidence-based treatment implementation. Attended weekly evidence-based therapy seminar.

**VA Southern Nevada Healthcare System** **2015-2016**

*Addictive Disorders Treatment Program (ADTP)* *Supervisors: Carl D. Williams, Ph.D. & Heather Manor, PsyD.*

Las Vegas, NV

- Implemented evidence-based treatments for substance use disorders, gambling disorder, post-traumatic stress disorder, and other co-morbid psychological concerns. Therapeutic approaches included: CBT for substance use disorders, Cognitive Processing Therapy, Acceptance and Commitment Therapy, Motivational Interviewing, and Seeking Safety.
- Co-facilitated weekly psychotherapy groups including Acceptance and Commitment Therapy for substance use, Seeking Safety for dually diagnosed PTSD and substance use disorders, CBT for anger management and substance use, and CBT psychoeducation group.
- Conducted diagnostic intake assessments for substance use and other psychological disorders. Collaboratively used results to establish treatment plans with Veterans.
- Conducted comprehensive psychological assessments for referral questions including differential diagnoses for personality assessments, PTSD, and cognitive impairment.
- Two hours and 30 minutes of weekly individual supervision. Supervision included in vivo and group therapy observation. Training in and supervision of diagnostic assessment, treatment planning, and session notes.

**A Better Today Recovery Services (ABTRS)** **2014-2015**

Las Vegas, NV *Supervisor: Mark Anderson, Ph.D.*

- Provided individual psychotherapy for a caseload of 5-7 male clients per week in a residential substance use treatment program. Diagnoses included substance use disorders, affective disorders, anxiety disorders, and PTSD. Therapeutic approaches included Cognitive Behavioral Therapy, Acceptance and Commitment Therapy, Motivational Interviewing, and Prolonged Exposure for PTSD.
- Integrated tenets of evidence-based treatments into 12-step recovery model.
- Led two weekly therapy groups from a cognitive-behavioral perspective.
- Conducted assessments using the MMPI-II-RF to facilitate treatment planning.
- Helped develop protocol to align ABTRS intake procedures and treatment recommendations to be consistent with DSM substance use disorder criteria.
- Participated in weekly individual and group supervision and interdisciplinary team meeting.

**Departmental Community Mental Health Clinic** **2013- 2014**

University of Nevada, Las Vegas *Supervisor: Chris Kearney, Ph.D. & Michelle Paul, Ph.D.*

- Provided long-term individual, co-therapy and family therapy for a diverse caseload of approximately 5-6 adult, adolescent, and child clients. Diagnoses included affective disorders, anxiety disorders, obsessive-compulsive disorders, learning disabilities, neurodevelopmental disorders and adjustment disorders. Therapeutic approaches included CBT, DBT, and ACT.
- Conducted clinical diagnostic intake interviews and provided treatment recommendations based on interview results.
- Weekly individual and group supervision. Training in and supervision of diagnostic clarification, treatment planning, case summaries, and clinical progress notes. All clinical activities were video recorded and were reviewed in group and individual supervision. Attended weekly staff meeting and practicum seminar which included didactic and group supervision components.

**Psychological Assessment & Testing Clinic** **2013-2016**

University of Nevada, Las Vegas *Supervisor: Michelle Paul, Ph.D.*

- Conducted comprehensive psychological assessments using a flexible battery with adults and adolescents referred from the community in an outpatient psychology department-sponsored mental health training clinic. Referral questions included ADHD, learning disabilities, and emotional regulation problems.
- Responsibilities included clinical interviewing, administration, scoring, and interpretation of psychological tests, integrated report writing, and provision of feedback to clients.
- Received supervision from a developmental perspective, including collaborative case review, construction of assessment battery, interpretation of results, and report preparation.

**The Optimum Performance Program in Sports (TOPPS)** **2012-2015**

University of Nevada, Las Vegas *Supervisor: Bradley Donohue, Ph.D.*

- Assisted in the development and refinement of Family Behavior Therapy (FBT) for collegiate student-athletes with substance use disorders as part of a NIDA-funded randomized controlled trial.
- Implemented manualized FBT with collegiate student-athletes diagnosed with substance use disorders. Intervention concurrently targeted substance use, comorbid mental health concerns, sport performance, interpersonal relationships, and risky sexual behavior. Student-athletes were representative of a diverse student population regarding race, ethnicity, gender, sexual orientation, and nationality.
- Weekly individual and group supervision. Received training in and supervision of intervention implementation, included audiotape review for treatment fidelity.

## PROFESSIONAL CLINICAL EXPERIENCE

**Horizon Health Services** **2009-2012**

Buffalo, NY *Supervisor: Rick Salada, MS, CASAC*

*Substance Abuse Counselor (35 hours/week)*

- Implemented individual therapy and provided case management services for a caseload of approximately 30 adult and adolescent clients diagnosed with substance use disorders in an outpatient community mental health clinic. Received weekly individual supervision.
- Led multiple groups per week. Groups topics included adolescent recovery, psychoeducation, relationship skills, Rational Emotive Behavior Therapy, relapse prevention, and opioid use.
- Responsibilities included comprehensive psycho-social assessments, treatment plan development, discharge planning, aftercare planning, participation in weekly interdisciplinary case conference and collaboration with legal and medical referral sources.
- Served as liaison between Horizon Health Services and local drug court programs where responsibilities included organizing client progress reports, providing in-court substance use screens, and collaborating with court officials to coordinate appropriate treatment interventions.

## PROVISION OF SUPERVISION

**Departmental Community Mental Health Clinic** **2016**

University of Nevada, Las Vegas *Supervisor: Michelle Paul, Ph.D.*

*Supervisor-in-Training*

- As part of a supervision dyad, provided weekly supervision to a practicum student in an outpatient mental health training clinic. Supervision included providing didactic training, intervention planning, case review, and video-tape review.
- Weekly supervision of supervision and group supervision of supervision. Supervision consisted of video review of supervision provision.

## RESEARCH EXPERIENCE

**VA Southern Nevada Healthcare System** **2016-2017**

Las Vegas, NV *Advisor: Olaf Fallye, M.D.*

*Research Health Science Specialist*

- Research assistant at control site for a site-level study examining the efficacy of Patient Aligned Care Teams for Veterans with mental illness (SMI-PACT).

- Responsibilities included determining eligibility and recruiting participants, consenting participants into the study, completing standardized baseline and follow-up assessments, and tracking participant progress.

**Inter-Professional Education Workgroup** **2015-2016**

University of Nevada, Las Vegas *Advisor: Noelle Lefforge, Ph.D.*

*Research Assistant*

- Research assistant for multidisciplinary team aiming to develop effective inter-professional training experiences for a diverse set of graduate students at UNLV.
- Responsibilities included development and dissemination of survey instruments used for program evaluation, development of data spreadsheets, training research assistants to enter and record data, and analysis of data.

**Family Research & Services** **2014-2015**

University of Nevada, Las Vegas *Advisor: Bradley Donohue, Ph.D.*

*Research Coordinator*

- Supervised all aspects of research projects being conducted at Family Research & Services, including NIDA funded randomized control trial.
- Responsibilities included coordination of research assessments, management of urn randomization procedures, development and review of research procedures, supervision of graduate and undergraduate students, and manuscript preparation.

**Family Research & Services** **2012-2014**

University of Nevada, Las Vegas *Advisor: Bradley Donohue, Ph.D.*

*Data Management Coordinator*

- Supervised data management activities for multiple research projects including NIDA funded randomized control trial and Great Plays Alcohol Abuse Prevention trial.
- Responsibilities included development and initiation of data spreadsheets, training research assistants to collect, enter and record data, establishing and maintaining quality assurance checks of data records and databases, and assuring data security.

**Dept. of Counseling, School, &, Educational Psychology** **2010-2011**

State University of New York at Buffalo *Advisor: Gregory Fabiano, Ph.D.*

*Project Aide*

- Implemented Motivational Interviewing with participants diagnosed with ADHD.
- Coded video-data depicting interactions between participants and their parents.

## GRANT INVOLVEMENT

**Pact to Improve Health Care in People with Serious Mental Illness (SMI-PACT)**

*Research Health Science Specialist*

Funding Agency: Veterans Affairs HSR & D Quality Enhancement Research Initiative (QUERI)

Principal Investigator: Alexander S. Young, MD, MSHS

Co-Principal Investigator: Amy N. Cohen, PhD.

**Family Behavior Therapy for Collegiate Athletes** (R01DA031828)

*Research Coordinator, Data Management Coordinator, & Interventionist*

Funding Agency: National Institutes on Drug Abuse

Principal Investigator: Bradley Donohue, Ph.D.

**Great Plays Alcohol Abuse Prevention**

*Prevention Educator*

Funding Agency: Alcohol Beverage Medical Research

Principal Investigator: Bradley Donohue, Ph.D.

**Improving Parenting Capacity to Promote Safe Driving in Adolescents with ADHD (**R01HD058588)

*Project Aide*

Funding Agency: National Institute of Child Health and Human Development

Principal Investigator: Gregory Fabiano, Ph.D.

## JOURNAL ARTICLES

Donohue, B., Gavrilova, Y., Galante, M., Gavrilova, E., **Loughran, T**., Scott, J., ... Allen, D. N. (2018). Controlled evaluation of an optimization approach to mental health and sport performance. *Journal of Clinical Sport Psychology*. 1-42.

Donohue, B., Plant, C. P., **Loughran, T. A**., & Torres, A. (2017). Family assisted contingency management within the context of evidence-supported treatment for child neglect and drug abuse. *Journal of Child and Family Studies*, *26,* 2224–2236.

Donohue, B., Dowd, A., Plant, C. P., Phillips, C.R., **Loughran, T**., & Gavrilova, Y. (2016). Controlled evaluation of a method to assist recruitment of participants into treatment outcome research and engage student athletes into substance abuse intervention. *Journal of Clinical Sport Psychology*, *10,* 272-288.

Donohue, B., **Loughran, T**., Pitts, M., Gavrilova, Y., Chow, G.M., Soto-Nevarez, A., & Schubert, K. (2016). Preliminary development of a brief intervention to prevent alcohol misuse and enhance sport performance in collegiate athletes. *Journal of Drug Abuse, 2,* 1-9.

Chow, G. M., Donohue, B., Pitts, M., **Loughran, T**., Schubert, K. N., Gavrilova, Y., & Diaz, E. (2015). Results of a single case-controlled study of The Optimum Performance Program in Sports in a collegiate athlete. *Clinical Case Studies, 14,* 191-209.

Donohue, B., Chow, G. M., Pitts, M., **Loughran, T**., Schubert, K. N., Gavrilova, Y., & Allen, D. N. (2015). Piloting a family-supported approach to concurrently optimize mental health and sport performance in athletes. *Clinical Case Studies, 14,* 159-177.

Pitts, M., Donohue, B., Schubert, K. N., Chow, G. M., **Loughran, T**., & Gavrilova, Y. (2015). A systematic case examination of The Optimum Performance Program in Sports in a combat sport athlete. *Clinical Case Studies, 14,* 178-190.

## BOOK CHAPTERS

Marzell, M., Donohue, B., & **Loughran, T**. (2015). Assessing substance-related disorders in African Americans. In *Guide to Psychological Assessment with African Americans* (pp. 183-194). New York, NY: Springer.

## NEWSLETTERS

Jain, D., **Loughran, T.,** Angyal, B., & Minero, L. (2018). Being a student and an advocate. *Society for Health Psychology Graduate Student Newsletter, 3*, 6.

**Loughran, T.** (2015). Perspectives of SLC from our APAGS student rep. *Nevada Psychological Association News,* 13.

**Loughran, T.** (2014). Stress in student-athletes: A review of assessment and intervention strategies. *Performance Excellence Movement,* 11-15.

## POSTERS AND PRESENTATIONS

**Loughran, T.,** Soto-Nevarez, A., Pitts, M., Schubert, K., Gavrilova, Y., Chow, G., & Donohue, B. (November, 2015). *Evaluation of a goal-oriented alcohol prevention program in student-athletes.* Poster presented at the Association for Behavioral and Cognitive Therapies annual convention, Chicago, IL.

**Loughran, T**., & Donohue, B. (October, 2015). *Psychological skills as a predictor of thoughts and stress in sport training.* Poster presented at the annual Association for Applied Sport Psychology conference, Indianapolis, IN.

Gavrilova, Y., Dowd, A., **Loughran, T**., Mitchell, R., & Donohue, B. (May, 2015). *Effect of engagement strategy on client's disclosure.* Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

**Loughran, T**., Lee, B., Zink, D., & Barchard, K. A. (May, 2015). *A psychometric evaluation of the emotion-based decision making scale*. Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

Phillips, C.R., Dowd, A., **Loughran, T**., & Donohue, B. (May, 2015). *A cognitive behavioral theory to assist in mental health rehabilitation following sport injury.* Poster presented at the Western Psychological Association annual convention, Las Vegas, NV.

Chow, G. M., Donohue, B., Diaz, E., Pitts, M., **Loughran, T**., Schubert, K., & Gavrilova, Y. (October, 2014). A Sport-Specific Family Behavior Therapy for Athletes: A Multiple- Baseline Case Study of a Collegiate Dancer. Poster presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Donohue, B., Chow, G., Pitts, M., **Loughran, T**., Schubert, K., Gavrilova, Y. (2014, October). Development and initial examination of The Optimum Performance Program in Sports (TOPPS): Bridging the gap between mental health and sport performance. In K. Wilson (Discussant). Symposium presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Donohue, B., Chow, G., Pitts, M., **Loughran, T**., & Schubert, K., & Gavrilova, Y. (October, 2014). Preliminary Pilot Examination of The Optimum Performance Program in Sports in Club and NCAA Athletes. Presentation presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Gavrilova, Y., Donohue, B., Chow, G., Pitts, M., **Loughran, T**., & Schubert, K. (October, 2014). The Optimum Performance Program in Sports (TOPPS) overview. Presentation presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

**Loughran, T**., Chow, G., Pitts, M., Schubert, K., Gavrilova, Y., & Donohue, B. (October, 2014). Frequency of Alcohol Use as a Predictor of Mental Health Symptoms in Collegiate Athletes. Poster presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Pitts, M., Donohue, B., Chow, G., **Loughran, T**., Schubert, K., & Gavrilova, Y. (October, 2014). Case Study Examination of the Optimum Performance Program in Sports (TOPPS) in a Collegiate Athlete. Presentation presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Schubert, K., Donohue, B., Pitts, M., Chow, G., **Loughran, T.**, & Gavrilova, Y. (October, 2014). Case examination of the Optimum Performance Program in Sports (TOPPS) in an NCAA division I athlete. Presentation presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Swarzman E., **Loughran, T**., Dowd, A., Tran, T., Torres, A., Gonzalez-Bueno, A., Gavrilova, Y., Chow, G., & Donohue, B. (October, 2014). Development and initial evaluation of a dynamic performance goal intervention. Poster presented at the annual Association for Applied Sport Psychology conference. Las Vegas, NV.

Diaz, E., **Loughran, T**., Chow, G., Kelleher, L., Kong, P., Dunn, R., Murrieta, V., & Donohue, B. (2014, April). *The effect of prevention programs on freshman athletes' alcohol consumption.* Poster session presented at the 94th annual meeting of The Western Psychological Association, Portland, Oregon.

**Loughran, T**. (2014, April). TOPPS: Methods to reduce stigma in performance-based interventions in collegiate athletes. In B. Donohue (Chair), *Process of developing a*

*non-stigmatizing, positive environmental context for the optimum performance program in sports*. Symposium conducted at the 94th annual meeting of The Western Psychological Association, Portland, Oregon.

**Loughran, T.,** Swarzman, E., Armenta, S., Dowd, A., Pak, K., Chow, G., & Donohue, B. (2014, April). *FBT adherence and outcomes in substance using mothers.* Poster session presented at the 94th annual meeting of The Western Psychological Association, Portland, Oregon.

Diaz, E., Kong, P., Swarzman, E., Holler, A., Gonzalez-Bueno, A., Gavrilova, Y., **Loughran, T**., Wrzeciona, K., Pitts, M., Murrieta, V., Dunn, R., Chow, G., Kelleher, L., & Donohue, B. *Factors that interfere with sport performance and alcohol use among college athletes.* (2013, October) Poster session presented at the 28th Association for Applied Sport Psychology Conference, New Orleans, Louisiana.

Bigler, L., Gonzalez-Buena, A., **Loughran, T**., Swarzman, E., Gavrilova, Y., Chow, G., & Donohue, B. (2013, July) *Family Behavioral Therapy's influence on alcohol use in collegiate athlete's performance.* Poster session presented the 2nd OMICS International Conference and Exhibition on Addiction Research and Therapy, Las Vegas, Nevada.

Gonzalez-Bueno, A., Bigler, L., **Loughran, T**., Swarzman, E., Chow, G., & Donohue, B. (2013, July) *Relationship between the training scales of the SIC and alcohol consumption scores of the AUDIT across gender.* Poster session presented the 2nd OMICS International Conference and Exhibition on Addiction Research and Therapy, Las Vegas, Nevada.

**Loughran, T**., Swarzman, E., Gonzalez-Bueno, A., Bigler, L., & Donohue, B. (2013, July) *Case study for the treatment of high-risk alcohol use in a collegiate athlete using Family Behavior Therapy.* Poster session presented the 2nd OMICS International Conference and Exhibition on Addiction Research and Therapy, Las Vegas, Nevada.

Swarzman, E., **Loughran, T**., Bigler, L., Gonzalez-Bueno, A., & Donohue, B. (2013, July) *Case study for the treatment of alcohol use in a collegiate athlete using Family Behavior Therapy.* Poster session presented the 2nd OMICS International Conference and Exhibition on Addiction Research and Therapy, Las Vegas, Nevada.

## AWARDS AND HONORS

| | |
|---|---|
| Outstanding Contribution to Nevada Psychological Association Award | **2017** |
| 1ST Place: UNLV Graduate and Professional Student Research Forum | **2016** |
| UNLV Summer Session Research Scholarship ($2,000) | **2016** |
| APAGS-ACT Excellence in Campus Leadership Award | **2015** |
| 1st place: Nevada Psychological Association Student Poster Award | **2015** |
| UNLV Summer Session Scholarship ($2,000) | **2015** |
| Family Research and Services Outstanding Graduate Student Research Award | **2013** |

## LEADERSHIP AND SERVICE

**American Psychological Association of Graduate Students, Advocacy Coordinating Team (APAGS-ACT)** **2017-Present**

*Chair, Advocacy Coordinating Team*

- Provided leadership in the development and implementation of new ACT initiatives.
- Liaised with State Psychological Associations as APAGS representative.
- Worked collaboratively with APA Membership and Government Relations Offices to develop student-focused advocacy workshops.
- Served as member of the Advocacy-Mentoring and Orientations subcommittees for the Practice Directorate's annual Practice Leadership Conference (PLC). PLC activities include engaging in live advocacy training events and meeting with United States legislators and their staff to discuss advocacy issues specific to psychology.

*Regional Advocacy Coordinator (Southwest Region)* **2015-2017**

- Oversaw eight State Advocacy Coordinators in their work educating students, developing advocacy skills, and accomplishing advocacy projects.
- Disseminated information on advocacy issues, organized and participated in regional and national APAGS-ACT committee meetings, recruited new members for the APAGS ACT network, and served on the APAGS ACT rewards committee.
- Developed campus-based discussion forums focused on social justice issues related to ethical issues in psychology and graduate student rights.
- Served as PLC student delegate in 2016 and 2017.

*Campus Representative (UNLV)* **2014- 2015**

- Provided information to students about issues relevant to the field of psychology and APAGS/APA, acted as a resource for information about legislative issues affecting the field of psychology, and acting as a liaison between graduate students at UNLV and the Nevada Psychological Association.
- Served as voting member of Nevada Psychological Association's Executive Board.
- Developed monthly workshop series (UNLV Psych Talks) where faculty members and community professionals provide supplemental training to graduate students.
- Served as PLC student delegate in 2015.

**UNLV Outreach Undergraduate Mentoring Program** **2013-2017**

*Graduate Student Mentor*

- Served as mentor undergraduate students from underrepresented backgrounds who are preparing for graduate studies in psychology.
- Helped students clarify goals related to graduate school, identify opportunities to participate in psychology research, and organize application materials.

**Association for Applied Sport Psychology** **2015-2016**

*Student Delegate*

- Served as a member of the Best Practices in Research (BPR) and Performance Excellence Movement (PEM) student initiative committees.
- Acted as co-editor of PEM, which is student led online magazine designed to increase public awareness of the application of sport and exercise psychology skills. Responsibilities include reviewing abstracts, editing manuscripts, and organizing content.

## TEACHING EXPERIENCE

**University of Nevada, Las Vegas** **2016-2017**

*Basic Principles of Psychotherapy, PSY 451*

- Served as instructor for two sections per semester of an upper-level psychology course introducing various theories and approaches to counseling and psychotherapy.
- Developed syllabi and course assessments, prepared and presented lectures, facilitated class discussion, administered and graded course assessments, and integrated experiential role-playing exercises into curriculum.

*Introduction to Psychology, PSY 101* **2015-2016**

- Taught two sections per semester of an introductory psychology course.
- Developed syllabi and course assessments, prepared and presented lectures, facilitated class discussion, and administered and graded course assessments.

**Bryant and Stratton College, Buffalo, NY**

*Organizational Psychology, PSYC 310* **2012**

- Taught one section of a baccalaureate-level Organizational psychology class.
- Developed and implemented lesson plans, prepared and presented in-class lectures, and developed, administered, and graded course assessments.

## VOLUNTEER CLINICAL ACTIVITIES

**Toronto Goodlife Marathon Psyching Team** **2011**

Toronto, Ontario Canada

*Volunteer*

- Attended one-day workshop on providing brief sport psychology interventions including mental imagery, reframing, and anchoring techniques.
- Provided brief interventions to marathon runners to help them prepare for and perform during the marathon.

## CLINICAL TRAININGS

**Dialectical Behavior Therapy (DBT)** **2017**

Durham VA Medical Center .

Workshop Co-Leaders: *Sara Boeding, Ph.D. & Kelly Caron, Ph.D.*

Comprehensive 3-day training focused on developing the knowledge and skills to successfully implement DBT in a VA setting. Emphasis was placed on risk assessment, understanding the biosocial model of psychological distress, and identifying relevant treatment targets.

**Prolonged Exposure (PE) for PTSD Workshop** **2017**

Durham VA Medical Center

Workshop Co-Leaders*: Kate Berlin, Ph.D. & Kelly Caron, Ph.D.*

Comprehensive 2-day training focused on developing the knowledge and skills to implement PE for PTSD. Emphasis was placed understanding the theoretical underpinnings of PE as it relates to PTSD, learning specific intervention strategies associated with PE, and demonstration and experiential practice of those strategies.

**Cognitive Processing Therapy (CPT) for PTSD Workshop** **2017**

Durham VA Medical Center

Workshop Co-Leaders: *Carolina Clancy, Ph.D. & Sara Tiegreen, Ph.D.*

Comprehensive 3-day training focused on developing the knowledge and skills to implement CPT for PTSD. Emphasis was placed on identifying PTSD symptoms, understanding the theoretical underpinnings of CPT as it relates to PTSD, learning specific intervention strategies within the CPT manual, and demonstration and experiential practice of those strategies.

**Comprehensive Training in Dialectical Behavior Therapy Part 2: DBT Skills, Skill Training and Skill Coaching** **2015**

Nevada Psychological Association

Workshop Leader: *Alan Fruzzetti, Ph.D.*

Comprehensive 4-day training that focused on the understanding and application of DBT skills. Emphasis was placed on skill acquisition, skill strengthening, and skill generalization. Activities included didactic training, demonstration, and supervised practice.

**Comprehensive Training in Dialectical Behavior Therapy Part 1: Theory, Structure, Targets and Treatment Strategies** **2015**

Nevada Psychological Association .

Workshop Leader: *Alan Fruzzetti, Ph.D.*

Comprehensive 4-day training that focused on theory and conceptualization of the DBT model and the structure of treatment in diverse populations. It included didactic training, demonstration, and supervised practice.

**Advanced Motivational Interviewing (MI) Workshop** **2014**

University of New Mexico Center on Alcoholism, Substance Abuse, & Addictions

Workshop Leader*: Kamilla L. Venner, Ph.D.*

Two-day advanced MI workshop focused on increasing MI skills and practice. Exercises centered on using complex therapeutic reflections to increase empathy and deepen the therapeutic alliance and collaboration. Emphasis was placed on honing skills in identifying change talk and practicing ways to elicit change talk.

**Motivational Interviewing (MI) Introductory Workshop** **2014**

University of New Mexico Center on Alcoholism, Substance Abuse, & Addictions

Workshop Leader*: Kamilla L. Venner, Ph.D.*.

Two-day workshop focused on orientation to the fundamental processes of MI. Training activities included review of outcome research, instruction on basic techniques used with MI and practice of skills through vignettes and role-plays.

**Structured Clinical Interview for DSM-IV-TR Training Series** **2012**

University of Nevada, Las Vegas .

Training Series Leader: *Daniel Allen, Ph.D.*

Training on administration of the structured clinical interview for DSM-IV-TR Axis I disorders (SCID-IV). Reviewed components of the SCID, discussed diagnostic issues relevant to administering structured interviews, and role-played SCID interviews. Received 3 hours of training per week over the course of one academic semester.

**Family Behavior Therapy (FBT) for Adults Workshop** **2012**

VA Southern Nevada Healthcare System

Workshop Leader: *Bradley Donohue, Ph.D.*

Two-day workshop on basic principles of FBT, which is a significant-other based behavioral treatment for reducing substance use in adults. Reviewed treatment procedures and role-played intervention components including contingency management, stimulus control, urge control, and communication skills.

## PROFESSIONAL AFFILIATIONS

American Psychological Association **2009-Present**

Nevada Psychological Association **2014-Present**