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LOMA LINDA UNIVERSITY
School of Behavioral Health
in conjunction with the
Faculty of Graduate Studies

Stress, Depression, Social Support, and Help-Seeking in College Student-Athletes

by

Clint H. Norseth

A Dissertation submitted in partial satisfaction of
the requirements for the degree
Doctor of Philosophy in Clinical Psychology

September 2017

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Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

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ABBREVIATIONS

NCAA	National Collegiate Athletic Association
CHAMPS	Challenging Athletes' Minds for Personal Success
N4A	National Association of Academic Advisors for Athletes
NAIA	National Association of Intercollegiate Athletes
IRLE	Inventory of College Students' Recent Life Experiences
ATSS	Inventory of Attitudes Towards Seeking Mental Health Services
PSS	Multidimensional Scale of Perceived Social Support
PHQ-9	Patient Health Questionnaire
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
ANOVA	Analysis of Variance

ABSTRACT OF THE DISSERTATION

Stress, Depression, Social Support, and Help-Seeking in College Student-Athletes

by

Clint H. Norseth

Doctor of Philosophy, Graduate Program in Clinical Psychology
Loma Linda University, September 2017
Dr. Kendal C. Boyd, Chairperson

Student-athletes have been identified as a distinctive sub-population in universities and colleges that face unique stressors and pressures that may put them at risk for developing mental health problems, including depression, when compared to student non-athletes. However, student-athletes have been found to seek help from mental health professionals less often than student non-athletes. Studies of college students in the general population have shown that social support networks can play an important part in “buffering” or moderating the effect of stress on both depression and help-seeking, which may also be the case for student-athletes. The purpose of the current study is to examine what stress factors predict attitudes toward help-seeking, and to test the role of social support as a moderator of the relationship between stress and depression, and attitudes toward help-seeking in college student athletes. The sample included 134 undergraduate college student-athletes and 2 graduate college student-athletes from several U.S. colleges, sports, and athletic divisions, with a mean age of 19.53 years old ($SD = 1.3$), 77.9% of participants being female, and 77.2% being. Participants completed an online survey regarding their experiences of stress, depression, perceived social support, and attitudes toward help-seeking. We use hierarchical linear regression analyses to examine perceived social support as a moderator of the

relationship between stress and attitudes toward help-seeking, between depression and attitudes toward help-seeking, and between stress and depression. An additional regression analysis was used to examine the relationship between several areas of stress experienced by student-athletes and their attitudes toward help-seeking. Results showed that social support did not have a moderating effect on the relationships among stress, depression, and attitudes toward help-seeking. However, increased stress was associated with increased depression, and both stress and depression were negatively associated with attitudes toward help-seeking. These results suggest a reluctance to seek help among college student-athletes despite the experience of stress and depression. Possible negative influences that may impact student-athletes' decision to seek help may include time pressures and stigma in the athletic culture.

CHAPTER ONE

INTRODUCTION

The National Collegiate Athletic Association (NCAA) reports that more than 460,000 student-athletes participate in 23 different sports every year. Researchers agree that student-athletes are a unique sub-population of college students and that they face unique pressures (Fletcher, Benschhoff, & Richburg, 2003; Sedlacek & Adams-Gaston, 1992; Valentine & Taub, 1998). Being a student-athlete offers many valuable and rewarding experiences, but it can lead to time constraints, performance pressure, stigma, social isolation and other stressors that put student-athletes at risk for mental health issues (Etzel, 2009). Considering these unique pressures and their risk for mental health concerns, student-athletes may benefit from counseling and other support services. However, student-athletes have been found to utilize counseling services less than non-athlete students (Watson, 2005). Questions then arise as to why this at-risk population is not seeking professional help. Researchers have begun to examine the reasons for and barriers to help-seeking among student-athletes in an attempt to better serve and support this population. The goal of the current study is to examine common forms of stress in student-athletes and how they influence attitudes toward seeking professional psychological help, as well as to examine the role of social support in this relationship.

Stress among Student-Athletes

Student-athletes share many common stressors that other non-athlete students experience, including academic, social, developmental, and substance-use related issues. However, other unique forms of stress experienced by student-athletes can add to and

exacerbate these common stressors. Academically, student-athletes are expected to complete regular class work, but are often obligated to miss classes or have less time to complete class work due to athletic participation. To help with these academic demands, many universities offer tutoring, mentoring, or other academic support to help student-athletes succeed (Carodine, Almond, & Gratto, 2001). This extra support and attention often leaves student-athletes facing resentment, criticism, or prejudice by other students, faculty, and the general public (Etzel, 2009; Valenine & Taub, 1999). Included in the stress of academics for student-athletes is that many receive financial aid or scholarships based on both their athletic and academic performance, and failure to maintain adequate performance may result in the loss of financial aid, which may affect their ability to continue their education (Carodine, Almond, & Gratto, 2001).

Other major stressors shared by student-athletes and non-athletes, but that are complicated by the multiple roles of student-athletes, are developmental tasks such as learning to live independently and adopting more adult responsibilities. Student-athletes often face role conflict where they must evaluate their identity as a student or an athlete. Psychological well-being has been shown to be impacted by role conflict in student-athletes, with higher well-being among those who can integrate both roles and thus face less conflict between their roles as student and athlete (Settles, Sellers, & Damas Jr., 2002). Other developmental stressors for student-athletes include navigating career preparation; developing mature interpersonal skills; and establishing autonomy, self-sufficiency, and independence (Etzel, 2009; Valentine & Taub, 1999).

To provide support and guidance for academic and development issues in student-athletes, the NCAA developed and implemented a program in 1994 called Challenging

Athletes' Minds for Personal Success (CHAMPS)/Life Skills program. The program consisted of five general “commitment” areas, which include (1) academic excellence, (2) athletic excellence, (3) personal development, (4) career development, and (5) community service. Each university has a CHAMPS/Life Skills coordinator that oversees the program and often collaborates with consultants to provide psycho-education to student-athletes. Many universities implemented these principles through required classes for first-year student-athletes, with a focus on the transition from high school to college including study skills, career exploration, developmental and social skills. Currently, the NCAA has adopted a new approach to the CHAMPS/Life Skills program in collaboration with the National Association of Academic Advisors for Athletes (N4A), where these associations hold annual conventions that provide training and education to college and university representatives that take these developmental principles and implement them at their own institutions.

The NCAA’s Sport Science Institute has also made recent endeavors to provide support for wellness in college student-athletes through online education modules and resources for athletes, coaches, and other athletic staff that include physical and mental health topics. The NCAA focused its efforts on mental health by publishing “Mind, Body, Sport: Understanding and Supporting Student-Athlete Mental Wellness” (Brown, 2014), which provides resources and expert advice from mental health providers and athletes to help improve understanding of and support for college student-athletes’ mental health.

While there are many common stressors shared by student-athletes and non-athletes, there are also many different sources and types of stress between these two

groups. When directly comparing the differences between student-athletes and non-athletes in stressful life events, Wilson and Pritchard (2005) found that student-athletes reported significantly more stress from not having adequate time for sleep, having a lot of responsibility, and having heavy demands from extracurricular activities. Non-athletes reported more stress from financial burdens, important decisions about education, social isolation, and being dissatisfied with their physical appearance (Wilson & Pritchard, 2005). Additionally, college student athletes have been reported to express concerns about injury, scrutiny, general adjustment to college, alcohol and substance use, anxiety, depression, eating disorders, and sexual assault (Etzel, 2009). Considering the number of stressors student-athletes may face, they show remarkable resilience and success, graduating at similar rates as students who are not athletes (Ferris, Finster, & McDonald, 2004). However, continued focus on how to support these student-athletes when they are faced with multiple unique stressors may help them to become more successful and create fulfilling lives.

Depression in Student-Athletes

Stress has consistently been shown to lead to depression and other mental health issues in the general population (Hammen, 2005). Considering the unique types and amount of stress student-athletes face, they may be at risk of experiencing symptoms of depression. However, research of depression in student-athletes has been inconsistent over time. In a recent review of the literature, Wolanin, Gross, and Hong (2015) reported that the prevalence rate of depressive symptoms among college student-athletes ranges from 15.6% to 21%, compared to 17% among college students in general (Hunt &

Eisenberg, 2010). Female student-athletes were more likely to endorse depressive symptoms than male student-athletes (Armstrong & Oomen-Early, 2009; Wolanin, Gross, & Hong, 2015; Yang et al., 2007). Being a freshman was also associated with higher levels of self-reported depressive symptoms (Yang et al., 2007).

One major risk factor for depression is physical injury (Appaneal, et al., 2009; Wolanin, Gross, & Hong, 2015). Considering the amount and levels of physical activity student-athletes are involved in compared to the general college student population, they appear to be at greater risk of physical injury. In a study examining depression scores among injured student-athletes, Leddy, Lambert, and Ogles (1994) found that 51% of injured athletes reported mild depressive symptoms, with 12% reporting depressive symptoms similar to individuals receiving outpatient treatment for depression. Other unique risk factors of depression in athletes examined by Wolanin, Gross, and Hong (2015) include athletic career termination and declines in athletic performance. With only 3% of college student-athletes going on to play at a professional level (Leonard, 1996), focusing on providing support and helping with the transition from collegiate sports to other vocations may help protect against additional stress or depression that student-athletes may experience during their college years.

Social Support in Student-Athletes

Stress has generally been shown to lead to depression and other adverse effects (Hammen, 2005). While student-athletes are at risk for depression due to the amount of stress they experience, they may also have several protective factors, such as the benefits of regular exercise, increased self-esteem, and increased social support (Armstrong &

Oomen-Early, 2009). Social support has been suggested to be a “buffer” that protects individuals from the adverse effects of stress (Cohen & Wills, 1985). For example, greater social connectedness is associated with decreased depression among college-student athletes (Armstrong & Oomen-Early, 2009).

Student-athletes tend to have unique networks of social support that non-athlete students may not have (Rosenfeld, Richman, & Hardy, 1989; Armstrong & Oomen-Early, 2009). One study examining the social support network of student-athletes found that they often find support from coaches, teammates, friends, and parents (Rosenfeld, Richman, & Hardy, 1989). This study also found that the type of support varies between support roles in student-athletes' lives, with friends providing the most and the broadest type of support, while coaches and teammates were found to provide mainly technical or sport-related support (Rosenfeld, Richman, & Hardy, 1989). While student-athletes may have a unique and broader network of social support that may be helpful in preventing depression and other ill effects of the stress that they face, there is still concern as to whether the people in their social support network are qualified or have the expertise to deal with more serious issues, such as actual occurrences of clinical depression, anxiety, eating disorders, or other mental health concerns (Rosenfeld, Richman, & Hardy, 1989; Etzel, 2009). Additional forms of social support for student-athletes may include the support they receive through life skills programs, as well as from mentors and tutors.

Attitudes toward Seeking Help in Student-Athletes

While student-athletes may benefit from regular exercise, increased self-esteem, and social support, they remain at risk if these protective factors fail at some point. If

these protective factors are ineffective, student-athletes have been shown to be less likely to seek help than student non-athletes (Watson, 2005). In the general college student population, including athletes and non-athletes, only 24% who have been diagnosed with depression and less than 20% diagnosed with anxiety disorders seek treatment (Hunt & Eisenberg, 2010). Generally, factors affecting attitudes toward help-seeking among all college students include gender, previous counseling, and age (Surgenor, 1985). Women are more likely than men to have more positive attitudes toward help-seeking (Surgenor, 1985; Komiya, Good, & Sherrod, 2000). Experience with previous counseling has been found to lead to more favorable attitudes toward help-seeking (Surgenor, 1985; Halgin et al., 1987). It has also been shown that the younger a person is, the less favorable attitude he or she has toward seeking help (Surgenor, 1985). Similarly, gender plays a role in attitudes toward help-seeking among student-athletes, with female student-athletes having more positive attitudes toward and expectations of seeking help (Martin et al., 2001; Martin, 2005).

Several other factors have been examined for the effect they have on student-athletes' attitudes toward help-seeking, including time management, self-reliance or a “for the good of the team” philosophy, social stigma, and resistance from the athletic department or university authorities (Watson, 2006). When comparing differences between attitudes toward help-seeking between student-athletes and non-athletes, Watson (2006) found that time was a significantly more common reason to not seek professional help for student-athletes than non-athletes. Also, male student-athletes appear to be under pressure from social stigma to conceal or under-report mental health concerns (Martin, et al., 2001; Martin, 2005; Steinfeldt, et al., 2009).

Impact of Stress and Social Support on Attitudes toward Help-Seeking

Researchers have found that stress and social support influence help-seeking behaviors and attitudes (Cramer, 1999). Generally, when stress or depression is high, college students have more positive attitudes toward seeking help (Halgin et al. 1985; Cepeda-Benito & Short, 1998; Cramer, 1999). However, these studies also found that social support was important in these relationships. Cramer (1999) found that if social support networks among college students were impaired, distress was likely to be higher and attitudes toward seeking help were more favorable, whereas if social support networks were functional, distress was likely to be low and attitudes toward help-seeking were less favorable. In a similar study, Cepeda-Benito and Short (1998) found that low social support and high distress resulted in more favorable attitudes toward seeking help.

It appears that stress and social support influence attitudes toward help-seeking among the general population of college students, but these relationships have not been examined among student-athletes. It is important to study the relationships among stress, social support, and help-seeking behaviors in college student-athletes to understand and provide more adequate and effective support for this population that faces unique pressures. In addition, it would be valuable to know which types of stress are related to more or less favorable attitudes in help-seeking to understand which student-athletes may be at more risk of not receiving support or to increase awareness and services to those who are most likely to benefit from support.

CHAPTER TWO

AIMS AND HYPOTHESES OF CURRENT STUDY

Despite the considerable amount of research on stress, depression, social support, and attitudes toward help-seeking in student-athletes, few studies have examined the relationships among these constructs. The purpose of the current study will be to examine these relationships through a series of analyses.

Aim One

The first aim of the study is to examine the relationship between stressors experienced by college student-athletes and their attitudes toward professional help-seeking. Specific stressors being examined will include developmental challenges, time pressure, academic alienation, romantic problems, assorted annoyances (e.g., “getting ‘ripped off’ or cheated in the purchase of services,” or “hearing gossip concerning someone you care about”), general social mistreatment, and friendship problems. Understanding which of these factors have an effect on college student-athletes’ mental health and attitudes toward seeking help will be helpful in identifying ways that counselors, psychologists, coaches, and other support givers can recognize and reach out to student-athletes who may be struggling.

Hypothesis 1

Considering previous research, we expect to find that the stressor of time will have the greatest impact on attitudes toward help-seeking. Specifically, those student-athletes reporting more stress due to time constraints will report less favorable attitudes

toward help-seeking. While there may be limited or no research on the other specific stressors experienced by student-athletes including developmental challenges, academic alienation, romantic problems, general social mistreatment, and friendship problems, previous research on stress shows that it is related to more mental health concerns, thus a greater need for mental health treatment. Therefore, we hypothesize that those student-athletes reporting greater experience of these stressors will have more positive attitudes toward help-seeking.

Aim Two

The next aim of the study will be to examine the potential moderating effect of perceived social support on the relationship between stress and attitudes toward help-seeking. Very little research has examined this “buffering” effect in college student-athletes, who often have access to unique types of social support compared to their non-athlete counterparts.

Hypothesis 2

Given results of previous studies we expect to find that social support will moderate the relationship between stress and attitudes toward help-seeking. College student-athletes who experience high stress, but high perceived social support, will report less favorable attitudes toward help-seeking. Alternatively, college student-athletes who experience high stress and low perceived social support will report more favorable attitudes toward help-seeking.

Aim Three

The third aim is to examine perceived social support as a moderator of the relationship between stress and depression in college student-athletes. Again, previous research has shown that this effect exists in the community population, but it has not been examined in student-athletes.

Hypothesis 3

We hypothesize that college student-athletes who experience high stress and high perceived social support will endorse less depression than student-athletes who experience high stress and low perceived social support.

Aim Four

Finally, the fourth aim is to examine the relationship between depression and attitudes toward professional help-seeking in college student-athletes, while examining the possible “buffering” or moderation effect perceived social support may have on this relationship. Exploring this relationship may add to the literature that suggests student-athletes may have unique social support systems that may fill the need of seeking professional help.

Hypothesis 4

Past research has suggested that experiencing depression is related to more favorable attitudes toward help-seeking in the community. Therefore, we hypothesize that there will be a positive relationship between student-athletes experiencing depression and

attitudes toward help-seeking. However, we also expect to see this relationship weakened for those who report higher levels of perceived social support.

CHAPTER THREE

METHOD

Participants

Participants for the current studies were recruited from various universities across the United States involved in NCAA Division I, II, III; and National Association of Intercollegiate Athletes (NAIA) intercollegiate athletic programs. Approximately 2400 coaches or athletic department administrators within these institutions were contacted to recruit participants for the current study. Efforts were also made to meet the requirements of any institution-specific Institutional Review Board requirements regarding access to Listservs or other methods of contacting student-athletes for participation. The primary inclusion criterion for the study was participation in at least one intercollegiate sport.

The sample for this study included 134 undergraduate college student-athletes and 2 graduate college student-athletes, with a mean age of 19.53 years old ($SD = 1.3$), 77.9% of participants being female, and 77.2% being White. Complete demographic and sample characteristics are shown in Table 1. The sample included student-athletes participating in 14 intercollegiate sports (see Table 2) from four divisions including NCAA Division I (28.7%), NCAA Division II (14.7%), NCAA Division III (55.9%), and NAIA Division I (0.7%).

Table 1. Student-Athlete Sample Demographics

Demographic	<i>N</i>	Percentage
Gender		
Female	106	77.9
Male	30	22.1
Race/Ethnicity		
African American/Black	12	8.8
Asian	1	0.7
Hispanic	6	4.4
Native American/Alaskan	1	0.7
White	105	77.2
Other/Multi-racial	11	8.1
Relationship Status		
Single	87	64
Committed/Serious	47	34.6
Relationship		
Married	2	1.5
Year in School		
Freshman	46	33.8
Sophomore	30	22.1
Junior	27	19.9
Senior	31	22.8
Graduate	2	1.5

Table 2. Intercollegiate Sports and Divisions Represented in Sample

Sport	<i>N</i>	Percentage
Alpine Skiing	1	0.7
Basketball	24	17.6
Crew/Rowing	9	6.6
Cross Country/Track	33	24.2
Diving	2	1.4
Field Hockey	4	2.9
Football	10	7.4
Golf	2	1.4
Lacrosse	2	1.4
Soccer	10	7.4
Softball	13	9.6
Swimming	11	8.1
Tennis	4	2.9
Volleyball	15	11.1
Multiple Sport	5	3.7

Procedures

This study was approved by the Loma Linda University Institutional Review Board (approval #5160090). Participants were sent an email explaining the purpose of the study and a link to an online survey through Qualtrics Online Survey Software. Prior to any questions being answered on the online survey, participants viewed an informed consent document stating the purpose, confidentiality, and risks involved in the study. They could not proceed to the survey until they provided consent for participation. Participants were then asked for basic demographic information (e.g., age, gender, ethnicity, etc.) in addition to other demographic variables relevant to the study, such as which sport or sports they participate in, which athletic association and division they

participate in, and current or previous participation in counseling or psychotherapy. Participants then completed the survey (approximately 90 items). After completion of the survey, participants were offered the opportunity to provide their name and email address for entry into a raffle for a chance to win one of fifteen \$10 Amazon gift cards.

Measures

Stress

The Inventory of College Students' Recent Life Experiences (IRLE; Kohn, Lafreniere, & Gurevich, 1990) is a self-report measure of the frequency of negative life events specific to college students. The IRLE includes 49 items such as “Not enough leisure time,” “Conflicts with friends,” and “Dissatisfaction with school.” These items are rated on a four-point Likert Scale ranging from 1 = *Not at all a part of my life* to 4 = *Very much a part of my life*. Total scores range from 49-196, with higher scores indicating greater experience of negative, stressful life events. The factor structure of the IRLE includes the following seven factors: (1) Developmental Challenge, (2) Time Pressure, (3) Academic Alienation, (4) Romantic Problems, (5) Assorted Annoyances, (6) General Social Mistreatment, and (7) Friendship Problems. The IRLE has been shown to be a reliable and effective measure of negative life events in a college sample with a Cronbach's alpha of .89 for the total score and subscales ranging from .47 in the Assorted Annoyances factor to .80 in the Time Pressure factor (Kohn, Lafreniere, & Gurevich, 1990). The IRLE has also been found to be a valid measure of stress and to have high correlation ($r = .67$) with the widely used Perceived Stress Scale (Cohen, Kamarck, &

Mermelstein, 1983; Kohn, Lafreniere, & Gurevich, 1990). The Cronbach's alpha in the current study for the total score of the IRLE was .93.

Attitudes toward Help-Seeking

The Inventory of Attitudes Toward Seeking Mental Health Services (ATSS; Mackenzie et al., 2004) is 24-item self-report measure of attitudes towards seeking professional help based on Fischer and Turner's (1970) Attitudes Toward Seeking Professional Psychological Help Scale. The ATSS maintained 17 revised items from the original measure, plus an additional seven items. Examples of items on the ATSS include, "I would want to get professional help if I were worried or upset for a long time," and "People should work out their own problems: getting professional help should be a last resort." These items are rated on a five-point scale ranging from 0 = *Disagree* to 4 = *Agree*. A higher score indicates a more favorable attitude toward seeking help. The ATSS was shown to be a reliable measure of attitudes towards help-seeking with a Cronbach's alpha of .87 (Mackenzie et al., 2004). It has also been shown to be a valid measure of attitudes toward help-seeking and significantly correlates with past use of professional help ($r = .33$) and intention of using professional help ($r = .38$) as measured in a community sample (Mackenzie et al., 2004). The Cronbach's alpha in the current study for the APSS was .83.

Social Support

The Multidimensional Scale of Perceived Social Support (PSS; Zimet et al., 1988) was designed as a self-report measure to assess perceived social support from friends,

family, and significant others. The original measure consists of 12 items such as, “There is a special person around when I am in need,” and “I can count on my friends when things go wrong.” These items are measured on a seven-point scale ranging from 1 = *Very strongly disagree* to 7 = *Very strongly agree*. This study included four additional items relating created by the investigators to include items relevant to social support from coaches or other athletic. These items read similarly to the original items, but included wording such as, “There is a coach around when I am in need” or “I can talk about my problems with my teammates.” Higher scores indicate better perceived social support. The PSS has been shown to be a reliable measure of perceived social support with a Cronbach's alpha of .88 (Zimet et al., 1988). The PSS has also been found to be a valid measure of social support, with a strong correlation with the Social Support Behaviors Scale (Kazarian & McCabe, 1991). The Cronbach's alpha in the current study including all the original items in the PSS was .92, and .95 with the additional items regarding Coaches/Athletic Staff and Teammates.

Depression

The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) is a self-report measure of depression with nine items directly relating to the nine diagnostic criteria of depressive disorders found in the Diagnostic and Statistical Manual of Mental Health Disorders (DSM-IV; American Psychiatric Association, 2000). Each item is scored on a scale of 0 to 3, with 0 indicating no presence of the depressive symptom, and 3 indicating a near daily presence of the symptom. A possible score can range from 0 to 27, with suggested scores of 1-4 showing minimal depression, 5-9 showing mild depression, 10-

14 showing moderate depression, 15-19 showing moderately severe depression, and 20-27 showing severe depression. The PHQ-9 has been shown to be a reliable and effective measure of depression with a Cronbach's alpha ranging from .86 to .89 (Kroenke et al., 2001). It has also been found to be a valid measure of depression, as it correlates strongly ($r = .55$) with the mental health sub-scale of the Short Form Health Survey (Ware & Sherbourne, 1992; Kroenke et al., 2001). The Cronbach's alpha for the PHQ-9 in the current study was .88.

Data Analyses

Prior to all analyses, data were examined for outliers and violations of assumptions, including linearity, homoscedasticity, multicollinearity, and independence and normality of residuals.

Hypothesis 1

The first analysis examined the relationship between the seven subscales of the IRLE, which indicate several aspects of perceived stress, and the total score of the ATSS, which indicates the favorability of attitudes toward seeking professional help. This relationship was tested using hierarchical multiple linear regression. The first step of this analysis included possible covariates that have been shown in previous research to have an impact on attitudes toward help-seeking, including age, gender, and any current or previous counseling. Gender and any current previous counseling were dummy coded with females and no previous counseling being the reference groups. The next step of the

analysis included the seven subscale scores of the IRLE, with the outcome variable being the total score on the ATSS.

Hypothesis 2

The second analysis examined the moderating effect of social support as measured by the PSS on the relationship between stress as measured by the IRLE and attitudes toward help-seeking as measured by the ATSS. This analysis was done using hierarchical regression, with the first step including covariates listed above, and the second step including the total scores of the IRLE and PSS. The third step of the regression included the interaction effect of IRLE x PSS. IRLE and PSS variables were mean-centered.

Hypothesis 3

The third analysis examined the moderating effect of social support on the relationship between stress and depression as measured by the PHQ-9. A similar hierarchical regression analyses was conducted for this hypothesis, with the first step including previously discussed covariates and the second step including the total score of the IRLE and the PSS, with the outcome variable being the total score of the PHQ-9. The third step included the interaction effect of IRLE x PSS. IRLE and PSS variables were mean-centered.

Hypothesis 4

The final analysis examined the moderating effect of social support on the relationship between depression and attitudes toward help-seeking. The first step of the hierarchical regression included covariates as in hypotheses 1, 2, and 3. The second step of this regression included the total score of the PHQ-9 and the PSS, with the outcome variable being the total score of the ATSS. The third and final step included the interaction effect of PHQ-9 x PSS. PHQ-9 and PSS variables were mean-centered.

CHAPTER FOUR

RESULTS

Stress

Participants in this study reported a mean stress level of 92.64 ($SD = 20.11$) on the IRLE. This level of stress is similar to, but slightly lower than the mean of 95.31 ($SD = 17.36$) found in the sample of general college students used in the development of this measure (Kohn, et al., 1990). No studies using this measure with college student-athletes were found that reported total stress levels to compare with the sample of the current study. The most common items endorsed by participants were similar to those in previous studies and reflected the amount of responsibilities and obligations as college students. See Table 3 for the most endorsed items on the IRLE.

Table 3. Most Endorsed Items on IRLE (Sources of Stress)

Item	<i>M</i>	<i>SD</i>
“Too many things to do at once”	3.11	.79
“A lot of responsibilities”	3.05	.89
“Heavy demands from extracurricular activities”	2.76	1.05
“Important decisions about your future career”	2.71	.97
“Not enough leisure time”	2.71	.94
“Not enough time to sleep”	2.62	.99
“Separation from people you care about”	2.39	.97
“Important decisions about your education”	2.36	.97
“Dissatisfaction with your athletic skills”	2.28	.95
“Not enough time to meet your obligations”	2.26	.89

Attitudes toward Help-Seeking

Results of the participants' willingness to seek help in this study was found to have a significantly lower overall mean score of 54.36 ($SD = 13.68$) than previously reported mean scores of 61.44 ($SD = 12.60$) in a general college student sample, $t(431) = 5.28, p < .001$, and a mean of 69.19 ($SD = 14.36$) in a community sample, $t(340) = 9.52, p < .001$ (MacKenzie et al., 2004).

Social Support

When measuring social support for this study, the current study included two additional subcategories to the PSS related to social support commonly found in college student-athletes, which include Coaches/Athletic Staff and Teammates. Results of the participants' mean scores in sources of support in the subcategory of Family ($M = 5.36, SD = 1.53$) was significantly lower than the mean of 5.80 ($SD = 1.12$), $t(409) = 3.31, p < .001$, found in a sample of general college students in previous studies (Zimet et al., 2008). The mean score in the Friends subcategory ($M = 5.22, SD = 1.29$) was also significantly lower than the mean of 5.85 ($SD = .94$), $t(409) = 5.63, p < .001$, found in Zimet, et al. (1988). Results also showed that the mean score in the Significant Other subcategory ($M = 4.61, SD = 1.94$) was significantly lower than the mean of 5.74 ($SD = 1.25$), $t(409) = 7.13, p < .001$, found in Zimet, et al. (1988). Table 4 includes mean scores of PSS with the additional categories of Coaches/Athletic Staff and Teammates included in the current study. Significant differences between the means of these sources of support were found using an analysis of variance (ANOVA), $F(4, 650) = 7.73, p < .001$.

A post hoc Tukey test showed that Significant Other and Coaches/Athletic Staff significantly differed from Family, Teammates, and Friends at $p < .05$.

Table 4. Most Endorsed Sources of Social Support for Student-Athletes as Measured by the PSS

Source of Support	<i>M</i>	<i>SD</i>
Family	5.36	1.53
Teammates	5.32	1.29
Friends	5.22	1.29
Coach/Athletic Staff	4.66	1.48
Significant Other	4.61	1.94

Depression

Participants in this study reported a mean score of 6.56 ($SD = 5.41$), as measured by the PHQ-9. This score is significantly higher than the mean score of 5.61 ($SD = 4.68$), $t(2932) = -2.29$, $p < .05$, found in the general college student population in Eisenberg, et al. (2009). Overall, 24.6% reported scores of ten or more, which suggest the presence of a depressive disorder. Table 5 provides complete results of depressive categories, with the majority of participants (44.6%) reporting minimal depressive symptoms.

Table 5. Depression severity as Measured by PHQ-9 Scores

Depression Severity	<i>N</i> (%)
Minimal (0-4)	58 (44.6)
Mild (5-9)	41 (31.5)
Moderate (10-14)	16 (12.3)
Moderately Severe (15-19)	12 (9.2)
Severe (20-27)	3 (2.3)

Hypothesis 1

Results of the first analysis showed that, after controlling for age, gender, and previous counseling experience, the seven subscales of the IRLE and total score combined explained a significant proportion of the variance in attitudes toward help-seeking, $R^2 = .178$, $F(11, 107) = 2.57$, $p < .01$. However, the only unique significant predictor of attitudes toward help-seeking was the IRLE subscale “Assorted Annoyances” ($\beta = -.44$, $t = -2.53$, $p < .05$). These results indicated that as student-athlete’s stress increased, particularly with “Assorted Annoyances,” their willingness to seek help decreased. See Table 6 for complete regression results.

Table 6. Hypothesis 1: Regression Results of Covariates and Stress Categories Predicting Attitudes toward Help-Seeking

Variable	<i>B</i>	95% CI (<i>B</i>)	β	<i>t</i>	<i>p</i>	<i>sr</i> ²	<i>pr</i> ²
Age	.44	(-1.14; 2.45)	.04	.49	.63	.002	.003
Gender	5.63	(-.15; 11.41)	.18	1.93	.06	.029	.032
Previous Counseling	2.36	(-3.49; 8.22)	.08	.80	.43	.005	.006
Developmental Challenges	-.86	(-2.08; .37)	-.38	-1.39	.17	.014	.017
Time Pressure	-.62	(-1.75; .51)	-.24	-1.08	.28	.008	.01
Academic Alienation	.06	(-1.56; 1.69)	.01	.079	.94	< .001	< .001
Romantic Problems	-1.55	(-3.29; .18)	-.24	-1.77	.08	.023	.029
Assorted Annoyances	-2.69	(-4.81; -.59)	-.44**	-2.53	.01	.048	.058
General Social Mistreatment	-1.17	(-2.56; .23)	-.34	-1.66	.10	.019	.026
Friendship Problems	-.21	(-2.30; 1.89)	-.03	-.19	.84	< .001	< .001
Total Stress Score	.58	(-.26; 1.42)	.90	1.37	.17	.014	.017

** $p \leq .01$.

Hypothesis 2

Results of this analysis revealed that, after controlling for age, gender, and previous counseling, the total scores of the IRLE and PSS combined explained a significant proportion of the variance in attitudes toward help-seeking, $R^2 = .110$, $F(5, 113) = 3.71$, $p < .01$. IRLE was a unique predictor of positive attitudes toward help-

seeking, which suggests that as athletes' total stress increased, they had less favorable attitudes toward help-seeking ($\beta = -.32, t = -3.37, p < .001$). PSS was not a significant predictor. In the final step of the regression, the optimal linear combination of the covariates, IRLE and PSS scores, and the interaction between IRLE and PSS (IRLE x PSS) explained a significant proportion of the variance in attitudes toward help-seeking, $R^2 = .009, F(6, 112) = 3.28, p < .01$. However, there was no significant interaction between IRLE and PSS. See Table 7 for complete regression results.

Table 7. Hypothesis 2: Regression Results of Covariates, Stress, Perceived Social Support, and Interaction of Stress and Perceived Social Support Predicting Attitudes toward Help-Seeking

Variable	<i>B</i>	95% CI (<i>B</i>)	β	<i>t</i>	<i>p</i>	<i>sr</i> ²	<i>pr</i> ²
Age	.16	(-1.56; 1.89)	.02	.19	.85	< .001	< .001
Gender	3.99	(-1.52; 9.50)	.13	1.43	.15	.014	.017
Previous Counseling	4.63	(-.73; 9.99)	.16	1.71	.09	.023	.026
Perceived Social Support	.05	(-.06; .15)	.08	.87	.39	.006	.006
Total Stress Score	-.22	(-.34; -.095)	-.34***	-3.51	.001	.096	.102
Total Stress x Perceived Social Support Interaction	-.003	(-.008; .002)	-.10	-1.07	.29	.008	.01

*** $p \leq .001$.

Hypothesis 3

Results of this analysis showed that, after controlling for age, gender, and previous counseling, the total scores of the IRLE and PSS explained a significant proportion of the variance in depression scores, $R^2 = .164$, $F(5, 121) = 21.81$, $p < .001$. IRLE was a significant predictor of depression ($\beta = .57$, $t = 8.07$, $p < .001$), which suggests that as student-athlete's total stress increased, total depression scores increased. In the final step of the regression, the optimal linear combination of the covariates, IRLE and PSS scores, and the interaction between IRLE and PSS (IRLE x PSS) explained a significant proportion of the variance in depression, $R^2 = .310$, $F(6, 120) = 18.80$, $p < .001$. There was no significant interaction between IRLE and PSS. See Table 8 for complete regression results.

Table 8. Hypothesis 3: Regression Results of Covariates, Stress, Perceived Social Support, and Interaction of Stress and Perceived Social Support Predicting Depression

Variable	<i>B</i>	95% CI (<i>B</i>)	β	<i>t</i>	<i>p</i>	<i>sr</i> ²	<i>pr</i> ²
Age	-.18	(-.73; .37)	.04	-.65	.51	.002	.004
Gender	.60	(-1.13; 2.32)	.05	.68	.50	.003	.004
Previous Counseling	2.54	(.87; 4.2)	.21*	3.01	.003	.04	.073
Perceived Social Support	.09	(-.04; .22)	.38	1.34	.18	.008	.014
Total Stress Score	.26	(.12; .41)	.57***	3.60	< .001	.058	.096
Total Stress x Perceived Social Support Interaction	-.001	(-.003; .000)	-.11	-1.56	.12	.01	.019

** $p \leq .01$. *** $p \leq .001$.

Hypothesis 4

Results showed that, after controlling for age, gender, and previous counseling, the total scores of PSS and PHQ-9 explained a significant proportion of the variance in attitudes toward help-seeking $R^2 = .146$, $F(5, 113) = 4.86$, $p < .001$. Depression (PHQ-9) was the only unique significant predictor of attitudes toward help-seeking ($\beta = -.39$, $t = -4.10$, $p < .001$), indicating that as depression in student-athletes increased, willingness to seek help decreased. In the final step of the regression, the optimal linear combination of the covariates, PSS and PHQ-9 scores, and the interaction between PSS and PHQ-9 (PSS x PHQ-9) explained a significant proportion of the variance in attitudes toward help-seeking, $R^2 = .021$, $F(6, 112) = 4.60$, $p < .001$. There were no unique significant predictors of attitudes toward help-seeking and there was no significant interaction between PSS and PHQ-9. See Table 9 for complete regression results.

Table 9. Hypothesis 4: Regression Results of Covariates, Stress, Perceived Social Support, and Interaction Predicting Depression

Variable	<i>B</i>	95% CI (<i>B</i>)	β	<i>t</i>	<i>p</i>	<i>sr</i> ²	<i>pr</i> ²
Age	.21	(-1.46; 1.88)	.02	.25	.81	< .001	<.001
Gender	4.41	(-.94; 9.77)	.14	1.63	.11	.019	.023
Previous Counseling	6.89	(1.40; 12.39)	.23*	2.49	.014	.044	.053
Perceived Social Support	.03	(-.07; .13)	.06	.66	.51	.004	.004
Total Depression Score	-1.05	(-1.53; -.58)	-.44***	-4.44	< .001	.144	.152
Total Stress x Perceived Social Support Interaction	-.02	(-.033; .002)	-.15	-1.71	.09	.026	.026

* $p \leq .05$. ** $p \leq .01$, *** $p \leq .001$.

CHAPTER FIVE

DISCUSSION

The aims of this study were to understand the relationships among depression, stress, social support, and attitudes toward help-seeking in college student-athletes. A hypothesis of this study was that social support would have a moderating effect on attitudes toward help-seeking in student-athletes, as seen in previous research of the general college student population. However, no significant moderating effects of social support on attitudes toward help-seeking were found in any of the analyses. One possible explanation for this lack of significance in social relationships may be that student-athletes' social support networks tend to be different and less well understood than the general population due to their athletic participation, which requires relationships and regular contact with coaches, trainers, teammates, and other athletic staff (Rosenfeld, et al., 1989). These regular social interactions may not provide a similar quality or stability as more meaningful interactions in the general population and may take away time from developing more meaningful and supportive relationships. It may also be possible that there is an unreported or unnoticed benefit to regular social interaction with more social contacts in general. While student-athletes may not consider their social interactions with coaches or other athletic participation interactions as social support, the mere fact that they are connecting with others more often than some in the general population may influence their mental health or wellness in a positive way. This could be an important question to consider in future research. The most endorsed sources of social support in this study suggest that family and teammates were seen as the most important sources of social support.

Other findings of the current study show important implications for how to address factors that influence student-athletes' decision to seek professional help when they experience high stress or depression. Generally, student-athletes have been found in the current and previous studies to show less favorable attitudes toward help-seeking than the general population. More concerning however, is the negative relationship found in the current study between stress, depression and attitudes toward help-seeking, which suggests that, as student-athletes' stress increases, they have less favorable attitudes toward help-seeking. While we did not measure help-seeking behavior in the current study, it is possible that attitudes toward help-seeking may affect actual help-seeking behavior in student-athletes and should be tested in future studies. This trend is opposite of what is seen in the general population and could be an important aspect to study in future research. Possible explanations that could be studied further are stigma, time constraints, and other factors that may influence a student-athlete's decision to seek professional help when experiencing stress and depression. With experiences of stress leading to depression, it may be helpful to focus more on efforts in athletic departments to address stress and depression before the problem becomes overwhelming enough that a student-athlete needs to admit to themselves and others that they have a mental illness, or "weakness," as it may appear in a stigmatized culture. Student-athletes have significant pressures to appear both mentally and physically healthy. Reporting mental health concerns as a student-athlete may unfortunately carry negative consequences that affect playing time, relationships with teammates, coaches, or administrators, and academic repercussions.

Contrary to what was hypothesized in the current study that was supported by previous research, time pressures were not found to be a unique predictor of attitudes toward help-seeking. It is unclear as to why this effect was not found in the current study, considering that four of the seven items that make up the factor of Time Pressure on the IRLE were the most highly endorsed items among this sample. Post-hoc analyses showed that none of the seven items of the IRLE that make up the Time pressure factor were found to be a unique predictor of attitudes toward help-seeking. Previous studies have shown that time factors were significantly different from non-student-athletes (Wilson & Pritchard, 2005), but have not directly studied as predictors of help-seeking, which may account for the insignificant effect. It is highly possible that the experience of time pressures could be more common for student-athletes, but may not impact their attitude to seek professional help. The single unique predictor of Assorted Annoyances, which includes items such as “disliking fellow students,” “gossip concerning someone you care about,” and “having your contributions overlooked,” was found to have a negative relationship with attitudes toward help-seeking. More specifically, as the frequency of experiencing Assorted Annoyances increased, willingness to seek help decreased. It may be possible that student-athletes interpreted the experience of events in the Assorted Annoyance as part of daily life that did not meet a threshold for stress that would warrant seeking professional help, which would appear to have a negative relationship with attitudes toward help-seeking. Future studies should consider the quality and interpretation of stressful in addition to frequency of experiencing a potentially stressful event.

Another potential limitation to the current study includes potential effects of the sample. The current study's sample included a majority of single, white, female student-athletes. The impact these demographics may have had on the sample could include a misrepresentation of student-athletes in a committed relationship, experience of stressful events, and general attitude toward help-seeking. The study was also conducted in the fall, which is near the beginning of athletic competition for the majority of this population, possibly with less stress and under less pressure at the beginning of their collegiate athletic career, having not yet formed relationships, expectations, successes, failures, and other experiences that may contribute to a student-athlete's stress and experience in their mid to late career. Future studies should take demographics and time of study participation into consideration.

While social stigma was not measured in the current study, future research may address if social stigma does have an effect on the stressed and /or depressed student-athlete, causing him or her to have less favorable attitudes toward seeking help. Research has shown that social stigma, in addition to time constraints, negatively influences student-athletes' likelihood to seek help (Watson, 2006). Social stigma that is present in athletic culture may place individuals suffering from mental health concerns at greater risk for deteriorating and facing even greater negative consequences when those mental health concerns are left untreated.

Increased efforts to create discussion, awareness, and acceptance of mental health concerns, which are a potential detriment to well-being as well as athletic performance, before student-athletes begin suffering from depression, anxiety, or other mental health conditions may impact their attitude toward seeking help in the future when they do

experience the condition. The NCAA has shown increased efforts in creating awareness of mental health concerns and reducing stress and stigma by educating student-athletes through programs such as the Sport Science Institute, which provides interactive educational modules for mental wellness. This program focuses on being well-rounded student-athletes that promote resilience, persistence, confidence, performance, and tolerance. As the culture shifts toward a more accepting and understanding approach to mental health in student-athletes, more research and program development will be needed to encourage and advance this healthy and productive change.

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