ABSTRACT. Student athletes must balance numerous challenges as they work at their academics and their sport. In this context, social support, especially from coaches, could have the potential of contributing to these athletes’ well-being. The present study aimed to investigate if coach–athlete relationships could predict college student athletes’ mental health outcomes (i.e., well-being, depression, and anxiety) beyond the known effects of gender and personality on mental health. Student athletes (N = 79, 56 men, 23 women) between 18 and 23 years of age (M = 19.50, SD = 1.25) completed measures of depression, anxiety, psychological quality of life, and coach–athlete relationship online. Results showed that both personality and coach–athlete relationships were significantly correlated to mental health outcomes. Multiple regression analyses showed the predictive power of the coach–athlete relationship over gender and personal factors in the prediction of depression and psychological well-being, but not anxiety. Results provide support for the importance of the coach–athlete relationship for athletes’ well-being, although more research with larger and more diverse samples is necessary to confirm this relationship.

Keywords: mental health, student athlete, depression, anxiety, coach–athlete relationship

Mental health issues in college are rising precipitously. The proportion of college students diagnosed with mental health conditions increased from 21.9% in 2007 to 35.5% in 2017 (Lipson, Lattie, & Eisenberg, 2018). Collegiate athletes may be at even more risk for mental health issues than nonathlete students. Together with overcoming developmental challenges, such as becoming independent and coping with uncertainty found in college (Chickering, 1969; Pascarella & Terenzini, 2005), student athletes contend with extra pressures, such as competition and athletic lifestyles, that nonathletes do not endure (Etzel, Watson, Visek, & Maniar, 2006). Social support may play an important role in student-athlete mental health (Hammen, 2005), especially the relationship with coaches (Lentz, Kerins, & Smith, 2018). In the present study, we examined major contributors to college athletes’ mental health with a special focus on the coach–athlete relationship.

The National Collegiate Athletic Association (NCAA) has over 360,000 student athletes who attend and compete at universities around the United States. Meeting academic challenges with the additional rigors of athletic competition can unduly tax students. Not surprisingly, stress plays a significant role in the mental health of high-school and college athletes (Lentz et al., 2018). The average student athlete exhibits similar or higher rates of depressive disorders than nonstudent athletes (Etzel, 2009; Wolanin, Gross, & Hong,
Mental health is related to personal, interpersonal, and environmental factors, such as personality, social support, and life stressors (Hammen, 2005; Kotov, Gamez, Schmidt, & Watson, 2010; Oexle & Sheehan, 2020). Among personal factors, gender (Storch, Storch, Killiany, & Roberti, 2005; Wolanin et al., 2016) and personality (Kotov et al., 2010) have been linked to mental health in the past (Brewer, 1993). For example, a survey of 398 undergraduate students showed that female student athletes had higher social anxiety and depression than male athletes and nonathlete students (Storch et al., 2005). The authors noted that women may be exposed to a greater number of stressors during their collegiate careers, internalizing these stressors more than their male counterparts, and feeling less satisfied with their overall collegiate experience (Storch et al., 2005). Another survey of 465 NCAA Division I student athletes found that women showed a risk 1.84 times higher than men of reporting depressive symptoms (Wolanin et al., 2016).

Specific personality traits such as conscientiousness, extroversion, agreeableness, neuroticism, and openness—or the Big Five traits—may also relate to mental health issues. Personality traits have been linked to competition anxiety (Binboga, Guven, Catikkas, Bayazit, & Tok, 2012; Velikic, Knezevic, & Rodic, 2014) and social physique anxiety in athletes (Cangur, Yaman, Ercan, Yaman, & Tok, 2017). A meta-analysis has also shown a link between the Big Five personality traits and anxiety, depressive, and substance abuse disorders in the general population, especially high neuroticism and low conscientiousness (Kotov et al., 2010). Kotov et al. suggested that personality traits are strongly related to psychopathology and should be taken into consideration in research and clinical practice.

Besides the importance of personality and gender, environmental factors can also have a significant effect on mental health. Specifically, mental health issues among college student athletes can be linked to the number of daily stressors that they face, which in the long term could lead to mental illness, if not well managed (Davoren & Hwang, 2014; Hammen, 2005; Wenzel, Glanz, & Lerman, 2002). Student athletes must maintain a full course load, work out to meet the physical demands necessary to succeed, adapt to frequent traveling for competition, and cope with injuries, while experiencing public pressure to perform (Ferrante & Etzel, 2009). Student athletes’ year-round training also results in athlete-specific physical and psychosocial demands (Etzel et al., 2006). Overall, student athletes cope with various stressors while adapting to the college environment and finding a well-balanced life between sports, school, and social life (Beauchemin, 2014). Finding the right balance in student athletes’ lives is an added challenge because each individual is unique in the ways these aspects work together and the ways in which they do not (Whitehead & Senecal, 2019).

Because of the significant impact of stress on mental health, interpersonal factors that help athletes cope with these stressors should also be considered when analyzing student athletes’ mental health. A factor known to act as a buffer from stress is social support (Lu et al., 2016; Wenzel et al., 2002). Social support has been operationalized in different ways, and measures of perceptions, receipt, networks, and quality have all been related to health (Sarason, Sarason, & Gurung, 2001). Among college students, social support has been related to lower risk of presenting depressive and anxiety symptoms (Hefner & Eisenberg, 2009; Merianos, Nabors, Vidourek, & King, 2013). In addition, student athletes who show higher social connectedness tend to have fewer symptoms of depression (Armstrong & Oomen-Early, 2009). Teammates’ social support negatively correlates to depression in female student athletes (Hagiwara, Iwatsuki, Isogai, Van Raalte, & Brewer, 2017).

Despite the importance of social support for better mental health outcomes, the influence of social support from the coach, and consequently the coach–athlete relationship, has not been satisfactorily explored (Felton & Jowett, 2013b; Felton & Jowett, 2017). Coaches can be an important source of support and can instill confidence in their athletes (Lentz et al., 2018; Lu et al., 2016). Coaches can also be a source of stress with a poor coach–athlete relationship adding stress in the athletes’ lives (Chyi, Lu, Wang, Hsu, & Chang, 2018). In contrast, a good relationship could help...
in the identification of pre-existing mental health issues and disclosure (Schary, 2019). Although the role of the coach has been studied, most research focuses on how coaches influence motivation and satisfaction (e.g., Langan, Toner, Blake, & Lonsdale, 2015; Raabe & Zakrjsek, 2017; Riley & Smith, 2011; Wu, Lai, & Chan, 2014). The coach–athlete relationship is strongly related to athletes’ basic psychological needs and has the potential to be helpful during physically, psychologically, and emotionally challenging times (Choi, Cho, & Huh, 2013). Consequently, our working definition of social support involves the provision of emotional, esteem, informational, and tangible aid by the coach (Koh, Kokkonen, & Law, 2019).

Research on social support in general, and from the coach in particular, reinforces the idea that better understanding the coach–athlete relationship may help predict athletes’ mental health. For example, research on basic needs satisfaction provided by the coach has shown that support from a coach predicts well-being outcomes (Davis & Jowett, 2014; Felton & Jowett, 2017). In one survey of 215 athletes, perceived social support from the coach predicted athletes’ basic needs satisfaction (Felton & Jowett, 2013a). Support from the coach has also been related to other athlete well-being factors such as vitality, positive and negative affect, and physical self-concept (Felton & Jowett, 2013b). Coach–athlete attachment anxiety was related to difficulties in emotional regulation, which in turn was linked to aggression, alcohol use, and psychological distress (Hebard, 2015). More research is necessary to clarify the association between coach–athlete relationships and mental health.

As illustrated, multiple variables may influence student athletes’ mental health, including gender, personality, and social support. Despite the apparent importance of the athletes’ relationships with their coaches to their mental health, this variable has not been adequately studied in relation to important mental health outcomes, such as depression and anxiety. The aim of the present study was to investigate if the variable coach–athlete relationship can predict student athletes’ mental health after controlling for the effect of personal factors. Specifically, we tested the extent to which coach–athlete relationships predicted student-athlete mental health beyond the influence of gender and personality. Identifying specific variables that are connected to student athletes’ mental health will help professionals develop more effective interventions to prevent mental health issues.

### Method

#### Participants

The sample consisted of 56 female and 23 male student athletes at a midsized Midwestern public university (Division I of the NCAA). Participants ranged between 18 and 23 years old ($M = 19.50$, $SD = 1.25$) and from college first-year students to college seniors. Student athletes identified themselves as European American ($n = 77$), African American ($n = 1$), and Asian ($n = 1$). Student athletes averaged 14.44 enrollment credits, which ranged from 12–18 credits ($SD = 1.69$). The average student athlete practiced 2.93 hours per day ($SD = 2.14$; range 0–5). The average number of days the student athlete practiced each week was 5.77 ($SD = 0.74$; range 3–7). Participants took part in 16 sports, and the highest represented sports were swimming and diving ($n = 26$), volleyball ($n = 11$), and soccer ($n = 11$).

#### Measures

Student athletes answered demographic questions concerning age, class, number of course credits, ethnicity, and the number of hours of participation in their specific sport each day and each week. Participants also completed questionnaires about their personality traits, coach–athlete relationship, and mental health.

**Personality.** We measured personality with a questionnaire based on the Big Five factors, the Ten Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003). It consists of 10 statements, two for each factor, that are rated on a 7-point Likert-type scale ranging from 1 (disagree strongly) to 7 (agree strongly). Sample statements included “extraverted, enthusiastic” and “open to new experiences, complex.” Gosling et al. demonstrated that the Ten Item Personality Inventory has adequate validity and reliability, which makes it a good option to decrease the size of surveys involving Big Five traits while maintaining good psychometric standards. Given that each personality trait is only measured with two items, internal reliability measurements are not commonly calculated.

**Coach–athlete relationship.** The Coach–Athlete Relationship Questionnaire (CART-Q) (Jowett & Ntoumanis, 2004) was used to assess the coach–athlete relationship. Jowett and Ntoumanis (2004) have shown that this scale has good validity and reliability. This measure has 11 items and 3 subscales. The subscales consist of commitment (3 questions), closeness (4 questions), and complementarity (4 questions). The student athletes answered the...
CART-Q questions based on their relationship with their head coach. Sample questions include “I feel close to my head coach” and “I respect my head coach.” The student athletes selected a response based on a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The Cronbach $\alpha$ for CART-Q was .98.

**Mental health.** To draw a comprehensive assessment of the athletes’ mental health, we used measurements of mental disorders (i.e., depression and anxiety) and of a positive element of mental health (i.e., psychological quality of life). Each scale has been validated in previous studies and shown to have convergent and divergent validity.

**Positive elements of health.** WHO-Quality of Life (WHOQOL-BREF) is a brief version of the World Health Organization Quality of Life assessment (The WHOQOL Group, 1998). It has been tested in a sample of people across 23 countries, showing sound validity and reliability (Skevington, Lotfy, & O’Connell, 2004). The scale consists of 26 questions and 4 domains (physical health, psychological health, social relationships, and environmental health), but only psychological health was used in the present study. Sample statements included, “How much do you enjoy life?” and “How satisfied are you with yourself?” For Questions 1 through 4, responses ranged from 1 (not at all) to 5 (an extreme amount). For Question 5, the statements ranged from 1 (very dissatisfied) to 5 (very satisfied). For Question 6, the statements ranged from 1 (never) to 5 (always). Reliability was high, Cronbach $\alpha = .83$.

**Negative elements of health.** The Center for Epidemiological Studies-Depression Scale Revised (CESD-R; Eaton, Muntaner, Smith, Tien, & Ybarra, 2004) consists of 20 statements on a 5-point Likert-type scale ranging from 1 (not at all or less than 1 day last week) to 5 (nearly every day for two weeks). Sample items are comprised of “Nothing made me happy” and “I felt like I was moving too slowly.” This scale has shown good validity and reliability and is vastly used in psychiatric epidemiology, with the strength of being atheoretical (Eaton et al., 2004; Van Dam & Earleywine, 2011). The CESD-R value that determines if an individual is considered clinically depressed is a score of 16 or higher out of the total 20 questions. The Cronbach $\alpha$ for the CESD-R was .86.

The Beck Anxiety Inventory Manual consists of 21 statements regarding how the individual felt within the past month (Beck & Steer, 1993). Participants use a 4-point response scale, ranging from 0 (not at all) to 3 (severely – it bothered me a lot). Sample statements included are “numbness or tingling” and “difficulty in breathing.” The Beck Anxiety Inventory Manual showed strong reliability with a Cronbach’s $\alpha$ of 0.89. A score of 1–21 indicates low anxiety, a score of 21–35 indicates moderate anxiety, and a score greater than 36 indicates high anxiety. Individuals scoring in the range of moderate to high anxiety should follow up with a medical professional.

**Procedure**
Athletes completed the questionnaires on Qualtrics during the month of November. After approval of the Institutional Review Board, the university athletic department’s academic coordinator sent emails to every student athlete ($n = 247$) and included an invitation to participate in the online survey. Seventy-nine athletes completed surveys for a 32% response rate. Participants gave consent to participate in the survey, provided the background information requested, and completed each of the surveys listed above in this report. Participants filled in their first and last names at the end of the survey to allow clinical referrals based on clinical levels of depression or anxiety. Only the researchers had access to the data.

**Data Analysis**
We used the Statistical Package for the Social Sciences for three major data analyses. First, we conducted descriptive analyses of all variables, both for the complete sample and separated by gender. Next, we correlated the major predictor variables personality and coach–athlete relationship subscales with measures of mental health (depression, anxiety, and psychological quality of life), controlling for gender. Finally, we used three hierarchical multiple regression analyses to assess if the coach–athlete relationship could predict each of the major mental health measures beyond gender and personality. We entered gender and personality in the first step and coach–athlete relationship in the second to test if it predicted variance in mental health variables over and above gender and personality.

**Results**
Table 1 illustrates the mean and standard deviations of all variables presented in the survey. We used an Analysis of Variance (ANOVA) to assess if there were significant differences between genders on the mental health variables. All descriptive data
are shown in Table 1. Men and women varied on five measures in the study. Men showed higher scores on the WHOQOL scale, \( F(1, 72) = 4.08, p = .047 \), and three measures of the coach–athlete relationship, and lower scores on emotional stability, \( F(1, 72) = 11.18, p = .001 \). Consistent with our focus on this important relationship, our results show men reporting higher levels of complementarity, \( F(1, 72) = 4.75, p = .033 \), and commitment, \( F(1, 72) = 5.88, p = .018 \), on the CART-Q.

**Associations Between Major Variables**

Table 2 shows partial correlations between each of the mental health variables and the predictor variables, controlling for gender. Results show many significant, moderate correlations between the variables examined. Consistent with the main focus of this article, the strongest associations are seen between well-being, depression, and the subscales of coach–athlete relationship. In addition, emotional stability correlated significantly with all mental health measures. It was positively and strongly correlated with quality of life, and negatively and moderately correlated to depression and anxiety. The correlations supported the importance of including measures of personality, especially emotional stability, and coach–athlete relationship measures in the hierarchical regression analyses.

A post-hoc power analysis showed that assuming a medium effect size and a standard significance level of \( p = .05 \), power was sufficient with our sample size = .74. Assuming a large effect between mental health and coach–athlete relationship shows our sample has adequate power.

### Predicting Mental Health

Three hierarchical multiple regressions had gender and personality inserted on the first step and coach–athlete relationship on the second step. The first multiple regression had depression as the dependent variable. In predicting depression, only the model including coach–athlete relationship as a predictor was significant, with a medium effect size, \( F(7, 61) = 2.22, p = .045 \), \( R^2 = .21 \). The combination of gender, personality, and coach–athlete relationship predicted 21% of the variance in depression scores. Adding coach–athlete relationship on the second step of the hierarchical regression accounted for an additional 15% of the variance in depression, \( \Delta F(1, 60) = 11.37, p = .001, \Delta R^2 = .15 \). Regarding specific predictors, only coach–athlete relationship (\( \beta = -.43, p = .001 \)) was a significant predictor of depression, where a stronger coach–athlete relationship was associated with lower depression scores. Table 3 shows the values for all predictors.

The second hierarchical regression, which had psychological quality of life as the dependent variable, also had only the second model as significant, with a medium effect size, \( F(7, 61) = 2.78, p = .014 \), \( R^2 = .24 \). The model accounted for 24% of the variance in psychological quality of life, with the addition of coach–athlete relationship contributing to half of this variance (\( \Delta R^2 = .12 \)), \( \Delta F(1, 61) = 9.39, p = .003 \). Regarding specific predictors, again, coach–athlete relationship was the only significant predictor (\( \beta = -.38, p = .003 \)), where a stronger coach–athlete relationship was associated with higher quality of life scores. Table 3 shows the values for all predictors.

In the third hierarchical regression, anxiety was the dependent variable. Neither model was significant in predicting anxiety. Gender and personality had a statistically nonsignificant contribution of 5% to the anxiety scores with a small effect size, \( F(6, 60) = 0.54, p = .777, R^2 = .05 \), and the model including coach–athlete relationship had a nonsignificant contribution of 11%, \( \Delta F(7, 59) = 1.05, p = .407, \Delta R^2 = .11 \). We summarize the regression analyses in Table 3.
Discussion
This study aimed to assess the associations between coach–athlete relationships and student athletes’ mental health. It also aimed to analyze if this association would be significant after accounting for the influence of student athletes’ gender and personality. Our results provide a detailed picture of the relationships between different measures of mental health, a range of personality factors, and most importantly, measures of the coach–athlete relationship. This section will discuss the findings regarding the relationship of each of these variables with different aspects of student athletes’ mental health.

The relationship between coaches and athletes presents itself as a major candidate for focus in the context of mental health of athletes (Lentz et al., 2018). Coaches’ relationship with their athletes showed a clear association with psychological quality of life and depression and contributed to the prediction of 15% of depression and 12% of psychological quality of life scores in this sample, after accounting for the effects of gender and personality variables. These are important findings, as they reinforce the need for coaches to invest on the improvement of their relationships with their athletes. Previous research has shown that the coach–athlete relationship influences important aspects of athletes’ performance and development (Prophet, Singer, Martin, & Coulter, 2017). In addition, the International Sport Coaching Framework (2013) includes building relationships in its list of coaching competencies. It is one of the few times, however, that this variable is related to aspects of athletes’ mental health.

Even though the link between coach–athlete relationship and depression in athletes has not been studied extensively in the past, it is not surprising that this relationship may exist. Lentz et al. (2018) suggested that the athletes’ relationships with their coaches could represent a source of support amid the many stressors that college student athletes endure. On most teams, the coach is the main point of contact between the athlete and the university, and on some campuses the coach may be the gatekeeper for all interactions with a university. A coach and his or her approval or disapproval could also play a major role in the athlete’s psyche. Implicitly or explicitly the athletes’ prospects, playing time, and career, can hinge on the coach. It is not surprising that the relationship with the coach can play a major role in the athlete’s mental health. Further, a poor relationship with the coach could be a stressor in itself, not only negating support, but also generating more stress on top of the many pressures that student athletes already undergo (Lentz et al., 2018).

Previous research (i.e., Davis & Jowett, 2014; Felton & Jowett, 2013b; Felton & Jowett, 2017) has shown an association of athlete’s attachment style and coach support with well-being outcomes such as affect, vitality, and performance self-concept. In the present study, coach–athlete relationship was correlated to psychological quality of life and depression, besides predicting them over and above the effects of personality and gender. These findings indicate that the coaches’ behaviors and their relationship with their athletes may have a connection with their

| TABLE 2 |
| Correlations Between Major Variables, Controlled by Gender |
| WHO | CESD-R | BAI |
| --- | --- | --- |
| Extraversion | .06 | .08 | .04 |
| Agreeableness | .14 | -.60 | .07 |
| Conscientiousness | .22 | .00 | -.21 |
| Emotional Stability | .47*** | -.31* | -.29* |
| Openness | .12 | -.11 | .03 |
| Commitment* | .36** | -.36** | -.14 |
| Closeness | .37** | -.44*** | -.26* |
| Complementarity | .36** | -.41** | -.15 |

Note. WHO = World Health Organization. CESD-R = Center for Epidemiological Studies-Depression Scale Revised. BAI = Beck Anxiety Inventory Manual.

* p < .05. ** p < .01. *** p < .001.

| TABLE 3 |
| Summary of Multiple Regression Analyses for the Prediction of Depression, Anxiety, and Psychological Quality of Life |
| Depression | Anxiety | Psychological QOL |
| --- | --- | --- |
| B | SE | B | SE | B | SE | B | SE |
| Gender | -.79 | 1.26 | -.08 | .44 | 1.12 | .39 | -.96 | 1.07 | -.11 |
| Extraversion | -.09 | .36 | -.03 | .08 | .32 | .03 | .47 | .31 | .18 |
| Agreeableness | .13 | .29 | .06 | -.14 | .26 | .08 | .11 | .25 | .06 |
| Conscient. | .40 | .32 | .15 | .15 | .29 | .07 | .06 | .27 | .03 |
| Emotional St. | .07 | .43 | .02 | .23 | .38 | .08 | .03 | .35 | .01 |
| Openness | .12 | .30 | .05 | -.08 | .27 | .04 | -.07 | .26 | .03 |

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| C–A Rel. | -.12 | .03 | -.43*** | -.06 | .03 | -.27 | .09 | .03 | .38*** |
| R² | .21 | .11 | .24 |
| F | 2.22** | 1.05 | 2.78* |

Note. QOL = Quality of Life. C–A Rel. = Coach–athlete relationship. 
P < .05. *** P < .01. ** P < .001.
athletes’ mental health, beyond the effect of the athletes’ personality on their own mental health. However, further research with larger and more varied samples (i.e., from various universities and divisions) are needed to confirm the relationship of these variables. In addition, future studies with longitudinal or experimental designs could help identify if this relationship is causal or if there is a third confounding or mediating variable affecting this association.

Beyond the coach–athlete relationship, our results shed light on other aspects of student athletes’ mental health. We found significant gender differences in quality of life scores and that emotional stability was significantly correlated to all measures of student-athlete mental health. In a meta-analysis that included 137 personality traits as correlates of subjective happiness and well-being, DeNeve and Cooper (1998) found that among the Big Five factors, emotional stability was the strongest predictor of happiness, and that extraversion and agreeableness were good predictors of positive affect. However, emotional stability was not a significant predictor in the hierarchical multiple regressions. These findings indicate that it may be important to consider emotional stability’s role in student athletes’ mental health in research and practice, but further research is necessary to establish this connection with confidence.

Our results are tempered by some important limitations. First, we acknowledge that different teams have their seasons start and end at different times of the year. Our data was collected at one point in the year and, although some teams were already playing, others would only be practicing. The stress and related mental health issues would correspondingly be different. Second, teams vary in size. Whereas a swimming team may have many members and even many assistant coaches, a volleyball team will have a smaller number of players. Although we measured team membership, we did not factor team size into our analyses. Both these factors are especially important when we note that this is a correlational study and we cannot measure changes in athlete or coach behavior and resulting changes in mental health. Third, the sample is relatively homogeneous, being predominantly women, almost all European American, and all at one university. Finally, although a substantial portion of the student athletes volunteered for our study, the sample is under 50% of the athlete population on campus. It is possible the athletes in the sample varied in some way from those who did not take part.

**Conclusion**

Although the present study only demonstrates initial evidence that coach–athlete relationship and some aspects of college student athletes’ mental health may be connected, it is important to consider this finding within the context of previous studies that have found relationship of coaches’ behaviors and support with various aspects of athletes’ psychological well-being, such as positive and negative affect, vitality, satisfaction, and performance self-concept (Davis & Jowett, 2014; Felton & Jowett, 2013b; Felton & Jowett, 2017; Reinboth, Duda, & Ntoumanis, 2004). In addition, this relationship makes theoretical sense, because coaches are key sources of support for college student athletes and relationship issues represent crucial stressors in college students’ lives (Lenz et al., 2018). The coach–athlete relationship had never been connected to depression and psychological quality of life, to our knowledge. In the present study, the coach–athlete relationship was not only correlated to depression and life satisfaction, but could also predict part of the athletes’ scores on these scales. More studies are necessary to confirm this connection, but in light of the evidence that coaches’ behaviors are connected to various well-being outcomes, coach education that targets specific behaviors that could support student athletes’ psychological well-being and mental health should become a central part of coaching education. Although there are great examples of suggestions on how to improve coach–athlete relationships to improve performance (e.g., Ferrar et al., 2018; Prophet et al., 2017), the potential effect of this relationship on athletes’ mental health should become central in these trainings as well.

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