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# The Impact of Social Media on the Mental Health

# of Student-Athletes across NCAA Divisions

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*The purpose of this research was to explore impacts of social media on the mental health of student-athletes. Ninety-four student-athletes across all three NCAA Divisions completed a survey on their social media use and various mental health measures. Results showed that while social media use as a whole did not impact depression, anxiety, satisfaction with life, perceived stress, or self-esteem, use of Facebook and self-esteem had a negative correlation while use of TikTok and self-esteem had a positive one. Additionally, for male participants, use of Instagram and Snapchat had a negative correlation with anxiety and depression. Qualitative responses indicated social media is often a tool used for procrastination and escape, and many student-athletes felt it had a negative impact on them. Student-athletes should be instructed on healthy coping strategies.*

T he evolution of technology has resulted in the creation and worldwide use of social media. Even though it was not the first social media platform, Facebook has arguably been the game changer for social media use (DataReportal, 2021). The proliferation of social media was helped by cellular technology advancements, which now allow for users to access these sites from any location (Woolley, 2013). Thus, social media has evolved from a computer-oriented tool to an easily accessible daily journal.

One of the reasons that social media has had such an impact on society is due to the differences each platform provides for its users. For example, at the top, with the highest number of active users, Facebook allows its members to connect with family and friends across the world to see photos, write on walls, and keep up with life updates (Statista, 2021). YouTube and TikTok are video sharing platforms and Instagram focuses primarily on photo sharing (Statista, 2021). Finally, Twitter allows users to write and read short updates or threads and Snapchat is a direct messaging application where users can share videos and photos (Statista, 2021).

Social media provides a place for users to connect with people, including their favorite celebrities (Ma, 2018). However, social media has also led to the term "keyboard warrior" which is defined as "a person who posts highly opinionated text or images online in an aggressive or abusive manner (Dictionary.com, 2021)." Jimmy Sanderson wrote "When I was growing up, if I got mad at an athlete, by the time I sat down and wrote a letter to the newspaper or called into a radio show, I was generally cooled down" (Christensen, 2015). However, the access that users have to social media allows them to post while still on an emotional high (Christensen, 2015). Because of the easy access that social media provides to student-athletes, the general population can deliver direct, hateful messages. A recent example of this in college sport is the social media attack on Ohio State basketball player EJ Liddell in March 2021, who was told "You are such a f---ing disgrace, don't ever show your face at Ohio State. We hate you. I hope you die I really do." This attack led to the filing of a police report (Berg, 2021). Finally, social media's public layout also provides athletes with a simple platform to spend time comparing themselves to others (Petersen, 2017).

Research has shown that social media has an impact on mental health in both college students and college student-athletes. Evidence of this is linked directly with social media's impact on sleep leading to effects on mental health (Levenson et al., 2016) and cybervictimization (McLoughlin et al., 2019). Student-athletes are known to run on limited sleep due to busy schedules, and their popularity within communities can make them a target of positive and negative media. With previous research showing that there is a link between social media use and mental health, there are concerns about the mental health of student-athletes due to their status (Beauchemin, 2014). The purpose of this study is to explore how social media impacts the mental health of college student-athletes.

## Literature Review

College students, in general, struggle with mental health issues. According to the American College Health Association (2019), 66.4% of the undergraduate population "felt overwhelming anxiety", 46.2% "felt so depressed it was difficult to function", and 85% "felt exhausted (not from physical activity)" in the last 12 months. In this sample, 2.3% of students "attempted suicide", while 14.4% "seriously considered suicide." Within this population,

student- athletes face unique stressors and have additional barriers to seek help (Beauchemin, 2014). Researchers have suggested that student-athletes are a vulnerable population potentially likely to suffer from mental health issues (Etzel, 2010) because of the social isolation due to game time, perceived poor athletic performance and identity issues (Pinkerton, Hinz, & Barrow, 1989).

*Mental Health of Student-Athletes*

Research in student-athletes has shown that they are most susceptible to suffer from depression, anxiety, eating disorders, and substance abuse (Thompson & Sherman, 2007; Stock & Levine, 2016). For example, Rao et al. (2015) found that the highest rate of suicide occurs within men's football, which may be due to the additional stress that is placed on these student-athletes due to the considerable national attention their sport receives. Although suicides have been found to be more common in the male student-athlete population, studies have shown that eating disorders are more likely to present in the female athlete population (Rao et al. 2015; Thompson, 2014). The prevalence of eating disorders in the general population has been found to be no higher than 8.0% of females (Saunders & Eaton, 2018), however, the rate of eating disorders amongst female athletes has been found to be between 14% and 19% (Greenleaf et al., 2009). In a study by Sanford-Martens et al. (2005), 18% of current NCAA Division I student-athletes across a variety of sports showed symptoms of eating disorders.

A study completed by Watson and Kissinger (2007) identified that non-athletes scored higher than athletes on 23 different factors pertaining to wellness using the 5F-Wel survey. Student-athletes scored significantly lower than their non-athlete counterparts on Essential Self which is a measure of how well individuals define their sense of meaning and purpose in life. Similarly, Brown et al. (2000) found that increased hours of sport participation resulted in lower self-efficacy for career decision-making tasks.

College athletes suffer from general anxiety and performance anxiety. Stull (2014) explained that generalized anxiety disorder is present within the college student-athlete community, however, student-athletes also present with anxiety related to athletic performance - performance anxiety, panic disorder and phobic disorder (Stull, 2014 p.28).

Depression is often associated with anxiety. Yang et al. (2007) found that 21% of the Division I student-athletes indicated they had symptoms of depression. Research by Weigand et al. (2013) found that depression was significantly higher in current student-athletes (16.77%), in comparison to graduated student-athletes (8.03%). According to the authors, higher levels of depression present in student-athletes could be due to their high workload and lack of rest. Highlighting the paradox explained by Morgan et al. (1987) where despite exercise improving symptoms in individuals with depression, overtraining of individuals with no history of mood disorders can cause the development of them. Maniar et al. (2005) suggested a possible reason for the level of depression present in athletes could be the culture of athletics "which emphasizes being mentally tough, showing no sign of weakness, and fighting through the pain. (p.1)"

More recently, Tran (2019) completed a comparison on the mental health of student-athletes from 2010 to 2015. The results of this study showed an increase in anxiety for white student-athletes, while racial/ethnic comparisons continued to suggest that the Asian/Pacific Islander population is at a heightened risk of depression and suicide. Further supporting the idea that student-athletes struggle with mental health issues, Cutler and Dwyer (2020) found that student-athletes were stressed, and this hindered their experience.

## Social Media and Mental Health

Research has suggested that social media can negatively impact mental health. For example, McLoughlin et al. (2019) found that adolescents who had been victims of cyberbullying had significantly higher levels of anxiety, depression, and stress, and showed significantly lower levels of social connectedness. Research on college students found that 22% reported being cyberbullied, and 38% reported that they knew of someone who had been cyberbullied (Bell & Wilfert, 2014), suggesting that college students may also be suffering negative mental health outcomes.

There is a link between social media, mental health, and sleep. First, there is strong evidence to suggest that poor sleep can increase the likelihood of depression and anxiety (Benitez & Gunstad, 2012). Benitez and Gunstad (2012) found that poor sleep quality increased levels of depression and anxiety in undergraduate students. Woods and Scott (2016) found a significant link between night-time social media use and poor sleep. Additionally, night-time use of social media was connected to lower self-esteem. Similarly, Levenson et al. (2016) measured social media use and its impact on sleep and found that higher levels of social media use significantly increased the chance of poor sleep.

Research has also shown that social media usage can have an impact on academic success. Al-Menayes (2015) found that time spent on social media is a strong negative predictor of GPA. The more time a person spends on social media, the lower their GPA will be. Success in academics is important when studying the mental health of student-athletes as the NCAA has implemented academic requirements for athletes to remain eligible to compete. An article published by the NCAA stated, "depression and anxiety have been found to be significant predictors of a lower grade-point average and poor athletic performance, they're also highly correlated with other risky behaviors, including suicide" (Davoren, A. K., & Hang, S., 2014, p.38).

Social media use can also impact self-esteem, anxiety, and depression. Isaranon (2019) found users had higher levels of self-esteem after receiving Facebook affirmation. Conversely, Faraon and Kaipainen (2014) identified a negative relationship between self-esteem and Facebook use showing that as Facebook use increased, levels of self-esteem dropped. Social media also impacts anxiety as Fathima et al. (2019) found that 40% of the users expressed symptoms of anxiety when they were unable to access social media, and 38% of participants felt more comfortable talking with others through social media. Ramzan et al. (2019) suggested using social media to compare oneself with others was a major source of depression. Finally, Brunborg and Andreas (2019) found a correlation between time spent on social media and depression.

An additional study by Santarossa and Woodruff (2017) measured time spent on social networking sites and body image, eating behaviors, and self-esteem. The results of this study replicated those of Spraggins (2009), which found that problematic social networking use was associated with decreased self-esteem, happiness, satisfaction with life, increased depression, and loneliness. This study defined problematic use as dependency on the internet (social media) so much so that it "can interfere with professional, social, and personal functioning, as well as negatively impacting well-being" (Spraggins, 2009, p.10). Santarossa and Woodruff (2017) indicated that overall time on social networking was significantly related to eating disorder symptoms/concerns. They also identified a significant relationship between those who spent a lot of time "lurking" and lower levels of body dissatisfaction.

As briefly mentioned earlier, a common mental health issue that is suffered by student-athletes is eating disorders. Ferguson et al. (2014) identified that peer competition impacted body dissatisfaction and eating disorder symptoms. Additionally, a small predictive relationship between peer competition and social media was found. The study supported an indirect relationship between social media use and body dissatisfaction.

More generally, Naslund et al. (2020) analyzed previous research looking at the impact of social media use on mental health and concluded that while there are benefits to social media use, it would be premature to assume that the benefits outweigh the risks. Similarly, Karim et al. (2020) conducted a review of social media use and mental health identifying that there is a link between social media use and mental health issues.

## Social Media Use, Student-Athletes, and Mental Health

Because of social media's impact on mental health, it is important to understand the prevalence of social media use by student-athletes. Kevin DeShazo (2017), through Fieldhouse Media, analyzed the results of the 2017 survey of more than 2000 student-athletes across the three levels of the NCAA as well as the NAIA. The results highlighted that student-athlete's favorite social media platform is Snapchat (41%). Other options were Instagram, Twitter, and Facebook that scored 39%, 10%, and 9% respectively. From this population of student-athletes 98% had a Facebook account and 81% use the privacy settings that are present. 95% have a twitter account, with 64% of respondents identifying that their account is public, 91% identified that they had an Instagram account with 39% identifying that their account is public, and finally 97% have a snapchat account with 39% believing that their account is public. This survey information shares that not only are student-athletes on social media, but they are on various platforms and many of the athletes do not utilize privacy settings on their accounts.

Previous research has found positive and negative impacts of using social media for student-athletes. David et al. (2017) found that student-athletes were able to identify both positive and negative implications of social media use. This highlights the need to determine whether social media is truly negatively impacting the mental health of student-athletes, or if there are benefits that make it worthwhile. Because of the lack of specific research on how social media use impacts the mental health of student athletes who are a unique population, this study explored the answers to the following research questions.

RQ 1: Is there a relationship between social media use and anxiety/depression, self-esteem, satisfaction with life, and perceived stress?

RQ 2: Is there a difference in the relationship between social media use and anxiety/depression, self-esteem, satisfaction with life, and perceived stress between male and female athletes?

RQ 3: Are there differences in social media use and mental health across divisions, year in school, or type of sport?

RQ 4: Is there a relationship between athlete identity and resilience, vitality, self-esteem, satisfaction with life, anxiety/depression, and perceived stress?

# Method

This study used survey methodology to answer the research questions. Survey methodology was the best choice for this study as it permitted for the data collection to include both open and closed-ended questions allowing for more personal data to be collected (Thomas et al., 2015). Thomas et al. (2015) described that survey methodology is beneficial for receiving information over a large geographical region. This is significant in this study as the schools who participated varied in geographical location. Survey methodology also leaves less room for researcher interpretation bias. Each participant was asked the same set of questions, the information gained was uniform and allowed accurate statistical tests to be run determining whether social media does have an impact on the mental health of student-athletes.

*Participants*

Following IRB approval, student-athletes at NCAA member institutions were invited to participate in the survey. Data were collected through the researcher approaching 179 Division I, 65 Division II, and 28 Division III programs. The researcher used email to contact staff within the student-athlete development center, or, at smaller institutions, the Senior Women's Administrator. The researcher asked these athletic staff through email for their participation, while requesting that they send the survey link to their student-athletes. Five Division I, two Division II, and two Division III institutions agreed to participate resulting in 94 student-athletes completing the survey in its entirety, and 104 student-athletes responding to the qualitative portion. There were special requirements to fit the desired population of this study, so purposive sampling was used. In this study, the target population had to fulfill the following criteria: current student-athlete, at least 18 years of age, and currently enrolled as a full-time student. Descriptive information for the participants is reported in Table 1.

*Instrument*

This survey was distributed using Qualtrics. Demographic variables including gender, ethnicity, and age were measured, along with the previously used measures listed below.

*Measures.* In order to answer the research questions, eight specific scales were chosen. These scales measure a mixture of social media use and mental health.

*Social Media Use.*
*The Social Networking Sites Frequency Scale.* This SNS frequency scale was used to identify what social networking sites are used by the student athletes and the frequency that they use these sites. This scale was adapted from the scale created by Matthes et al. (2020).
*The Social Media Use Scale.* This is a 10-item scale that uses a 5-point Likert scale to determine the user's perception of social media and whether they believe that social media positively or negatively impacts their lives. This 10-item scale is made up from two subscales: Integration into Social Routine (ISR), and Social Integration and Emotional Connection (SIEC). ISR is comprised of 4 items (M = 2.97, SD = 1.07, Cronbach $\alpha$ = .90). SIEC is made up of 6 items (M = 2.22, SD = 0.86, Cronbach $\alpha$ = .91)

Table 1

*Demographic Characteristics of the Sample*

| Demographic Variable | Percentage | Count |
|---|---|---|
| Female | 69.1% | 65 |
| Transfer Students | 9.6% | 5 |
| International Students | 12.8% | 12 |
| Ethnicity | | |
| White | 89.4% | 84 |
| Black | 3.2% | 3 |
| Hispanic/Latino | 4.3% | 4 |
| Multi-racial | 1.1% | 1 |
| Other | 1.1% | 1 |
| Year in School | | |
| Freshman | 42.6% | 40 |
| Sophomore | 20.2% | 19 |
| Junior | 20.2% | 19 |
| Senior | 14.8% | 14 |
| Graduate | 2.2% | 2 |
| Status on Team | | |
| First team | 53.2% | 50 |
| Second team | 23.4% | 22 |
| Third team | 11.7% | 11 |
| Practice/training/not competing | 11.7% | 11 |
| Division | | |
| I | 27.7% | 26 |
| II | 11.7% | 11 |
| III | 60.6% | 57 |

*Online Harassment Scale*. This scale, used by Kelly et al. (2019), was modified slightly for use in this study. This scale is a three-item scale that has six options to select from ranging from about once a week to never, measuring whether the student-athletes in the study have been victim to online harassment.

*Athletic Identity*.
*Athletic Identity Measure Scale*. This is a 7-item scale measuring athlete identity. Responses to these items were completed through a 7-point Likert scale ranging from "strongly disagree" to "strongly agree". It was developed by Brewer and Cornelius in 2001 and then validated by Visek et al. (2008). The internal reliability coefficient was measured as .81.

*Mental Health*.
*The Connor-Davidson Resilience Scale*. This scale is made up of 25 items that are measured on a 5-point Likert scale. Cronbach's alpha for this scale was 0.89, indicating it is a reliable scale (Connor & Davidson, 2003).

*The Satisfaction with Life Scale*. This scale is made up of 10 items that include positively and negatively worded statements. These statements are measured through a 7-point Likert scale. The validity of this scale is measured through the correlations scored on each of the items: .81, .63, .61, .75, and .66 (Diener et al., 1985).

*The Vitality Scale*. The Vitality Scale measured a positive feeling of aliveness and energy through the analysis of 7 subjective vitality items (Ryan & Frederick, 1997). The Cronbach's alpha for this scale measured .92.

*The Rosenberg Self-Esteem Scale*. Self-esteem was measured using the Rosenberg Self-Esteem Scale which consists of 10 items measured through a 4-point Likert scale (Rosenberg, 1989). The Rosenberg Self-esteem scale is made up of five positively worded sentences and five negatively worded sentences. The Cronbach's alpha score was calculated to equal .91.

*The Athlete Burnout Scale*. Athlete Burnout was measured using the Athlete Burnout Scale created by Raedeke and Smith (2001)**.** This scale consists of 15 items measured with a 5-point Likert scale was used. Reliability of this scale was shown through its model fit, $x^2$ (87) – 198.7, p < .01, GFI = .90, NNFI =.93, CFI = .94, RMSEA = .073.

*The Perceived Stress Scale (short form)*. Student-athletes' perceptions of their own perceived stress was measured using Cohen et al's (1983) perceived stress scale (short-form). This scale is a 4-item Likert scale (Cohen et al.,1983). Cronbach's alpha for this scale was .77.

*Patient Health Questionnaire-4*. This scale was used to screen for anxiety and depression. This scale is the combination of two, two-item scales that measure anxiety and depression. The Cronbach's alpha was reported as greater than .8 (Kroenke, Spitzer, Williams, & Löwe, 2009).

*Procedure*

The survey was administered online through Qualtrics and was completed by participants at their leisure. The survey link was emailed directly to contacts, who then passed it on to the students. The researcher followed up with each agreeing institution twice, a week apart.

*Analysis*

Data from this study were analyzed using SPSS version 25. The data were assessed using regression and multiple regression to determine if there was a significant relationship between social media use variables, demographic variables, and mental health measures. Correlations were also run. The level of significance used was *p* = .05.

*Qualitative Data Analysis*

Thematic analysis was used for the qualitative portion of this study (Clarke et al., 2019). Thematic analysis is a cluster method that is used to identify patterns across a dataset. To achieve this, a six-phase process outlined by Clarke et al. (2019) was used. This process is as follows: familiarization of the data, coding, generating initial themes, reviewing themes, defining and naming themes, and writing up. Thematic analysis was chosen as the best method for this as it is suitable to a wide range of responses (Clarke et al., 2019). Due to the nature of this analysis, and the wide variety of responses that the researcher anticipated, the themes were created through

inductive coding. Inductive coding allows theme development to be directed by the content of the data (Clarke et al., 2019). To do this, qualitative data was transferred to an excel document and thoroughly analyzed. After becoming familiar with the data, the first step was to determine which of the participants felt that social media had an impact on them. Following this, coding took place to identify whether the respondent felt that social media had a positive or negative impact on them. The final step in the analysis was identifying sub-themes within these two categories.

# Results

Descriptive statistics for the mental health scales in the sample are reported in Table 2. A Pearson correlation coefficient was calculated for the relationship between the use of specific social media applications and mental health measures. Table 3 reports the correlations. A significant negative correlation was found between YouTube and PHQ ($r$ (92) = -.25, $p < .05$), indicating a significant linear relationship between the two variables. Those who use YouTube score lower on the PHQ scale, indicating using YouTube results in lower levels of anxiety and depression.

Table 2
*Sample Mental Health Descriptive Statistics*

| Variable | Total *M(SD)* | Male *M(SD)* | Female *M(SD)* |
|---|---|---|---|
| 1. AIMS | 36.40(6.86) | 37.07(6.76) | 36.11(6.94) |
| 2. PHQ | 4.40(3.74) | 1.97(2.31) | 5.49(3.75) |
| 3. PSS | 6.60(3.49) | 4.21(2.69) | 7.66(3.29) |
| 4. SatWLife | 24.33(6.27) | 24.97(5.28) | 24.05(6.68) |
| 5. Self-Esteem | 19.46(5.46) | 22.55(4.67) | 18.08(5.24) |
| 6. Vitality | 32.36(8.78) | 37.86(6.71) | 29.91(8.51) |
| 7. Resilience | 39.61(6.74) | 42.28(5.30) | 38.42(7.00) |
| 8. SMUse | 41.53(10.53) | 36.62(9.65) | 43.72(9.82) |
| 9. OnlineHara | 3.72(1.49) | 4.00(2.00) | 3.60(1.20) |
| 10. Burnout | 33.05(11.76) | 29.07(9.51) | 34.83(12.29) |

Regression analyses were conducted on each mental health variable to determine the effects of social media use and demographic variables. Table 4 lists regression results for each mental health measure. Significant multiple linear regression results were identified within the PHQ ($R^2 = .31$, $F$ (9, 84) = 4.09, $p < .001$), PSS ($R^2 = .28$, $F$ (9, 84) = 3.60, $p < .005$), Self-Esteem ($R^2 = .24$, $F$ (9,84) = 2.30 $p =.005$), and Vitality ($R^2 = .28$, $F$ (9,84) = 3.57, $p <.005$) scales.

A multiple linear regression was also calculated predicting participants satisfaction with life based on a number of demographic variables. The regression equation was not significant ($R^2 =.13$, $F$ (9 ,84) = 1.39, $p >.05$).

Each of the four significant mental health measures noted significant differences in response scores across gender. However, the PHQ scale also noted a significant effect of being both Division I, and a graduate student. On the PSS scale, males scored 3.52 points less than females, meaning that their perceived stress was lower. On the self-esteem measure, males scored on average 4.51 points higher than their female counterparts meaning that they had higher

self-esteem levels. On the Vitality scale, males scored on average 8.54 points higher than females. These findings indicate the female student-athletes have higher levels of mental health than their male counterparts.

Table 3
*Individual Network and Mental Health Correlations*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Facebook | | | | | | | | | | |
| 2. Twitter | .27** | | | | | | | | | |
| 3. Instagram | .26* | .26* | | | | | | | | |
| 4. LinkedIn | .25* | .23* | .01 | | | | | | | |
| 5. Snapchat | .22* | .18 | .63** | -.11 | | | | | | |
| 6. TikTok | -.06 | .12 | .22* | -.04 | .27** | | | | | |
| 7. Youtube | -.01 | .09 | -.07 | -.05 | -.19 | .05 | | | | |
| 8. Self-Esteem | -.19 | .14 | .04 | .07 | .11 | .19 | .04 | | | |
| 9. SatWLife | -.04 | .09 | .11 | -.06 | .07 | .15 | .11 | .59** | | |
| 10. PHQ | .13 | -.13 | -.03 | -.001 | -.002 | -.003 | -.25* | -.65** | -.56** | |
| 11. PSS | .15 | .001 | .10 | -.01 | .07 | .11 | -.17 | -.61** | -.56** | .74** |

*Note*: $p < .05*$ and $p < .01**$

A multiple regression analysis was also conducted on athlete identity to determine the effect of demographic variables (Table 5). A multiple linear regression was calculated to predict athlete identity based on a number of variables. A significant regression equation was found ($R^2$ = .19, $F(8,85) = 2.49$, $p < .05$), between athlete identity and Division II. The regression analysis did not show significant differences between team and individual sport athletes.

Further, a Pearson correlation coefficient was calculated for the relationship between athlete identity and various mental health measures (Table 6). A positive correlation was noted for both vitality and resilience. Vitality = ($r(92) = .21$, $p < .05$), indicating that those with higher vitality levels, identified more strongly as an athlete. Resilience = ($r(92) = .24$, $p < .05$), indicating that those with higher levels of resilience, identified more strongly as an athlete.

Table 7 is an analysis of the mental health measures. Burnout was significantly correlated with every mental health variable. When lower levels of athlete identity ($r(92) = -.40$, $p < .01$), satisfaction with life ($r(92) = -.57$, $p < .01$), self-esteem ($r(92) = -.61$ $p < .01$), vitality ($r(92) = -.64$, $p < .01$), and resilience ($r(92) = -.53$, $p < .01$), increase, burnout would decrease. While scoring higher on PHQ ($r(92) = .59$, $p < .01$), online harassment ($r(92) = .25$, $p < .05$), and PSS ($r(92) = .55$, $p < .01$) correlated to increased burnout. Additionally, those student-athletes who scored higher on vitality ($r(92) = .21$, $p < .05$), and resilience ($r(92) = .24$, $p < .05$) identified more strongly on the athlete identity scale.

A regression analysis was run to identify any significant differences in social media use between males and females. Results are reported in Table 8. A significant regression equation was found ($R^2 = .10$, $F(1,92) = 10.61$, $p < .05$). To further analyze the significant differences, the file was split between gender. There were no significant correlations noted between the four primary mental health measures and social media use, reported in Table 9, however, this analysis

Table 4
*Regression Results for the Effects of Social Media Use on Mental Health*

| | B | β | S.E. | t-value | p-value |
|---|---|---|---|---|---|
| PHQ (R² = .31, Adjusted R² = .23, *SE* = 3.28, F = 4.09, *df* = 9, *p* < .001) | | | | | |
| Constant | 6.35 | | 1.73 | 3.67 | .000 |
| SMUseTotal | -.02 | -.06 | .04 | -.56 | .58 |
| D1 | -1.85 | -.22 | .80 | -2.31 | .02 |
| D2 | .77 | .07 | 1.15 | .67 | .51 |
| GenderSimple | -3.66 | -.46 | .81 | -4.54 | .000 |
| TeamSport | -.16 | -.02 | .75 | -.21 | .83 |
| Sophomore | .14 | .02 | .92 | .16 | .88 |
| Junior | 1.18 | .13 | .94 | 1.25 | .22 |
| Senior | 1.19 | .11 | 1.03 | 1.16 | .25 |
| Graduate | 5.38 | .21 | 2.39 | 2.25 | .03 |
| PSS (R² = .28, Adjusted R² = .20, *SE* = 3.12, F = 3.60, *df* = 9, *p* < .005) | | | | | |
| Constant | 7.37 | | 1.65 | 4.48 | .000 |
| SMUseTotal | .01 | .03 | .03 | -.56 | .78 |
| D1 | -1.27 | -.16 | .77 | -2.31 | .10 |
| D2 | -.87 | -.080 | 1.09 | .67 | .43 |
| GenderSimple | -3.52 | -.47 | .77 | -4.54 | .000 |
| TeamSport | .28 | .04 | .72 | -.21 | .70 |
| Sophomore | -.38 | -.04 | .88 | .16 | .67 |
| Junior | 1.01 | .12 | .90 | 1.25 | .26 |
| Senior | -.02 | -.002 | .98 | 1.16 | .98 |
| Graduate | 2.07 | .12 | 2.28 | 2.25 | .20 |
| Self-Esteem (R² = .24, Adjusted R² = .16, *SE* = 5.01, F = 2.93, *df* = 9, *p* = .005) | | | | | |
| Constant | 16.94 | | 2.64 | 6.42 | .000 |
| SMUseTotal | .02 | .03 | .06 | .27 | .79 |
| D1 | 2.38 | .20 | 1.23 | 1.94 | .06 |
| D2 | .71 | .04 | 1.75 | .41 | .69 |
| GenderSimple | 4.51 | .38 | 1.23 | 3.66 | .000 |
| TeamSport | .41 | .04 | 1.15 | .36 | .72 |
| Sophomore | .50 | .04 | 1.41 | .36 | .72 |
| Junior | -2.34 | -.17 | 1.44 | -1.63 | .11 |
| Senior | -.23 | -.02 | 1.57 | -.15 | .88 |
| Graduate | -5.26 | -.14 | 3.66 | -1.44 | .15 |
| Vitality (R² = .28, Adjusted R² = .20, *SE* = 7.86, F = 3.57, *df* = 9, *p* < .005) | | | | | |
| Constant | 27.52 | | 4.14 | 6.65 | .000 |
| SMUseTotal | .07 | .08 | .09 | .79 | .43 |
| D1 | 3.28 | .17 | 1.92 | 1.71 | .09 |
| D2 | -1.16 | -.04 | 2.75 | -.42 | .67 |
| GenderSimple | 8.54 | .45 | 1.93 | 4.42 | .000 |
| TeamSport | -1.22 | -.07 | 1.80 | -.68 | .50 |
| Sophomore | 2.33 | .11 | 2.21 | 1.05 | .30 |
| Junior | -2.58 | -.12 | 2.26 | -1.14 | .26 |
| Senior | -2.28 | -.093 | 2.46 | -.93 | .36 |
| Graduate | -7.80 | -.13 | 5.74 | -1.36 | .18 |

Table 5
*Regression Results for Athlete Identity*

|  | B | β | S.E. | t-value | p-value |
|---|---|---|---|---|---|
| AIMS ($R^2$ = .19, Adjusted $R^2$ = .11, *SE* = 6.46, F = 2.49, *df* = 8, *p* < .05) | | | | | |
| Constant | 33.95 | | 1.59 | 21.32 | .000 |
| D1 | 1.81 | .12 | 1.57 | 1.16 | .25 |
| D2 | 7.06 | .33 | 2.22 | 3.18 | .002 |
| GenderSimple | 1.12 | .08 | 1.51 | .74 | .46 |
| TeamSport | 2.84 | .20 | 1.48 | 1.92 | .06 |
| Sophomore | -2.64 | -.16 | 1.81 | -1.46 | .15 |
| Junior | -.26 | -.02 | 1.84 | -.14 | .89 |
| Senior | -2.61 | -.14 | 2.02 | -1.30 | .20 |
| Graduate | 2.84 | -.16 | 4.71 | -1.56 | .12 |

Table 6
*AIMS Pearson Correlation with Various Mental Health Measures*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. AIMS | | | | | | | |
| 2. PHQ | -.15 | | | | | | |
| 3. PSS | -.14 | .74** | | | | | |
| 4. SatWLife | .16 | -.56** | -.56** | | | | |
| 5. Self-Esteem | .14 | -.65** | -.61** | .59** | | | |
| 6. Vitality | .21* | -.70** | -.65** | .63** | .66** | | |
| 7. Resilience | .24* | -.54** | .50** | .37** | .53** | .59** | |
| 8. SMUse | .05 | .08 | .15 | .07 | -.07 | -.06 | -.22* |

*Note*: *p* < .05* and *p* <.01**

Table 7
*Mental Health Correlations*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. PHQ | | | | | | | | |
| 2. OnlineHar | -.02 | | | | | | | |
| 3. Burnout | .59** | .25* | | | | | | |
| 4. AIMS | -.15 | .02 | -.40** | | | | | |
| 5. PSS | .74** | .04 | .55** | -.14 | | | | |
| 6. SatWLife | -.56** | -.15 | -.57** | .16 | -.56** | | | |
| 7. Self-Esteem | -.65** | -.06 | -.61** | .14 | -.61** | .59** | | |
| 8. Vitality | -.70** | -.06 | -.64** | .21* | -.65** | .63** | .66** | |
| 9. Resilience | -.54** | -.15 | -.53** | .24* | -.50** | .37** | .53** | .50** |

*Note*: *p* < .05* and *p* <.01**

Table 8
*Regression Analysis of Social Media Use and Gender*

|  | B | β | S.E. | t-value | *p*-value |
|---|---|---|---|---|---|
| Social Media Use ($R^2 = .10$, Adjusted $R^2 = .09$ $SE = 9.77$, F = 10.61, $df = 91$, $p < .01$) | | | | | |
| Constant | 43.72 | | 1.21 | 36.09 | .000 |
| GenderSimple | -7.10 | -.32 | 2.18 | -3.26 | .002 |

Table 9
*Correlation Analysis of Social Media Use and Mental Health by Gender*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Female | | | | | | | | | |
| 1. PHQ | | | | | | | | | |
| 2. OnlineHar | .03 | | | | | | | | |
| 3. Burnout | .56** | .32* | | | | | | | |
| 4. AIMS | -.18 | -.012 | -.45** | | | | | | |
| 5. PSS | .70** | .04 | .52** | -.13 | | | | | |
| 6. SatWLife | -.60** | -.09 | -.59** | .17 | -.61** | | | | |
| 7. Self-Esteem | -.59** | -.08 | -.59** | .19 | -.52** | .62** | | | |
| 8. Vitality | -.63** | -.13 | -.60** | .21 | -.52** | .64** | .57** | | |
| 9. Resilience | -.47** | -.27* | -.49** | .27* | -.40** | .30* | .45** | .37** | |
| 10. SMUse | -.03 | .16 | -.09 | .15 | .04 | .06 | .15 | .14 | -.16 |
| Male | | | | | | | | | |
| 1. PHQ | | | | | | | | | |
| 2. OnlineHar | .08 | | | | | | | | |
| 3. Burnout | .56** | .31 | | | | | | | |
| 4. AIMS | .04 | .07 | -.25 | | | | | | |
| 5. PSS | .57** | .26 | .51** | -.12 | | | | | |
| 6. SatWLife | -.59** | -.31 | -.48** | .11 | -.55** | | | | |
| 7. Self-Esteem | -.58** | -.20 | -.56** | -.05 | -.58** | .62** | | | |
| 8. Vitality | -.69** | -.14 | -.64** | .15 | -.54** | .73** | .69** | | |
| 9. Resilience | -.60** | -.10 | -.55** | .12 | -.58** | .59** | .59** | .71** | |
| 10. SMUse | -.22 | .01 | .01 | -.11 | -.09 | .18 | -.18 | -.06 | -.13 |

*Note*: $p < .05*$ and $p < .01**$

did highlight strong significances between burnout and other mental health measures in both genders. Further correlation analysis was run analyzing relationships between specific social media networks and mental health variables, which are reported in Table 10. Females showed negative relationships between AIMS and LinkedIn (-.29*) and Self-Esteem and Facebook (-.26**), while having a positive relationship between Self-Esteem and TikTok (.32**). Males showed positive correlations between Self-Esteem and both Instagram (.46*) and Snapchat (.44*). However, negative correlations were found between PHQ and Instagram (-.58**) and Snapchat (-.48**), as well as AIMS and YouTube (-.40*), for male participants.

Table 10
*Correlation Analysis of Social Media Use and Individual Networks by Gender*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Female | | | | | | |
| 1. PHQ | | | | | | | | | | | |
| 2. AIMS | -.18 | | | | | | | | | | |
| 3. PSS | .70** | -.13 | | | | | | | | | |
| 4. SatWLife | -.60** | .17 | -.61** | | | | | | | | |
| 5. Self-Esteem | -.59** | .19 | -.52** | .62** | | | | | | | |
| 6. Facebook | .15 | -.03 | .13 | -.13 | -.26** | | | | | | |
| 7. Twitter | -.08 | .20 | .13 | .01 | .07 | .37** | | | | | |
| 8. Instagram | -.04 | .23 | .03 | -.01 | .08 | .21 | .31* | | | | |
| 9. LinkedIn | .04 | -.29* | -.03 | -.07 | .03 | .30* | .21 | .05 | | | |
| 10. Snapchat | .05 | .18 | .11 | -.08 | .18 | .10 | .22 | .71** | -.01 | | |
| 11. TikTok | -.08 | -.01 | .06 | .10 | .32** | -.14 | .21 | .09 | -.001 | .21 | |
| 12. YouTube | -.10 | -.11 | -.02 | .17 | -.15 | .13 | -.05 | .04 | -.10 | -.23 | .18 |
| | | | | | Male | | | | | | |
| 1. PHQ | | | | | | | | | | | |
| 2. AIMS | .04 | | | | | | | | | | |
| 3. PSS | .57** | -.12 | | | | | | | | | |
| 4. SatWLife | -.59** | .11 | -.55** | | | | | | | | |
| 5. Self-Esteem | -.58** | -.05 | -.58** | .62** | | | | | | | |
| 6. Facebook | -.17 | .12 | .02 | .24 | .12 | | | | | | |
| 7. Twitter | -.11 | -.13 | -.06 | .27 | .15 | .14 | | | | | |
| 8. Instagram | -.58** | -.13 | -.18 | .46* | .33 | .27 | .32 | | | | |
| 9. LinkedIn | .07 | .12 | .23 | -.02 | .08 | .20 | .24 | .00 | | | |
| 10. Snapchat | -.48** | -.20 | -.27 | .44* | .24 | .34 | .21 | .50** | -.28 | | |
| 11. TikTok | -.08 | -.25 | -.003 | .36 | .12 | .03 | .01 | .37* | -.11 | .33 | |
| 12. YouTube | .01 | -.40* | .21 | -.19 | -.14 | -.14 | .23 | .08 | -.10 | .06 | -.04 |

*Note*: $p < .05$* and $p < .01$**

## Qualitative Results

Respondents were asked how they feel their use of social media effects their lives as student-athletes. As mentioned above, the first step in the analysis was identifying whether the respondent felt that social media had an impact on them. The responses that showed social media had an impact were then analyzed into positive and negative impacts. Within these categories inductive analysis took place.

## Positive

*Communication.* Users who identified that social media had a positive effect on them, often paired this with providing them a platform to have open communication with people who

they may otherwise lose touch with. One participant stated, "I feel like it keeps me connected with old friends, teammates, and other teams across the world. It keeps me up to date on a lot of things." It also provided a platform for users to be recruited by allowing them easier access to communicate with coaches. Other participants said, "It's helps me stay in contact with my coaches and teammates," and, "It helped me get recruited."

*Relieve Stress*. Some users identified that social media was something that they were able to use to escape their stresses. One participant stated, "It is used as a stress relief method. When I am stressed, I check social media to avoid responsibilities for a couple of minutes." Another participant said, "Helps me get my mind off of things."

*Motivation*. Users noted that social media gave them access to the population of their peers and competition. This allowed them to keep an eye on what they were doing for training, which could be used as motivation for their own training and success. One participant stated, "Personally, I feel like it helps me. I use social media to look at ways to better myself as an athlete. I will follow sports pages and motivational pages that help me better myself." Another participant stated, "I find videos of different plays and skills for my sport, as well as see what other teams in my division are doing."

## Negative

*Procrastination*. The most common negative effect of social media that users noted was procrastination. Users stated they would go to social media to get away from their responsibilities or avoid interaction. One participant stated, "It's a major distraction from doing my homework and studying" while another said, "My phone becomes a security blanket for me whenever I'm put in an uncomfortable situation. this interferes with my bond with my team sometimes. I procrastinate by going on my phone as well."

*Loss of Sleep*. Users felt that social media made them more tired. This was because they would stay up late on social media, or they would have interrupted sleep because of it. One participant stated, "Sometimes I overuse social media and it affects my time management, hours of sleep and other things." Another participant stated, "I think sometimes I spend too much time on social media, and I could use that time better. I could spend more time studying, working out, practicing, or even sleeping."

*Vulnerable*. Some users felt that social media provided a platform for them to be judged by fellow student-athletes. One user stated, "I hate using it. Instagram is a platform that basically just causes individuals, specifically young women, to compare themselves to others whether it is body image or how one presents their life. It is draining and very pessimistic most of the time." Another user stated, "I feel the pressure to perform more successfully knowing that it will be posted on social media. Even if someone does not comment on it, there are often silent judgers."

## Discussion

While previous studies have been completed individually on social media, student athletes, and mental health, few studies have been completed on social media's impact on the

mental health of student-athletes. Thus, the goal of this study was to explore this specific connection in more depth. The results of the current study differed from some previous research. For example, Faraon and Kaipainen (2014) identified a significant negative relationship between Facebook use and self-esteem, which was not identified in this study. A possible reason for this could be less emphasis placed on Facebook use amongst this particular age group. Chen (2020) shares that the most frequent users of Facebook are users between 25-30 years old with 84% sharing that they use Facebook. Facebook was established in 2006 (Boyd, 2019), while Instagram (2010) (Evans, 2018), Snapchat (2011) (O'Connell, 2020), and TikTok (2016) (Mohsin, 2020) are all much more recent and aimed at a different demographic of users. Interestingly, the only significant relationship identified in the current study between different social media platforms, and the mental health measures used in this study, was a significant negative relationship between YouTube and anxiety/depression. While there is a lack of information identifying any relationship between YouTube consumption and anxiety/depression, Chen (2020) shares that YouTube is the social media platform with the highest U.S consumption. Chen (2020) further explains that 78% of men and 68% of women use YouTube with 90% of 18-24 years olds using it. Possible reasons for this could be its simple sharing capabilities, and access to a large audience (Rahebi, 2016). As well as this, it has leisure capabilities. Allowing viewers to watch whatever genre they desire on smart devices (Rahebi, 2016). A possible explanation for the relationship found in this study could be that the students-athletes are watching videos that make them feel good – this could range from funny videos, to videos of other interests that they have.

McLoughlin et al. (2019) identified that cyber victimization had a significant impact on anxiety, depression, and stress in adolescents. However, the results of this study did not identify any significances with online harrassment. As the size of this study was only 94 student-athletes, it is possible that not enough of the respondents experienced online harassment, thus making the relationship unlikely to exist in this sample. Also, since the sample included many Division III athletes, the liklihood of experiencing online harssmant in this sample may have been lower.

Qualitative findings of this study support those of Ramzan et al. (2019) who identified that participants use social media to compare themselves to others. Within the qualitative findings of this study, users could percieve this as positive or negative, suggesting a reason for no conclusive significant correlation in the quantitative data. Further analysis of qualitative results in this study showed similarities to the findings of Spraggins (2009) who noted that problematic social networking use is associated with decreased self-esteem, happiness, satisfaction with life, and increased depression and loneliness. While respondents did not explicitly state increased depression as a result of social media use, there were links to decreased self-esteem and loneliness. Quantitative data of this thesis did not measure Spraggins (2009) defined theory of problematic use, which can account for the lack of statistically significant correlations. This project did not look into the defined theory of problematic use identified by Spraggins (2009), but future research should use this definition to build another project that looks to identifying at what point student-athletes begin using social media in a problematic way.

In a study completed by Woods and Scott (2016), they identified that social media could have an impact on sleep. The qualitative data from this research project supports this finding. Further research should be completed on student-athletes sleeping habits as Benitez and Gunstad (2012) completed a study on undergraduate students' sleep and noted poor sleep impacted depression and anxiety.

Findings of this research project identified a strong correlation between anxiety/depression and burnout. It could be that some of this is related to the similarities in presentation of symptoms (Freudenberger, 1974). Further, a study completed by Kaschka et al, (2011) noted that the significance in overlap between burnout and depression is so prevalent, that burnout could be a risk factor for depression. College sport employees should attempt to reduce burnout by providing the student-athletes with opportunities to identify outside being a student-athlete. Examples could be movie nights or quiz nights.

Further, regression analyses for the effects of social media on individual mental health variables noted that there were significant differences in the mental health scores between males and females in response. Males scored lower in anxiety/depression and perceived stress, while scoring higher on self-esteem and vitality. It is possible that this is due to the smaller amount of time that males spend on social media in relation to their female counterparts as found in this study. It could be argued, due to the increased time on social media, that social media is more important to females. In support of this, when data for males and females are analyzed separately, there is a relationship between Facebook usage and female users' self-esteem, which could be explained through the findings of Faraon and Kaipainen (2014). Interestingly, it was found that LinkedIn had a significant negative relationship with athlete identity of females in this study. This could be due to the platform of LinkedIn being centered around career networks. LinkedIn allows the student-athletes a place to market themselves as young professionals in a career field, as opposed to the sport field. In males, it was identified that Instagram and Snapchat usage had a positive relationship with mental health, and use may decrease anxiety and depression and increase life satisfaction . YouTube was found to have a significant negative correlation with male user's athletic identity. A possible explanation for this could be the content that is being consumed on this platform by the user. YouTube provides easy access to watch a variety of different content. Users could be consuming anything from music videos, to gaming live streams. This would allow for the student-athlete to identify more strongly with another hobby outside of their own sport. The differences between gender are significant to note if insititutions consider implementing social media training. There is a suggestion in these vast significant differences that blanket education will not achieve its goal of educating the student-athletes on the dangers of social medis use. Future research should look directly into the differences in perception of social media and its value between male and female student-athletes. This research would more specifically show the differences in the impact that social media has on people of different genders.

Additionally, the regression analysis of anxiety and depression noted that there are higher levels of anxiety and depression in Division III and graduate student-athletes. It is possible this finding is due to fewer resources to help this group of student-athletes. Further research should be completed on Division III student-athletes to identify trends surrounding their anxiety and depression as this could change approaches within the coaching and guiding of these student-athletes. Additionally, these student-athletes may suffer from insecurities surrounding their athletic talent, and their use of social media could be problematic in providing them a platform to compare themselves to other athletes. Exploratory research could be completed on the differences in resources between NCAA divisions and whether the athletes believe that they are provided adequate resources to be successful and healthy.

For graduate student-athletes, it seems understandable that they would express higher levels of anxiety and depression as they are likely transitioning out of life as a student-athlete sooner and may feel overwhelmed with their responsibilities. Their coursework may also be

more intensive. While this study did not identify that graduate students have higher levels of perceived stress, future research should look specifically into perceived stress, anxiety, and depression of graduate student-athletes. Potentially, this research could identify trends relating to social media use in graduate student-athletes whose peers have graduated and gone on to be successful or unsuccessful in their career professions. Additionally, identifying if transition is something that is more worrisome to graduate students would help student-athlete development programs within athletic departments prepare their students better.

Results indicated that being a Division II athlete has a significant positive effect on athlete identity. This could be because student-athletes at the Division II level are trying to compete with student-athletes at the Division I level and are putting in more effort to get to that level. A similar explanation was discussed by Huml (2018) who found similar athletic identity between Division I and Division II.

Analyses indicated that vitality and resilience positively relate to athlete identity, hhis finding likely shows that those in a more positive headspace feel more positive about their sport. While those who are struggling mentally are more likely view their sport negatively, or as a burden, which is supported by burnout having a significant negative relationship with athlete identity. The significance of burnout negatively impacting athlete identity is important because, if student-athletes who are suffering from burnout are less likely to identify with their sport or as an athlete then the effort that they put into being successful has a chance to take away from the program and other athletes. With psychological counselling and treatment, however, it is possible for student-athletes suffering from burnout to come back. Hill et al, (2009) identified higher levels of avoidant coping (defined as coping which disengages from the stressor) related to higher levels of burnout.

Based on the results of this study, it is suggested that athletic departments educate student-athletes on healthy social media use and provide instruction on coping strategies that center the student-athlete on their development. It would be expected that this would de-emphasize the importance of social media and student-athletes would be able to treat it with less value. Athletic staff should be aware that mental health issues are prevalent within this population, and help-seeking behavior should be encouraged. The findings of this study would support the idea that females are more susceptible to mental health issues from social media use, and in future there should be training created that is directed toward this.

## Limitations

The biggest limitation of this research was the sample size. While over 100 Division I, II, and III schools were contacted to participate in this survey, only a small number agreed to distribute to their student-athletes. Then, the number of student-athletes that chose to respond was less than desirable and skewed toward Division III. In the future, research should attempt to partner with a conference at the Division I level. This is a topic that is growing in importance and will likely evolve with the new NIL rules. Partnering with a conference would assure distribution to the desired population of student-athletes.

Additionally, it is possible that the definition of social media use used in this research could have impacted possible results. In future research, measuring the hours of consumption across different platforms, or purpose for social media use could show different mental health impacts. Future research should continue to explore how social media use is measured in psychological studies to include the most useful and valid measures.

Further, this study was very broad and exploratory. It would be advised the survey is cut down, and only the most important/desired information is sought. This will increase completion rates of the survey. Future research should be completed on social media use's impact on sleep as well as users' perceived stress around social media use. This could examine student-athletes stress around posting, as well as dependency on social media.

NIL presents student-athletes with an opportunity to benefit from their name, image, and likeness, and it is likely that much of this will be done through signing deals focused on social media views. These deals will add another component of social media stress that student-athletes have previously not had to consider. Research following this development should be done to identify what skills student-athletes lack to manage this additional stress.

## Conclusion

This research study provided a broad look into the possible impacts that social media can have on the mental health of student-athletes. The findings in this study support previous research and provide new information in the research area of social media and mental health, however, much work is needed in this area with larger sample sizes as qualitative data identified relationships that were not prevalent in quantitative results. Moving forward, studies should focus on specific mental health variables and define problematic social media use to better understand the impacts of social media on mental health. If student-athletes' social media use is found to be problematic enough to impact sleep, social media use training could be developed to educate student-athletes of the dangers and prevent burnout long-term. Additionally, qualitative work should be completed to provide more insight into how social media impacts student-athletes and what athletic departments can do to reduce negative effects.

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