

**DOES SIZE MATTER? A COMPARISON OF SELF-REPORTS OF MENTAL HEALTH
CONCERNS OF STUDENT-ATHLETES IN A LARGE AND MEDIUM-SIZED
UNIVERSITY**

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partial fulfillment of the requirements for the degree of Master of Arts in Clinical Psychology

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ABSTRACT

DOES SIZE MATTER? A COMPARISON OF SELF-REPORTS OF MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES IN A LARGE AND MEDIUM-SIZED UNIVERSITY

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The prevalence of mental health disorders among college students has increased nearly 50% in the last decade, with over 60% of college students meeting the criteria for one or more mental health problems. Student-athletes, in particular, garner significant attention due to their elevated risk for mental health concerns. Research consistently highlights heightened mental health issues among student-athletes compared to their non-athlete peers. Despite this evidence, utilization of mental health services among student-athletes remains disproportionately low, with only 10% of student-athletes seeking help for their mental health concerns compared to 30% of the general student population. School size may also impact access to mental health services, with counseling centers at large institutions often having a higher student-to-counseling staff ratio than medium-sized and smaller schools. However, the average wait time for a student's first appointment is the longest in medium-sized schools. The current study examined the prevalence of self-reported mental health problems among student-athletes in a medium-sized university, as indicated by the Minnesota Multiphasic Personality Inventory, 3rd Edition (MMPI-3), and compared these findings with the reported prevalence in the same population in a large university. These numbers were then aggregated and compared to the normative sample. When compared to the normative sample, student-athletes generally reported fewer mental health concerns across all scales, except for Stress and Compulsivity, where they reported higher levels

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of concern. When examining student-athlete groups from different-sized universities, those from a large university reported fewer mental health concerns than those from a medium-sized university.

Keywords: Student-athlete, MMPI, collegiate mental health, university size

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The number of student-athletes competing in NCAA championship sports has reached an all-time high, with over 520,000 in the 2021-2022 academic year (NCAA, 2022). Recent media coverage has spotlighted the significant challenges and stressors inherent in the student-athlete lifestyle (Hensley-Clancy, 2022; Waldman, 2023). Balancing multiple responsibilities, student-athletes are responsible for their sports-related obligations while also managing academic workloads and personal and family responsibilities (Parrott, 2023; Ryan et al., 2018). This complex balancing act can contribute to heightened levels of stress and potentially impact student-athletes' mental health.

Student Mental Health

Recent studies have brought attention to student mental health on college campuses. The occurrence of mental health disorders among college students has increased nearly 50% since 2013 (Lipson et al., 2022), with more than 60% of college students meeting the criteria for at least one mental health issue. In comparison, among young adults aged 18-25, 33.7% meet the criteria for a diagnosable mental health condition, whereas the prevalence among all U.S. adults aged 18 and older is lower at 22.8% (SAMHSA, 2023). The Healthy Minds Study (Healthy Minds Network, 2023), which assesses mental health and related problems among college students, reveals that anxiety is the most prevalent diagnosis, affecting 36% of the student population. Depression or other mood disorders closely follow, impacting 30% of students. A significant number of students, 56%, rated their mental health as "fair" or "poor," with over twice as many identifying their mental health as poor (22%) compared to excellent (9%) (*Student Voice*, n.d.). Furthermore, a substantial proportion of students, 57%, reported a need for some

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level of emotional or mental health assistance in the past year. Psychotropic medications were used by 67% of students, with a significant portion of these medicines prescribed by general practitioners (Healthy Minds Network, 2023).

The American Foundation for Suicide Prevention (2022) reports that suicide is the second leading cause of death for college students. A national study conducted by Oh et al. (2022) highlights the prevalence of suicidal ideation among college students, with approximately 12% disclosing such thoughts. While there has been a decrease in the college suicide rate in recent years (Lipson et al., 2022), the suicidal ideation statistic underscores the elevated suicide risk faced by college students compared to the general population (Dubé et al., 2021).

Student-athlete Mental Health

Student-athlete mental health has garnered significant attention in recent years, and high-profile suicides and media attention have brought the challenges of student-athlete mental health into the spotlight (Hensley-Clancey, 2022; Parrott, 2023; Waldman, 2023). Media coverage surrounding student-athlete suicides and mental health has become increasingly prevalent, causing alarm about mental health challenges that may exist within collegiate sports. Numerous articles have explored what some have described as an "epidemic" of student-athletes dying by suicide and the underlying factors contributing to this trend (Hensley-Clancey, 2022; "NCAA Survey Shows Mental Health Still a Concern for Athletes," 2022). Acknowledging the growing concerns surrounding student-athlete mental health, the NCAA has made attempts to address the issue, including the publication of a document focused on mental health best practices in student-athlete mental health (NCAA, 2024).

Recent research has revealed concerning findings regarding student-athlete mental health. Canadian student-athletes were found to exhibit levels of psychological distress that surpass

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those reported by their non-athlete peers, as well as the rates observed in the broader society (Sullivan et al., 2019). Leonelli et al. (2022) found that pre-season measurements of multiple scales on the Minnesota Multiphasic Personality Inventory-2, Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2011), a self-report measure of constructs relevant to the assessment of mental health problems and personality, predicted mental health problems during the competitive season. This study revealed that 71.8% of student-athletes elevated at least one clinically relevant MMPI-2-RF scale, with 45% elevating three or more MMPI-2-RF scales (Leonelli et al., 2022). These findings align with previous research indicating a prevalence of mental health conditions among the student-athlete population (Parnabas et al., 2014; Sullivan et al., 2019). Additionally, student-athletes report commonly experiencing feelings of loneliness and anxiety, as well as a level of stress that adversely affects their sleeping and eating patterns (Cutler & Dwyer, 2020).

Despite these concerns, student-athletes often refrain from seeking professional help (Moreland et al., 2017). Instead, they may resort to unhealthy coping mechanisms to manage the stressors inherent in their dual roles as students and athletes, including high-risk drinking, social drug use, and eating disorders (Bratland-Sanda & Sundgot-Borget, 2013; Cutler & Dwyer, 2020)

Student-athlete Protective Factors

While one body of literature suggests that student-athletes present with higher levels of mental health concerns than their non-athlete peers (Parnabas et al., 2014; Sullivan et al., 2019), another offers a more optimistic perspective. Several studies indicate that student-athletes not only cope well with stressors but also exhibit comparable (Gorczynski et al., 2017) or even lower levels of mental health concerns than non-athlete students (Armstrong & Oomen-Early, 2009; Armstrong et al., 2015; Wolanin et al., 2016). This is evidenced by lower rates of depression

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symptoms and reduced levels of sadness, anxiety, and suicidal behavior. (Armstrong & Oomen-
Early, 2009; Armstrong et al., 2015).

When examining the rates of suicidal behavior among student-athletes compared to other demographic groups, the data show an interesting pattern. The suicide rate across all demographic groups stands at 14.1 suicides per 100,000 individuals (CDC, 2022). The rate is slightly lower among individuals aged 18-22 at 11.6 per 100,000 (Rao et al., 2015). College students, as a whole, experience a rate of approximately 7.5 suicides per 100,000 (American Foundation for Suicide Prevention, 2022). When focusing specifically on the student-athlete population, the rate drops to 0.93 suicides per 100,000 (Rao et al., 2015), underscoring the comparatively lower incidence of suicidal behavior within this population.

Student-athletes also benefit from protective factors that set them apart from their non-athlete counterparts. These include high levels of self-esteem and confidence levels and strong connections to supportive adults (Cutler & Dwyer, 2020; Gallup, 2020). Additionally, being a student-athlete is linked to robust social support networks, with the development of positive social bonds and relationships (Armstrong et al., 2015; Cutler & Dwyer, 2020; Gallup, 2020). Nearly 70% of student athletes can identify at least one individual on campus they can rely on for emotional support when needed (Cutler & Dwyer, 2020). These factors further highlight the potential protective factors associated with being a student-athlete.

Unique Stressors for Student-athletes

College students, in general, experience a high level of demands which can lead to elevated stress levels. Top stressors identified include struggling to cope with keeping up with coursework (57%), pressure to do well at college (47%), concerns about money (46%), balancing school and work obligations (41%), balancing school and family obligations (27%), worries

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about finding a job (26%), and invasion of Ukraine/other international conflicts (17%) (*Student Voice*, n.d.). In addition to these common stressors, student-athletes confront a distinct set of demands that set their experiences apart from those of their non-athlete counterparts (Cutler & Dwyer, 2020; Parrott, 2023),

Student-athletes experience stressors which encompass athletic performance pressures, hectic travel schedules, injuries, media scrutiny, and social pressures, which must be managed alongside academic and personal responsibilities (Cutler & Dwyer, 2020; Parrott, 2023). Noren (2014) emphasizes that the unique stressors and expectations that student-athletes encounter may either trigger psychological concerns or exacerbate existing mental health issues, which could ultimately lead to poor mental health outcomes.

During the competitive season, student-athletes often face increased mental health concerns, including overall distress, dissatisfaction, diffuse physical symptoms, and unusual thoughts, which have been identified as predictors of mental health issues (Leonelli et al., 2022). Furthermore, certain mental health conditions appear to be more prevalent during this period, potentially affecting academic outcomes and athletic performance (Leonelli et al., 2022).

Injuries represent another significant stressor for student-athletes, often eliciting emotional responses such as feelings of loss, anger, frustration, and depression. These feelings can be particularly prevalent when an athlete's self-identity is closely tied to their athletic success (Manuel et al., 2002; NATA, 2013; Yang et al., 2010; Ameri et al., 2012, as cited in Armstrong et al., 2015). Mann et al. (2016) found that injuries more than doubled during periods of high academic stress compared to periods of low academic stress. However, while injuries can have detrimental effects, they may also lead to positive outcomes such as increased empathy, exploration of non-athletic interests, and improved time management skills (Ardern, 2012, as

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cited in Armstrong et al., 2015).

These stressors contribute to the high-stress lifestyles often experienced by student-athletes, significantly differing from the experiences of non-athlete students. Overall, student-athletes represent a "high-risk" sub-population in colleges. They face various health behaviors and stressors and engage in risky behaviors such as binge drinking, disordered eating, and overtraining (Armstrong et al., 2015; Bratland-Sanda & Sundgot-Borgen, 2013; Ryan et al., 2018). These factors underscore the need for targeted support and interventions to address the unique mental health needs of student-athletes.

Student Mental Health Services

According to data from Penn State University's Center for Collegiate Mental Health (CCMH, 2023), there has been a notable increase in the utilization of campus counseling services over the past decade. Between 2009 and 2015, the number of students seeking assistance at these centers increased by almost 40% (CCMH, 2023). This upward trend persisted until the onset of the COVID-19 pandemic, highlighting a growing recognition of mental health needs among college students (CCMH, 2023).

The International Accreditation of Counseling Services recommends minimum staffing ratios of counseling staff to students of 1 to 1,000-1,500. The National Survey of Counseling Center Directors (LeViness et al., 2019) found the average ratio of employed "talk therapy" counseling staff (i.e., not interns) to students is 1 to 1,318, with counseling centers at larger educational institutions having higher ratios than those at smaller colleges or universities. The mean ratio of counseling students to counseling staff in small universities (enrollment $\leq 5,000$) is 785, and the mean ratio at medium-sized universities (enrollment of 5,000-15,000) is 1,579. In contrast, the mean ratio in large universities (enrollment $> 15,000$, including those considered

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"huge" with a student enrollment of > 30,000) is 1,740. (LeViness et al., 2019). However, the average wait time in days for a first appointment is the longest in medium-sized universities (6.8), compared to 5.6 days in small and 5.9 days in large universities (LeViness et al., 2019).

Student Perception of Mental Health Services

Students perceive a significant public stigma associated with receiving mental health services, with 41% believing this stigma exists (Healthy Minds Network, 2023). However, this perception differs from personal beliefs, with only 6% expressing a tendency to think less of someone who has received mental health treatment (Healthy Minds Network, 2023). Despite this stigma, the increase in the number of students seeking help at campus counseling centers reflects a growing recognition of mental health needs within the college student population.

When assessing satisfaction with therapy services offered by campus providers, students demonstrate overwhelmingly positive sentiments across various domains, including hours, location, therapist quality, privacy considerations, and cultural sensitivity. Scheduling concerns emerge as the primary issue, particularly regarding convenient hours (19%) and avoiding long appointment delays (21%) (Healthy Minds Network, 2023).

Student-athlete Perception of Mental Health Services

Despite the documented challenges student-athletes experience, they use campus health services at lower rates than their non-athlete peers; only 10% of student-athletes seek help for their mental health concerns compared to 30% of the general student population (Armstrong et al., 2015; Eisenberg, 2014). Barriers to seeking mental health treatment among student-athletes are multifaceted, encompassing factors such as lack of time, fear of adverse reactions from coaches and administration, attitudes of athletic stakeholders, lack of resources, limited mental health knowledge, and personal discomfort (Moreland et al., 2017; Ryan et al., 2018). Media

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perception further shapes attitudes toward seeking help, as student-athletes may fear heightened scrutiny could exacerbate their already challenging experiences (Parrott, 2023).

Research suggests that student-athletes generally demonstrate more negative attitudes toward help-seeking behavior than their non-athlete peers (Wahto et al., 2016; Watson, 2005). They also express greater reluctance to seek mental health services compared to other available support avenues, such as athletic or academic services (Gorczynski et al., 2017). Only about half of student-athletes indicate they would feel comfortable seeking support from a mental health provider on their campus (NCAA, 2023).

Kaier et al. (2015) found that student-athletes exhibit higher levels of personal stigma and perceived stigma than the general college student population, possibly due to fears of being recognized at campus counseling offices. Notable is that student-athletes' personal attitudes toward others seeking mental health treatment are generally more favorable than their perceptions of how teammates would treat others (Cutler & Dwyer, 2020). While they perceive their teammates as having stigma regarding mental health treatment, teammates' actual attitudes are supportive, a finding that aligns with findings in the general student population (Healthy Minds Network, 2023).

Cutler and Dwyer (2020) found that half of surveyed student-athletes were unsure about or did not believe their coaching staff could provide support during an emotional crisis. Student-athletes tend to engage more with non-team support personnel, such as athletic program coordinators, physicians, or counselors, when seeking mental health support, identifying their coaches and assistant coaches as a last resource. They also share that they often avoid conversations with coaches about stress and mental health, reflecting a reluctance to disclose negative feelings to their coaches (Cutler & Dwyer, 2020).

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These factors collectively contribute to the underutilization of mental health services among student-athletes compared to non-athlete students (Ryan et al., 2018). However, both men and women student-athletes express a desire for increased discussions on mental wellness by coaches and administrators, indicating a growing awareness of its importance (NCAA, 2023).

When student-athletes were asked about conditions that would enhance their access to mental health care, the top three responses included free services, access to practitioners who understand the student-athlete experience, and the ability to schedule appointments online (Ryan et al., 2018). However, concerns related to scheduling, including convenient hours and avoiding long appointment delays, remain significant (Healthy Minds Network, 2023). These challenges may pose additional challenges for student-athletes, who must navigate demanding schedules filled with games, travel, and practices.

School size and student mental health

Despite the wealth of literature on student mental health, few studies have explored relationships between school size and mental health. In a review of data from the Healthy Minds Study, Lipson et al. (2015 or 2022?) found that large enrollment was among the institutional characteristics associated with worse student mental health. Are there any articles out there regarding large schools and athlete pressures? Although there are highly publicized concerns about student-athlete mental health, there is no research on the impact of school size on student-athlete mental health.

Purpose of the Study

The purpose of this study is to compare mental health problems reported by student-athletes from a medium-sized university in the Southeast with the reported mental health problems of their counterparts from a large university in the Midwest. These groups will be

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aggregated and compared to a normative sample.

The following research question and hypothesis are proposed:

RQ1: Are student-athletes more likely to report elevated levels of psychological distress compared to the MMPI-3 normative sample?

Research Hypothesis 1: Student-athletes will report higher levels of psychological distress than the normative sample.

RQ2: Does student-athlete mental health differ across universities of different sizes?

Research Hypothesis 2: Student-athletes from a large university will report higher levels of psychological distress than those from a medium-sized university.

METHOD

Participants

Sample 1.

Sample 1 consists of 163 NCAA Division I student-athletes at a medium-sized university in the Southeast region of the United States. Participants were recruited from the university's student-athlete population, with invitations extended to athletes from all sports. The sample size represents approximately 48% of the total student-athlete population of 342 individuals. The university has a student population of approximately 11,000 undergraduate and graduate students (Western Carolina University, n.d.) and is in a rural community with a population of approximately 6,800 residents. A total of 39 (23.5%) student-athletes were removed from the study sample because they invalidated the MMPI-3 based on criteria outlined in the MMPI-3 Manual for Administration, Scoring, and Interpretation (i.e., CRIN < 80, VRIN < 80, F < 100, Fp < 100) (Ben-Porath & Tellegen, 2020a). See Table 1 for full demographics.

Sample 2

Sample 2 consists of 218 NCAA Division I first-year student-athletes at a large university in the Midwest region of the United States. The sample size represents approximately 48% of the total student-athlete population of roughly 450 individuals (Kent State University, n.d.). The university has a student population of approximately 25,000 undergraduate and graduate students (Kent State University, n.d.) and is in a suburban community of a large metropolitan area with approximately 28,000 residents.

A total of 21 (9.6%) student-athletes were removed from the study sample because they invalidated the MMPI-3 based on criteria outlined in the MMPI-3 Manual for Administration, Scoring, and Interpretation (i.e., CRIN < 80, VRIN < 80, F < 100, Fp < 100) (Ben-Porath &

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Tellegen, 2020a). See Table 1 for full demographics.

Measures

Minnesota Multiphasic Personality Inventory-3rd Edition (MMPI-3)

The Minnesota Multiphasic Personality Inventory-3 (Ben-Porath & Tellegen, 2020) is a well-established measurement of personality, psychological functioning, and behavioral tendencies. Comprising of 335 self-report items, the respondent indicates “True” or “False” for each item. The instrument includes 42 substantive scales arranged in a hierarchy across five broad domains of psychological dysfunction: Somatic/Cognitive, Emotional/Internalizing, Thought Dysfunction, Behavioral/Externalizing, and Interpersonal Functioning. Within this framework, the scales are further categorized into Higher-Order (H-O) Scales, which measure affect, thought, and action (Emotional/Internalizing, Thought Dysfunction, and Behavioral/Externalizing), mid-level or Restructured Clinical (RC) Scales, which measure common clinical symptoms present in psychological dysfunction, and Specific Problems (SP) Scales, which provide narrow, focused descriptions of problems experienced including somatic cognitive, internalizing, externalizing, and interpersonal symptoms.

The instrument also includes 10 validity scales, which measure protocol validity, assess whether the test results can be interpreted, and identify any necessary interpretive considerations. These scales detect response patterns that may compromise the protocol's validity, including content nonresponsiveness, over-reporting, and under-reporting.

The normative sample for the MMPI-3 is designed to align with the demographic projections provided by the 2020 U.S. Census Bureau. It is comprised of 1,620 individuals aged 18 and older (810 men and 810 women) from diverse communities throughout the United States (Ben-Porath & Tellegen, 2020a). Extensive data documenting reliability and validity are reported

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in the MMPI-3 technical manual (Ben-Porath & Tellegen, 2020b).

Demographic information about student-athletes was also collected (see Table 1).

Procedure

Sample 1

Recruitment. Recruitment of Sample 1 involved three procedures. The first procedure involved emailing the assistant athletic directors and coaches and providing a recruitment message, which they forwarded to student-athletes. This email prompted interested student-athletes to use a confidential messaging app to contact the primary researcher. The second recruitment approach involved researchers being present in the student-athlete study hall, allowing them to engage with students upon arrival, provide study details, and extend invitations to participate. The final recruitment method involved researchers being present during student-athlete practices to present information about the study and provide participation information. All participation was voluntary. Recruitment of Sample 1 was reviewed and approved by Western Carolina University's Internal Review Board.

Administration. Student-athletes who volunteered to participate in the study received an index card with a participant number and URL to access the Qualtrics Survey. Graduate and advanced undergraduate students guided participants through the informed consent process and provided instructions for participation. Participants utilized their personal electronic devices (i.e., phones or computers) to complete the MMPI-3 assessment. Upon completing the assessment, all participants underwent an exit interview, allowing them to ask questions or provide feedback.

A suicide risk interview was administered to participants who answered “True” to any one of seven suicide-risk questions. This interview, based on the framework developed by Chu et al. (2015), encompassed inquiries into thwarted belongingness, perceived burdensomeness, and

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the capability for suicide. Interviews were conducted by one of two researchers trained in its administration. Participants exhibiting elevated risk but below a moderate risk level were provided with a list of mental health resources. Those assessed with moderate or higher risk levels were immediately connected to the university counseling center for intervention.

Participants declining this connection were flagged for further follow-up from the university.

Protocols deemed invalid according to the established validity criteria of the MMPI-3 were excluded from the analysis.

Sample 2

Sample 2 is a set of archival data on 218 first-year student-athletes results from the pre-season administration of the MMPI-3 at a large university in the Midwest. Student-athletes completed the MMPI-3 assessment as a component of athletic department pre-season procedures. Detailed recruitment and administration information is currently unavailable. Protocols deemed invalid according to the established validity criteria of the MMPI-3 were excluded from the analysis.

Data Analysis

For research question one, mean-score differences across the 42 MMPI-3 substantive scales were compared between the combined student-athlete samples and the normative sample. z -scores were utilized to compare the groups. The analysis focused on mean scores that deviated significantly from the normative sample. Percent elevated beyond the normative range was examined as a secondary outcome variable.

For research question two, mean-score differences were compared across the same 42 MMPI-3 substantive scales. Independent t -tests were utilized to compare student-athletes from

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the two universities. Percent elevated beyond the normative range was examined as a secondary outcome variable.

Given the large number of comparison tests involved in both research questions, alpha scores are potentially inflated. Type 1 error was controlled for by utilizing a pre-established effect size criterion ($d = .30$) and a more conservative alpha level ($p \leq .001$).

RESULTS

Comparison Between Aggregate Student-athlete Samples and Normative Sample

Significant differences were observed between combined student-athlete samples and the normative sample across twelve scales of the MMPI-3. Table 2 provides a comprehensive list of the data analysis results, with Table 3 providing a list of the scales with significant findings.

Statistical significance was determined by a z -statistic resulting in $p \leq .001$ and a Cohen's d of .30 or greater. Negative Cohen's d values indicate a directionality opposite to that hypothesized.

Directionality in the hypothesized direction was evident in only two of the 12 scales, with significant differences between the two groups occurring within the Emotional/Internalizing specific problems scales. Of the remaining scales with significant differences, a directionality opposite that hypothesized was observed, with student-athletes reporting significantly lower problems on these scales than the normative sample.

Within the Somatic-Cognitive scales, student-athletes exhibited a lower prevalence of Malaise (MLS) ($p < .001$, $d = -.39$, 6.2% elevated) compared to the normative sample.

In Emotional/Internalizing scales, student-athletes showed significantly lower rates of Suicide/Death Ideation (SUI) ($p < .001$, $d = -.34$, 11.5% elevated), Helplessness/Hopelessness (HLP) ($p < .001$, $d = -.44$, 5.3% elevated) and Introversion/Low Positive Emotions (INTR) ($p < .001$, $d = -.39$, 6.5% elevated). However, they reported significantly higher levels of Stress (STR) ($p < .001$, $d = .33$) and Compulsivity (CMP) ($p .001$, $d = .52$), with elevation on these scales notably higher than would be expected in the general population, with rates of 22.40% for Stress and 33.00% for Compulsivity.

Within the Behavioral/Externalizing scales, student-athletes exhibited a significantly lower prevalence of Behavioral/Externalizing Dysfunction (BXD) ($p < .001$, $d = .58$, 0.30%

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elevated). They also demonstrated a lower incidence of Antisocial Behavior (RC4) ($p < .001$, $d = 0.70$, 0.30% elevated), showing significantly lower prevalence rates of Family Problems and (FML) ($p < .001$, $d = -.40$, 5.90% elevated), Juvenile Conduct (JCP) ($p < .001$, $d = -.63$, 0.30% elevated), and Substance Abuse (SUB) ($p < .001$, $d = -.61$, 1.2% elevated) compared to the normative sample. Levels of Disconstraint (DISC) ($p < .001$, $d = -.61$, 0.6% elevated) was also lower among student-athletes compared to the normative sample. \

Within the Interpersonal Functioning scales, student-athletes showed lower levels of Social Avoidance (SAV) compared to the normative sample ($p < .001$, $d = -.40$, 5.6% elevated).

Comparison Between University Samples

Significant differences were observed between student-athlete samples of different university sizes across 18 scales of the MMPI-3. Table 4 provides a comprehensive list of the data analysis results, with Table 5 providing a list of the scales with significant findings. Statistical significance was determined by a t -statistic resulting in $p \leq .001$ and a Cohen's d of .30 or greater. Negative Cohen's d values indicate a directionality opposite to that hypothesized. All significant findings, without exception, demonstrate a reversal in the hypothesized directionality, with student-athletes from a large university reporting lower levels of psychological distress than those from a medium-sized university.

In the Somatic/Cognitive scales, student-athletes from a large university reported significantly lower levels of Somatic Complaints (RC1) ($p < .001$, $d = -.43$). Student-athletes from a large university reported lower levels of Malaise (MLS) ($p < .001$, $d = -.53$) and Neurological Complaints ($p < .001$, $d = -.61$). Elevation rates at a large university were about what would be expected in the general population (8%) on RC1 (8.1%) and Neurological Complaints (8.1%) while those for a medium-sized university were higher on RC1 (17.7%) and

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Neurological Complaints (24.2%).

Within Emotional/Internalizing scales, students from a large university reported significantly fewer concerns on Demoralization (RCd) ($p < .001$, $d = -.36$) than students from a medium-sized university. Percent elevated for a large university (6.1%) were less than what would be expected in the general population (8%), while those for a medium-sized university were higher on RCd (14.5%). Student-athletes from a large university also reported significantly lower levels of Worry (WRY) ($p < .001$, $d = -.40$), Compulsivity (CMP) ($p < .001$, $d = -.61$), and Anxiety-Related Experiences (ARX) ($p < .001$, $d = -.43$). Elevation rates were substantially lower for the large university than the medium-sized university sample for Worry (15.7% versus 28.2%), Compulsivity (24.4% versus 46.8%), and Anxiety-Related Experiences (10.2% vs 17.7%).

Significant differences were observed within the Thought Dysfunction scales, with student-athletes from a large university showing lower levels of Thought Dysfunction (THD) ($p < .001$, $d = -.58$), than students from a medium-sized university. Lower levels of reporting of Ideas of Persecution (RC6) ($p = .001$, $d = -.36$), Aberrant Experiences (RC8) ($p < .001$, $d = -.68$), and Psychoticism (PSYC) ($p < .001$, $d = -.58$) were found among student-athletes from a large school. Percent elevated for a large university was about or less than what would be expected in the general population (8%) for RC6 (8.1%) and RC8 (6.6%) while reporting on these same scales at a medium-sized university were higher than what would be expected in the general population (12.9% and 15.3%, respectively).

Significant differences were found within the Behavioral/Externalizing scales, with lower levels of Behavioral/Externalizing Dysfunction (BXD) ($p < .001$, $d = -.37$) among student-athletes from a large university compared to their counterparts from a medium-sized university.

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Specifically, student-athletes from a large university reported significantly lower levels of Antisocial Behavior (RC4) ($p < .001$, $d = -.38$), and Substance Abuse (SUB) ($p < .001$, $d = -.43$). In the large university sample, student-athletes reported significantly lower levels of Hypomanic Activation (RC9) ($p < .001$, $d = -.37$) and Aggression (AGG) ($p < .001$, $d = -.47$) compared to those in the medium-sized university sample. This pattern was consistent with reports of Disconstraint (DISC), with student-athletes from a large university reporting significantly lower levels than their counterparts at a medium-sized university ($p < .001$, $d = -.43$). Percent elevated scores for RC9 in the large university sample (8.1%) aligned closely with the expected rate in the general population (8%). In contrast, the medium-sized university sample reported higher levels of Disconstraint (13.7%). Elevated scores were generally lower than would be expected in the general population for both university samples. Specifically, RC9 and Aggression showed elevated rates for student-athletes from the medium-sized university, at 13.7% and 11.3%, respectively.

Finally, in examining the Interpersonal Functioning scales, Interpersonal Functioning specific problems showed that student-athletes from a large university reported significantly lower levels of Disaffiliativeness (DSF) ($p < .001$, $d = -.36$) compared to their counterparts from a medium-sized university.

DISCUSSION

Contrary to expectations, student-athletes exhibited lower levels of dysfunction across several domains than the normative sample. Significant differences were observed on multiple scales compared to the normative sample, highlighting many areas of potential resilience. Among the significant findings, student-athletes reported higher levels of stress, which may reflect the unique challenges they face within the college environment but also align with broader research indicating that college students generally experience elevated stress levels due to academic, financial, and personal pressures. Therefore, it would be valuable to explore if this reflects a broader trend within the collegiate demographic or if the high elevation rates on these scales indicate a unique vulnerability within the student-athlete subgroup.

High levels of compulsivity were also observed among student-athletes when compared to the normative sample. While initially appearing maladaptive, this characteristic may be linked to the structured and rigorous nature of their schedules. Student-athletes navigate multiple demands and may adhere to strict routines and schedules to effectively manage their time. Within this framework, compulsive tendencies may manifest as an adaptive trait rather than a maladaptive one, serving a functional purpose in navigating their busy lives. Additionally, the prevalence of superstition-like behaviors, such as adhering to specific pre-game rituals or wearing a lucky pair of socks, may also contribute to elevated levels of compulsivity. Thus, while compulsive behaviors are observable among student-athletes, it is important to acknowledge the adaptive nature of these behaviors within the context of the student-athlete lifestyle.

The comparison between student-athletes from different university sizes revealed interesting disparities. In contrast to the anticipated findings, student-athletes from a large

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university demonstrated lower levels of psychological distress across various scales than those from a medium-sized university. However, it is essential to contextualize these differences. Factors such as geographical location and access to resources may contribute to variations in mental health outcomes among student-athletes. For instance, student-athletes attending universities in suburban areas near metropolitan hubs may have greater access to support services and alternative behavioral health resources than those in more rural settings.

Also notable in this comparison was the demographic characteristics of the teams, which may influence mental health outcomes. For example, the analysis reflected a less diverse racial makeup in the medium-sized university sample, and a notably higher percentage of females than males in the large university sample. Research suggests that factors like race, gender, and socioeconomic status can intersect with experiences of stress and resilience, and demographic disparities could potentially impact psychological well-being through these mechanisms.

Additionally, the racial composition of the team may influence the availability of culturally relevant support networks and resources. Student-athletes from underrepresented racial or ethnic groups may face additional stressors associated with discrimination, acculturation, and identity formation. These factors may contribute to variations in mental health outcomes across demographic subgroups within the student-athlete community, particularly if the demographic makeup of the community or the overall university does not align with that of the student-athlete population.

Elevation rates—indicating the percentage of scores surpassing clinical thresholds—also emerged as noteworthy. Although many scales reflected mean scores below the MMPI-3 average mean of 50, the elevation rates surpassed expectations for the general population (8%). This

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discrepancy between mean scores and elevation rates may suggest a more complex mental health dynamic among student-athletes.

Study Implications

The findings of this study hold significant implications for understanding the mental health landscape among college student-athletes and the broader student population. Contrary to expected findings, the results revealed that student-athletes reported lower levels of dysfunction across several domains compared to the normative sample. However, notable elevations in stress and compulsivity were observed. These findings offer valuable insights for identifying targeted interventions and support systems to address these areas of concern.

Understanding disparities when considering the teams' demographic characteristics is essential to recognizing and developing targeted interventions and support systems to effectively address these disparities. The findings that student-athletes from a large university reported lower levels of psychological distress than their counterparts from a medium-sized university highlight the need to consider broader socio-environmental factors when identifying and developing interventions and supports. Factors such as cultural needs, access to resources, and institutional support structures all play integral roles in student mental health. By acknowledging this diversity, universities can develop culturally sensitive approaches to promote mental health and resilience among student-athletes and the broader student population.

Recognizing the resiliency factors demonstrated by student-athletes may offer valuable lessons for addressing broader needs at the university level. Understanding the specific stressors faced by student-athletes and reflecting on strengths and coping strategies they utilize can inform campus-wide efforts to promote mental health and well-being among all students. For example, initiatives aimed at enhancing stress management skills, fostering supportive social networks,

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and providing access to resources could benefit not only student-athletes but also the general student population. By acknowledging and leveraging the resilience exhibited by student-athletes, universities can develop more effective approaches to supporting student mental health, ultimately fostering a healthier and more resilient campus community.

Study Limitations and Suggestions for Future Investigation

It is important to recognize the limitations of this study. Including just one school from each size group limits the generalizability of the findings. Furthermore, the lack of comparisons between student-athletes and the broader student population necessitates further investigation to determine whether the mental health challenges encountered by this subgroup are genuinely distinctive or if they are representative of broader trends in college mental health.

In terms of future directions, conducting additional research to compare mental health outcomes between student-athletes and the general student population could offer valuable insights into the degree of divergence or convergence in their experiences. Moreover, delving further into the specific factors contributing to elevated scores among certain student-athlete subsets, while others exhibit lower scores, warrants exploration. Finally, future inquiries should explore the intersectionality of various factors influencing mental health outcomes among student-athletes, including demographic variables and institutional contexts.

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

REFERENCES

- American Foundation for Suicide Prevention. (2022). *Suicide prevention on university and college campuses (state priority)*. <https://afsp.org/university-and-college-campus-suicide-prevention/>
- Armstrong, S. N., Burcin, M. M., Bjerke, W., & Early, J. (2015). Depression in student athletes: a particularly at-risk group? A systematic review of the literature. *Athletic Insight*, 7(2), 177-193.
- Armstrong, S. & Oomen-Early, J., (2009). Social connectedness, self-esteem, and depression symptomatology among collegiate athletes versus nonathletes. *Journal of American College Health*, 57(5), 521–526. <https://doi.org/10.3200/JACH.57.5.521-526>
- Ben-Porath Y. S., & Tellegen A. (2011). *Minnesota multiphasic personality inventory-2 restructured form (MMPI-2-RF): Manual for administration, scoring, and interpretation*. University of Minnesota Press.
- Ben-Porath, Y. S., & Tellegen, A. (2020a). *MMPI-3: Minnesota multiphasic personality inventory-3 manual for administration, scoring, and interpretation*. University of Minnesota Press.
- Ben-Porath, Y. S., & Tellegen, A. (2020b). *Minnesota multiphasic personality inventory-3 technical manual*. University of Minnesota Press.
- Bratland-Sanda, S., & Sundgot-Borgen, J. (2013). Eating disorders in athletes: overview of prevalence, risk factors and recommendations for prevention and treatment. *European Journal of Sport Science*, 13(5), 499–508. <https://doi.org/10.1080/17461391.2012.740504>
- Centers for Disease Control. *Suicide data and statistics*. Retrieved March 18, 2024 from <https://www.cdc.gov/suicide/suicide-data-statistics.html>

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

Center for Collegiate Mental Health (2023). 2023 Annual report: bringing science and practice together. https://ccmh.psu.edu/assets/docs/2023_Annual%20Report.pdf

Chu, C., Klein, K. M., Buchman-Schmitt, J. M., Hom, M. A., Hagan, C. R., & Joiner, T. E. (2015). Routinized assessment of suicide risk in clinical practice: An empirically informed update. *Journal of Clinical Psychology, 71*(12), 1186-1200. <https://doi.org/10.1002/jclp.22210>

Cutler, B. A. & Dwyer, B. (2020). Student-athlete perceptions of stress, support, and seeking mental health services. *Journal of Issues in Intercollegiate Athletics, 13*, 206-226.

Dubé, J. P., Smith, M. M., Sherry, S. B., Hewitt, P. L., & Stewart, S. H. (2021). Suicide behaviors during the COVID-19 pandemic: A meta-analysis of 54 studies. *Psychiatry Research, 301*, 113998. <https://doi.org/10.1016/j.psychres.2021.113998>

Eisenberg, D. (2014). *2014 NCAA innovations grant final report: Developing and evaluating a model program for supporting the mental health of student athletes*. School of Public Health and Institute for Social Research, University of Michigan. <https://athletesconnected.umich.edu/wp-content/uploads/2017/02/2014-NCAA-Final-Report-main-narrative.pdf>

Gallup (2020). *A study of NCAA student athletes: Undergraduate experiences and post graduate outcomes*. Gallup, Inc. <https://www.gallup.com/file/education/312941/NCAA%20Student-Athlete%20Outcomes.pdf>

Gorczynski P. F., Coyle M., & Gibson K. (2017). Depressive symptoms in high performance athletes and non-athletes: a comparative meta-analysis. *Sports Medicine, 51*, 1348–1354.

Healthy Minds Network (2023). *Healthy minds study among colleges and universities, year*

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

- 2022-2023. healthymindsnetwork.org/wp-content/uploads/2023/08/HMS_National-Report-2022-2023_full.pdf
- Hensley-Clancy, M. (2022). Reeling from suicides, college athletes press NCAA: 'This is a crisis.' <https://www.washingtonpost.com/sports/2022/05/19/college-athletes-suicide-mental-health/>
- Kaier, E., Cromer, L. D., Johnson, M. D., Strunk, K., & Davis, J. L. (2015). Perceptions of mental illness stigma: Comparisons of athletes to nonathlete peers. *Journal of College Student Development* 56(7), 735-739. <https://doi.org/10.1353/csd.2015.0079>.
- Kent State University (n.d.). *Athletic points of pride*. Retrieved March 14, 2024 from <https://www.kent.edu/facts-figures/athletic-points-pride>
- Leonelli, B. R., Kuhn, T., Sanborn, V., & Gunstad, J. (2022). Feasibility of predicting in-season mental health problems in college student-athletes from pre-season assessment. *Clinical Journal of Sports Medicine*, 32(2), e139–e144. <https://doi.org/10.1097/JSM.0000000000000899>
- LeViness, P., Gorman, K., Braun, L., Koenig, L. & Bershad, C. (2020). *The association for university and college counseling center directors annual survey: 2019*. Association for University and College Counseling Center Directors. <https://www.aucccd.org/assets/documents/Survey/2019%20AUCCCD%20Survey-2020-05-31-PUBLIC.pdf>
- Lipson, S. K., Zhou, S., Abelson, S., Heinze, J., Jirsa, M., Morigney, J., Patterson, A., Singh, M., & Eisenberg, D. (2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national healthy minds study, 2013–2021. *Journal of Affective Disorders*, 306, 138–147. <https://doi.org/10.1016/j.jad.2022.03.038>

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

Lipson, S. K., Gaddis, S. M., Heinze, J., Beck, K., & Eisenberg, D. (2015). Variations in student mental health and treatment utilization across US colleges and universities. *Journal of American College Health, 63*(6), 388–396.

<https://doi.org/10.1080/07448481.2015.1040411>

Mann, J. B., Bryant, K. R., Johnstone, B., Ivey, P. A., & Sayers, S. P. (2016). Effect of physical and academic stress on illness and injury in Division 1 college football players. *Journal of Strength and Conditioning Research, 30*(1), 20–25.

<https://doi.org/10.1519/JSC.0000000000001055>

Moreland, J. J., Coxe, K. A., & Yang, J. (2018). Collegiate athletes' mental health services utilization: A systematic review of conceptualizations, operationalizations, facilitators, and barriers. *Journal of Sport and Health Science, 7*(1), 58–69.

<https://doi.org/10.1016/j.jshs.2017.04.009>

National Collegiate Athletic Association (2023). Current findings on student-athlete mental health. https://ncaaorg.s3.amazonaws.com/research/wellness/Dec2023RES_HW-MentalHealthRelease.pdf

National Collegiate Athletic Association (2022). NCAA student-athletes surpass 520,000, set new record. <https://www.ncaa.org/news/2022/12/5/media-center-ncaa-student-athletes-surpass-520-000-set-new-record.aspx>

National Collegiate Athletic Association (2024). Mental health best practices: Understanding and supporting student-athlete mental health,

https://ncaaorg.s3.amazonaws.com/ssi/mental/SSI_MentalHealthBestPractices.pdf

NCAA survey shows mental health still a concern for athletes. (2022).

<https://apnews.com/article/sports-health-indiana-depression-mental->

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

5762474f9122061b047be650a5df563a

Noren, N. (2014). Taking notice of the hidden injury: awareness, better treatment of athletes' mental health begins to take shape. *ESPN*.

http://espn.go.com/espn/otl/story/_/id/10335925/awareness-better-treatment-college-athletes-mental-health-beginstake-shape.

Oh, H., Marinovich, C., Jay, S., Marsh, J., Zhou, S., & DeVlyder, J. E. (2022). COVID-19 factors and self-injurious behaviors among US college students: findings from the healthy minds study 2020. *Journal of American College Health*, 1–5.

<https://doi.org/10.1080/07448481.2022.208105>

Parnabas, V., Mahamood, Y., Parnabas, J., & Abdullah, N. M. (2014). The relationship between relaxation techniques and sport performance. *Universal Journal of Psychology*, 2(3), 108–112. <https://doi.org/10.13189/ujp.2014.020302>

Parrott, S. (2023). Media framing of student-athlete suicide: an examination of problems, causes, moral evaluations and treatment recommendations. *Communication and Sport*, 1-19.

<https://doi.org/10.1177/21674795231187155>

Rafal, G., Gatto, A., & DeBate, R. (2018). Mental health literacy, stigma, and help-seeking behaviors among male college students. *Journal of American College Health*, 66(4), 284–

291. <https://doi.org/10.1080/07448481.2018.1434780>

Rao, A., & Hong, E. (2015). Understanding depression and suicide in college athletes: Emerging concepts and future directions. *British Journal of Sports Medicine*, 50(3), 136-137.

<https://doi.org/10.1136/bjsports-2015-095658>

Ryan, H., Gayles, J. G., & Bell, L. (2018). Student-athletes and mental health experiences. *New Directions for Student Services*, 2018(163), 67-79. <https://doi->

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

org.proxy195.nclive.org/10.1002/ss.20271

Student Voice. (n.d.). <https://reports.collegepulse.com/student-voice-feeling-understood>

Substance Abuse and Mental Health Services Administration. (2023). Key substance use and mental health indicators in the United States: Results from the 2022 National Survey on Drug Use and Health. <https://www.samhsa.gov/data/report/2022-nsduh-annual-national-report>

Sullivan, P., Blacker, M., & Murphy, J. (2019). Levels of psychological distress of Canadian university student-athletes. *The Canadian Journal of Higher Education*, 49(1), 47-59. <https://doi.org/10.47678/cjhe.v49i1.188192>

Wahto, R. S., Swift, J. K., & Whipple, J. L. (2016). The role of stigma and referral source in predicting college student-athletes' attitudes toward psychological help-seeking. *Journal of Clinical Sport Psychology*, 10(2), 85–98. <https://doi.org/10.1123/JCSP.2015-0025>

Waldman, D. (2023). Student-athletes aren't immune from suicide risk. Colleges are taking notice. *CBS News*. <https://www.cbsnews.com/news/student-athletes-suicide-risk-colleges-mental-health/>

Watson, J. C. (2005). College Student-Athletes' Attitudes Toward Help-Seeking Behavior and Expectations of Counseling Services. *Journal of College Student Development*, 46(4), 442–449. <https://doi.org/10.1353/csd.2005.0044>

Western Carolina University. (n.d.). *About Western Carolina*. Retrieved March 14, 2024 from <https://www.wcu.edu/discover/about/fast-facts.aspx#:~:text=Enrollment,more%20than%209%2C000%20undergraduate%20students>

Wolanin, A., Hong, E., Marks, D., Panchoo, K., & Gross, M. (2016). Prevalence of clinically elevated depressive symptoms in college athletes and differences by gender and sport.

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES

British Journal of Sports Medicine, 50(3), 167. <https://doi.org/10.1136/bjsports-2015-095756>

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Table 1

Demographics

Demographic variable	Sample 1 (<i>n</i> = 166)	Sample 2 (<i>n</i> = 218)
<i>M</i> _{age} (range)	20.18 (18-24)	19.44 (18-23)
Race/ethnicity		
Am. Indian or Alaska Native	1 (0.6%)	0 (0.0%)
Asian	1 (0.6%)	5 (2.3%)
Black/African American	41 (24.7%)	23 (10.6%)
Hispanic	5 (3.0%)	5 (2.3%)
Native Hawaiian/Pacific Islander	0 (0.0%)	1 (0.5%)
White	117 (70.5%)	94 (43.1%)
Other	1 (0.6%)	0 (0.0%)
Gender Identity		
Male	92 (55.4%)	74 (33.9%)
Female	67 (40.4%)	144 (66.1%)
Missing	7 (4.2%)	0 (0.0%)
Marital Status		
Married	0 (0.0%)	1 (0.5%)
Never Married	156 (94.0%)	118 (54.1%)
Separated	3 (1.8%)	0 (0.0%)
Missing	7 (4.2%)	99 (45.4%)

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Table 2

Comparison of MMPI-3 Scale Scores Between Aggregate Student-Athlete Samples and Normative Sample (N = 321)

MMPI-3 Scale	% elevated	<i>M</i>	<i>SD</i>	<i>Z</i> statistic ^a	<i>p</i> - value	Cohen's <i>d</i>
<i>Somatic/Cognitive</i>						
Somatic Complaints (RC1)	11.8	50.72	10.27	1.29	.100	.07
Malaise (MLS)*	6.2	46.12	10.00	-6.95	< .001	-.39
Neurological Complaints (NUC)	14.3	51.62	10.42	2.90	.002	.16
Eating Concerns (EAT)	5.0	49.53	9.39	-0.84	.200	-.05
Cognitive Complaints (COG)	14.6	51.77	10.87	3.17	< .001	.18
<i>Emotional/Internalizing</i>						
Emotional/Internalizing Dysfunction (EID)	9.7	49.47	10.13	-0.95	.171	-.05
Demoralization (RCd)	9.3	48.33	9.97	-2.99	.001	-.17
Suicide/Death Ideation (SUI)*	11.5	46.57	8.29	-6.15	< .001	-.34
Helplessness/ Hopelessness (HLP)*	5.3	45.60	8.41	-7.88	< .001	-.44
Self-Doubt (SFD)	12.5	49.66	10.25	-0.61	.271	-.34
Inefficacy (NFC)	11.2	49.48	9.95	-0.93	.176	-.05
Low Positive Emotions (RC2)	6.9	48.21	9.39	-3.21	< .001	-.18
Introversion/Low Positive Emotions (INTR)*	6.5	46.14	9.15	-6.92	< .001	-.39
Dysfunctional Negative Emotions (RC7)	19.3	52.53	10.81	4.53	< .001	.25
Stress (STR)*	22.4	53.33	11.54	5.97	< .001	.33
Worry (WRY)	20.6	50.30	10.64	0.54	.295	.03
Compulsivity (CMP)*	33.0	55.22	12.30	9.35	< .001	.52
Anxiety-Related Experiences (ARX)	13.1	49.81	11.29	-0.34	.367	-.02
Anger Proneness (ANP)	10.6	51.28	9.70	2.29	.011	.13
Behavior Restricting Fears (BRF)	8.4	51.93	11.43	3.46	< .001	.19
Negative Emotionality/ Neuroticism (NEGE)	14.6	52.03	11.05	3.64	< .001	.20
<i>Thought Dysfunction</i>						
Thought Dysfunction (THD)	7.8	50.55	10.09	.99	.162	.06
Ideas of Persecution (RC6)	10.0	52.17	10.41	3.89	< .001	.22
Aberrant Experiences (RC8)	10.0	49.94	10.65	-.11	.457	-.01
Psychoticism (PSYC)	9.3	50.55	10.14	.99	.162	.06
<i>Behavioral/Externalizing</i>						
Behavioral/Externalizing Dysfunction (BXD)*	.3	44.23	6.34	-10.37	< .001	-.58
Antisocial Behavior (RC4)*	.3	42.98	5.73	-12.58	< .001	-.70

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MMPI-3 Scale	% elevated	<i>M</i>	<i>SD</i>	<i>Z</i> statistic ^a	<i>p</i> - value	Cohen's <i>d</i>
Family Problems (FML)*	5.9	46.00	9.08	-7.67	< .001	-.40
Juvenile Conduct (JCP)*	0.3	43.68	6.20	-11.32	< .001	-.63
Substance Abuse (SUB)*	1.2	43.87	6.72	-10.98	< .001	-.61
Hypomanic Activation (RC9)	10.3	50.67	9.47	1.20	.115	.07
Impulsivity (IMP)	11.2	48.72	10.03	-2.29	.011	-.12
Activation (ACT)	18.1	52.51	9.06	4.50	< .001	.25
Aggression (AGG)	7.2	48.83	9.72	-2.10	.018	-.12
Cynicism (CYN)	9.7	49.94	8.96	-0.11	.457	-.01
Disconstraint (DISC)*	.6	43.88	6.25	-10.96	< .001	-.61
<i>Interpersonal Functioning</i>						
Self-Importance (SFI)	10.3	52.10	9.92	3.76	< .001	.21
Dominance (DOM)	10.3	48.83	9.25	-2.10	.018	-.12
Aggressiveness (AGGR)	5.3	47.56	8.43	-4.37	< .001	-.24
Disaffiliativeness (DSF)	9.0	48.85	9.00	-2.06	.020	-.12
Social Avoidance (SAV)*	5.6	46.03	9.25	-7.11	< .001	-.40
Shyness (SHY)	12.5	50.36	10.53	0.64	.259	.04

Note. MMPI-3 = Minnesota Multiphasic Personality Inventory - 3rd Edition

^aA negative *z* statistic and Cohen's *d* indicates a directionality opposite to that hypothesized.

*Indicates a statistically significant difference between the combined student-athlete samples and normative sample at the pre-established effect size criterion ($d = .30$) and $p \leq .001$ on this scale.

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Table 3

Significant Differences in MMPI-3 Scale Scores Between Aggregate Student-Athlete Samples and Normative Sample

MMPI-3 Scale	<i>p</i> -value	Cohen's <i>d</i> ^a	% Elevated
Higher-order			
Behavioral/externalizing Dysfunction (BXD)	< .001	-.58	.3
Restructured Clinical			
Antisocial behavior (RC4)	< .001	-.70	.3
Somatic-Cognitive specific problems			
Malaise (MLS)	< .001	-.39	6.2
Emotional/Internalizing specific problems			
Suicide/Death Ideation (SUI)	< .001	-.34	11.5
Helplessness/Hopelessness (HLP)	< .001	-.44	5.3
Stress (STR)	< .001	.33	22.4
Compulsivity (CMP)	< .001	.52	33.0
Behavioral/Externalizing specific problems			
Family Problems (FML)	< .001	-.40	5.9
Juvenile Conduct (JCP)	< .001	-.63	.3
Substance Abuse (SUB)	< .001	-.61	1.2
Interpersonal Functioning specific problems			
Social Avoidance (SAV)	< .001	-.40	5.6
Personality Psychopathology-5			
Introversion/Low Positive Emotions (INTR)	< .001	-.39	6.5
Disconstraint (DISC)	< .001	-.61	.6

Note. Statistical significance is indicated when the *p*-value is equal to or less than .001 and

Cohen's *d* is equal to or greater than .3.

^aA negative Cohen's *d* indicates a directionality opposite to that hypothesized.

Table 4

Means and Standard Deviations for MMPI-3 Scales Between Samples (N = 321)

MMPI-3 Scale	KSU (n = 197)			WCU (n = 124)			t(319) ^a	p value	Cohen's d
	% Elevated	M	SD	% Elevated	M	SD			
Validity									
Combined Response Inconsistency*	--	47.30	8.10	--	51.80	9.20	-4.56	< .001	.52
Variable Response Inconsistency*	--	48.20	8.10	--	51.80	9.30	-3.66	< .001	.42
True Response Inconsistency	--	55.30	5.90	--	56.00	6.30	0.99	.162	.11
Infrequent Responses	--	47.80	10.20	--	50.90	10.70	-2.60	.005	.30
Infrequent Psychopathology Responses	--	50.50	10.80	--	54.00	10.90	-2.82	.003	.32
Infrequent Somatic Responses*	--	49.70	10.70	--	54.80	11.80	-3.97	< .001	.46
Symptom Validity	--	50.80	10.20	--	52.10	11.00	-1.03	.152	.12
Response Bias*	--	50.40	10.90	--	54.40	11.20	-3.14	< .001	.36
Uncommon Virtues	--	52.10	8.70	--	51.20	8.90	0.95	.172	.11
Adjustment Validity	--	52.20	10.20	--	50.60	8.90	1.50	.068	.17
<i>Somatic/Cognitive</i>									
Somatic Complaints (RC1)*	8.1	49.06	10.22	17.7	53.35	9.83	-3.71	< .001	.43
Malaise (MLS)*	5.1	44.14	9.92	8.1	49.27	9.32	-4.61	< .001	.53
Neurological Complaints (NUC)*	8.1	49.27	9.55	24.2	55.35	10.69	-5.30	< .001	.61
Eating Concerns (EAT)	3.6	49.05	8.53	7.3	50.29	10.61	-1.10 ^b	.136	.13
Cognitive Complaints (COG)	13.2	51.02	10.65	16.9	52.95	11.16	-1.55	.061	.18
<i>Emotional/Internalizing</i>									
Emotional/Internalizing Dysfunction (EID)	8.6	48.30	10.10	11.3	51.30	10.00	-2.64	.004	.30
Demoralization (RCd)*	6.1	47.00	9.40	14.5	50.50	10.40	-3.14	< .001	.36
Suicide/Death Ideation (SUI)	8.1	45.80	6.60	16.9	47.90	10.30	-2.03 ^c	.022	-.26

MMPI-3 Scale	KSU (n = 197)			WCU (n = 124)			t(319) ^a	p value	Cohen's d
	% Elevated	M	SD	% Elevated	M	SD			
Helplessness/ Hopelessness (HLP)	4.1	45.30	8.40	7.3	46.00	8.40	-.71	.239	-.08
Self-Doubt (SFD)	10.7	48.90	9.90	15.3	50.90	10.70	-1.67	.048	-.19
Inefficacy (NFC)	9.6	48.40	9.70	13.7	51.10	10.20	-2.37	.009	-.27
Low Positive Emotions (RC2)	6.1	47.30	9.70	8.1	49.60	8.60	-2.15	.016	-.25
Introversion/Low Positive Emotions (INTR)	6.6	44.68	9.13	6.5	48.46	8.72	-3.68	< .001	-.42
Dysfunctional Negative Emotions (RC7)	17.3	51.30	11.0	22.6	54.50	10.30	-2.61	.005	-.30
Stress (STR)	17.3	52.10	11.1	30.6	55.30	12.00	-2.38 ^d	.009	-.28
Worry (WRY)*	15.7	48.70	10.2	28.2	52.80	10.80	-3.41 ^e	< .001	-.40
Compulsivity (CMP)*	24.4	52.40	11.8	46.8	59.70	11.80	-5.35	< .001	-.61
Anxiety-Related Experiences (ARX) *	10.2	48.00	10.9	17.7	52.70	11.30	-3.76	< .001	-.43
Anger Proneness (ANP)	8.6	50.60	9.4	13.7	52.40	10.10	-1.69	.046	-.19
Behavior Restricting Fears (BRF)	8.4	51.70	11.9	8.1	52.30	10.70	-.52	.301	-.06
Negative emotionality/ neuroticism (NEGE)	10.7	50.61	10.50	21.0	54.30	11.56	-2.88 ^f	.002	-.34
Thought Dysfunction									
Thought Dysfunction (THD)*	5.6	48.36	9.89	11.3	54.02	9.43	-5.09	< .001	-.58
Ideas of persecution (RC6)*	8.1	50.77	10.26	12.9	54.41	10.29	-3.10	.001	-.36
Aberrant Experiences (RC8)*	6.6	47.29	10.29	15.3	54.15	9.87	-5.91	< .001	-.68
Psychoticism (PSYC)*	6.6	48.36	9.95	13.7	54.04	9.47	-5.08	< .001	-.58
Behavioral/Externalizing									
Behavioral/Externalizing Dysfunction (BXD)*	0.0	43.35	6.03	.8	45.63	6.59	-3.19	< .001	-.37
Antisocial Behavior (RC4)*	0.0	42.15	5.31	.8	44.30	6.12	-3.33	< .001	-.38
Family Problems (FML)	6.6	45.72	9.46	4.8	46.44	8.45	-.69	.247	-.08
Juvenile Conduct (JCP)	0.0	43.21	5.96	.8	44.43	6.52	-1.71	.044	-.20

MMPI-3 Scale	KSU (<i>n</i> = 197)			WCU (<i>n</i> = 124)			<i>t</i> (319) ^a	<i>p</i> value	Cohen's <i>d</i>
	% Elevated	<i>M</i>	<i>SD</i>	% Elevated	<i>M</i>	<i>SD</i>			
Substance Abuse (SUB)*	1.0	42.77	5.97	1.6	45.62	7.45	-3.60 ^g	< .001	-.43
Hypomanic Activation (RC9)*	8.1	49.32	9.02	13.7	52.81	9.82	-3.35	< .001	-.37
Impulsivity (IMP)	7.1	47.39	9.08	17.7	50.85	11.09	-2.91 ^h	.002	-.35
Activation (ACT)	14.7	51.56	9.02	23.4	54.03	9.00	-2.40	.008	-.28
Aggression (AGG)*	4.6	47.11	8.64	11.3	51.57	10.69	-4.10	< .001	-.47
Cynicism (CYN)	9.1	49.04	8.93	10.5	51.39	8.86	-2.30	.011	-.26
Disconstraint (DISC)*	0.0	42.87	5.89	1.6	45.49	6.49	-3.73	< .001	-.43
<i>Interpersonal Functioning</i>									
Self-Importance (SFI)	7.6	51.14	9.14	14.5	53.62	10.91	-2.11 ⁱ	.018	-.25
Dominance (DOM)	7.6	48.48	8.52	14.5	49.39	10.32	-.82 ^j	.207	-.10
Aggressiveness (AGGR)	3.6	47.11	7.66	8.1	48.29	9.50	-1.17 ^k	.122	-.14
Disaffiliativeness (DSF)*	8.6	47.62	8.93	9.7	50.80	8.79	-3.12	< .001	-.36
Social Avoidance (SAV)*	6.1	44.79	9.23	4.8	48.02	8.98	-3.01	.001	-.35
Shyness (SHY)	11.2	49.46	10.26	14.5	51.79	10.84	-1.94	.027	-.22

Note. MMPI-3 = Minnesota Multiphasic Personality Inventory - 3rd Edition

^aEqual variances assumed except where noted. ^bEqual variances not assumed, *t*(220.54). ^cEqual variances not assumed, *t*(187.48).

^dEqual variances not assumed, *t*(246.79). ^eEqual variances not assumed, *t*(246.79). ^fEqual variances not assumed, *t*(243.02). ^gEqual variances not assumed, *t*(219.92). ^hEqual variances not assumed, *t*(223.578). ⁱEqual variances not assumed, *t*(227.86). ^jEqual variances not assumed, *t*(225.16). ^kEqual variances not assumed, *t*(221.003).

*Indicates a statistically significant difference between samples on this scale at the pre-established effect size criterion (*d*=.30) and *p* ≤ .001.

MENTAL HEALTH CONCERNS OF STUDENT-ATHLETES AND NON-ATHLETES

Table 5

Significant Differences in MMPI-3 Scales Between Samples

MMPI-3 Scale	<i>p</i> -value	Cohen's <i>d</i> ^a	% elevated	
			KSU	WCU
Higher-order				
Thought Dysfunction (THD)	<.001	-.58	5.6	11.3
Behavioral/Externalizing Dysfunction (BXD)	<.001	-.37	0.0	0.8
Restructured Clinical				
Somatic Complaints (RC1)	<.001	-.43	8.1	17.7
Demoralization (RCd)	<.001	-.36	6.1	14.5
Ideas of Persecution (RC6)	.001	-.36	8.1	12.9
Aberrant Experiences (RC8)	<.001	-.68	6.6	15.3
Antisocial Behavior (RC4)	<.001	-.38	0.0	0.8
Hypomanic Activation (RC9)	<.001	-.37	8.1	13.7
Somatic-Cognitive specific problems				
Malaise (MLS)	<.001	-.53	5.1	8.1
Neurological Complaints (NUC)	<.001	-.61	8.1	24.2
Emotional/Internalizing specific problems				
Worry (WRY)	<.001	-.40	15.7	10.2
Compulsivity (CMP)	<.001	-.61	24.4	11.8
Anxiety-Related Experiences (ARX)	<.001	-.43	10.2	17.7
Behavioral/Externalizing specific problems scales				
Substance Abuse (SUB)	<.001	-.43	1.0	1.6
Aggression (AGG)	<.001	-.47	4.6	11.3
Interpersonal Functioning specific problems				
Disaffiliativeness (DSF)	<.001	-.36	8.6	9.7
Personality Psychopathology-5				
Psychoticism (PSYC)	<.001	-.58	6.6	13.7
Disconstraint (DISC)	<.001	-.43	0.0	1.6

Note. Statistical significance is indicated when the *p*-value is equal to or less than .001 and

Cohen's *d* is equal to or greater than .3.

^aA negative Cohen's *d* indicates a directionality opposite to that hypothesized.