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A comprehensive examination of factors impacting collegiate athletes' utilization of psychological assessment and intervention services

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Abstract

Although collegiate athletes underutilize mental health programming, investigators have rarely examined factors that may influence their participation in such programs. The current study examined how structured interviews and demographic factors influence collegiate athletes to use psychological programming. Two-hundred and eighty-nine collegiate athletes were referred to the study. They were screened for mental health and randomly assigned to one of two semi-structured interviews based on experimental phase. Participants in Phase I received standard engagement (SE; $N = 35$) or SE + discussion of mental health (DMH; $N = 44$). Phase II participants received SE + DMH ($N = 82$) or SE + DMH + discussion of personal ambitions (DPA; $N = 66$). Phase III participants received SE + DMH + discussion about their culture of choice (DCC; $N = 25$) or SE + DMH + discussion of sport culture (DSC; $N = 37$). After receiving the respective interview participants were offered psychological assessment and intervention. χ^2 analyses revealed class standing, mental health symptom severity, referral type, and type of engagement interview influenced program commitment/utilization. Logistic regression analyses indicated SE + DMH + DPA and SE + DMH + DSC uniquely improved assessment attendance

whereas referrals from coaches/teammates, participation in sport performance workshops, and senior status uniquely improved assessment and intervention attendance.

KEYWORDS
collegiate athlete, counseling, wellness

1 | INTRODUCTION

In the United States, approximately 460,000 college students participate annually in the National Collegiate Athletics Association (NCAA), more than two million participate annually in club sports (National Association of Intercollegiate Athletics, 2017; National Collegiate Athletic Association, 2016; Pennington, 2008), and more than eight million compete annually in intramural sports (Dugan et al., 2014; National Intramural and Recreational Sports Association, 2015). Although rates of sport participation are difficult to compare across nations, the importance of sport participation to physical health is consistently recognized across the globe (see van Bottenburg et al., 2005).

The relationship between sport participation and mental health symptomology in collegiate athletes is not clear (Donohue et al., 2018a). However, extant study results usually indicate slightly higher or about the same psychiatric symptom severity for athletes as compared with non-athletes (Gorczynski et al., 2017; Gulliver et al., 2015; Martens et al., 2006; Reardon & Factor, 2010; Rice et al., 2016; Sundgot-Borgen & Torstveit, 2004). Psychiatric concerns in collegiate-athlete populations have resulted in the prioritization of mental health treatment recommendations and protocols (Moreland et al., 2018; NCAA Sport Science Institute and the NCAA, 2016; Neal et al., 2015). These trends have engendered controlled empirical development of sport-specific mental health programs for athletes (Donohue et al., 2018a). However, collegiate athletes, as compared with their nonathlete peers, appear to underutilize programs that are designed to improve psychological functioning (Brown et al., 2014; Gulliver et al., 2012a) and express less positive attitudes towards mental health intervention (Breslin et al., 2017; Watson, 2005). The 2016 Association for University and College Counseling Centers Directors Annual Survey indicates collegiate athletes are less represented in campus counseling centers than nonathlete peers (Reetz et al., 2016). These findings have piqued interest of researchers across the globe to discover factors that improve collegiate athletes' access to and engagement in mental health services (Neal et al., 2015), which is a focus of the current study.

As compared with female athletes, male athletes appear less accepting of psychological services (Moreland et al., 2018) and more likely to perceive mental health help-seeking behavior as a sign of weakness (Gulliver et al., 2012a). Male athletes report less interest in pursuing psychological intervention and endorse less favorable views towards psychological intervention in general (Barnard, 2016; Maniar et al., 2001; Martin et al., 1997; Martin et al., 2001; Martin, 2005; Wrisberg et al., 2009). Female collegiate athletes, relative to male athlete peers, report greater receptivity to help from coaches and teammates, and expect to be more committed to psychological intervention (Martin et al., 2001). Collectively, these results suggest female athletes consistently evidence more favorable attitudes towards mental health services than their male counterparts. However, gender comparisons in mental health service utilization from the point of entry to intervention have yet to occur.

The influence of ethnicity/race and culture on mental health service utilization in diverse collegiate athlete samples has yet to be examined in methodologically sound studies (Kontos & Breland-Noble, 2002). Ethnicity has been found to be unrelated to elite collegiate athletes' willingness to seek mental skills training (Wrisberg et al., 2009). However, cultural factors (e.g., nationality) may impact athletes' attitudes towards sport psychology (Anderson et al., 2004; Martin et al., 1997). Indeed, student-athletes have reported problems due to their ethnic and racial backgrounds (Beamon, 2014), and they believe sport psychology consultants should be familiar with

sport culture (Lubker et al., 2008). Thus, there is a great need to examine how race/ethnicity impact mental health service utilization among racially and ethnically diverse collegiate athletes.

To our knowledge, scientists have yet to examine the influence of age or class standing on college student-athletes' mental health help-seeking behavior. Some studies suggest mental health interventions are attended less often by freshmen and sophomores compared to juniors and seniors in the general collegiate student population (Masuda et al., 2012; Mendoza et al., 2015) and college students younger than 19 years of age report less use of traditional mental health services as compared to older students (Sontag-Padilla et al., 2016). In contrast, students have reported similar rates of mental health service utilization across class standing (Center for Collegiate Mental Health, 2018). Therefore, research studies are needed to better understand the influence of age and/or class standing on mental health service utilization in collegiate athletes.

Collegiate athletes in most sports experience greater time demands while participating in their respective sport during the on-season (Etzel et al., 1991), potentially making it difficult for them to access and utilize mental health care services. For instance, during the competitive on-season, NCAA student athletes participate in sport-related activities up to 20 h per week. However, this does not include travel time, voluntary sport-related activities, training room activities, and study hall requirements. Alternatively, when off season, NCAA student-athletes participate in only 8 h of sport-related activities and generally have less travel responsibilities (The National Collegiate Athletic Association, 2009). Time constraints, therefore, may be a major barrier to accessing psychological treatment in student-athlete populations (Etzel et al., 1991; Lopez & Levy, 2013; Watson, 2006). On the other hand, it may be that collegiate athletes experience more pressure or stress during the on-season, leading them to desire relatively more professional mental health services during this time of the year. Therefore, it is important to examine how being in- or off-season influences mental health service utilization in collegiate athletes.

According to the National Survey of College Counseling Centers (see Gallagher, 2015), a majority of collegiate students receiving mental health counseling experience psychological problems that meet diagnostic criteria for a mental health condition. Recent trends in college counseling centers demonstrate greater severity of mental health symptoms and higher rates of mental health counseling utilization in the college population at large (Benton et al., 2003; Erdur-Baker et al., 2006; Robbins et al., 1985; Xiao et al., 2017). It is unclear whether these trends reflect a true increase in the prevalence of mental health conditions, greater mental health awareness, and/or increases in help-seeking behavior (Hunt & Eisenberg, 2010). To our knowledge, no investigators have examined how mental health symptom severity, utilizing validated mental health assessment measures, influences mental health service utilization in collegiate athlete populations.

Collegiate athletes with a history of sport psychology consultation or mental skills training services report more positive attitudes towards sport psychology compared to athletes who have not reported these experiences (Anderson et al., 2004; Wrisberg et al., 2009). Moreover, when athletes' previous experience with sport psychology consultation is rated highly effective, as compared with low effectiveness, they report being more willing to pursue future mental skills training (Wrisberg et al., 2009). However, investigators have yet to examine how mental health service experiences influence subsequent utilization of mental health services in collegiate athletes (Moreland et al., 2018). This is important because there may be inherent differences in how mental health services and sport performance-oriented programming are experienced.

It is also important to consider mental health service utilization may be influenced by the type of referral to treatment (Gulliver et al., 2012b). For instance, predominately female, Caucasian collegiate athletes have reported increased likelihood of attending counseling when referred by a family member, as opposed to themselves, a teammate, or a coach (Wahto et al., 2016). However, the influence of gender on collegiate athletes' mental health service utilization is undetermined. Coaches play an important role in connecting collegiate athletes to treatment and have been described as "gate-keepers" for mental health services, as at least some athletes have endorsed that they would seek professional help at the advice of their coach (Biggin et al., 2017; Mazzer & Rickwood, 2009). Therefore, research examining the relationship between referral type (e.g., athletic departments, athletic team, nonathletic environments) and mental health service utilization is needed.

Although most collegiate athletes participate at the club or intramural level (Dugan et al., 2014), studies involving mental health service utilization in collegiate athletes have almost exclusively focused on elite athletes (Maniar et al., 2001; Wrisberg et al., 2009). There is some support to suggest elite athletes may resist mental health counseling (Watson, 2005) and are more accepting of counseling intervention to address sport performance than mental health concerns (Gulliver et al., 2012b), while other study results suggest there are no differences in attitudes about sport psychology between world class, international, developmental, or junior athletes (Anderson et al., 2004). Therefore, it is unclear if NCAA, club, and intramural athletes evidence similar mental health utilization rates. This is important because sport participation is growing in both competitive and recreational sport. Therefore, studies examining the mental health service utilization of various athlete types (i.e., NCAA, club, intramural athletes) are needed.

Extant studies have examined mental health service engagement strategies in collegiate athletes. Donohue et al. (2004) conducted a randomized controlled trial examining two interview formats on college athletes' attitudes towards mental health seeking. Participants assigned to discuss the benefits of sport psychology demonstrated improved openness to discuss personal issues with a sport psychology consultant compared with participants who were prompted to discuss their sport. In another controlled trial, Gulliver et al. (2012a) assessed the efficacy of three internet-based mental health interventions on young elite athletes' mental health help-seeking attitudes, intentions, and behavior. Intervention included: (a) mental health literacy and destigmatization psychoeducation, (b) feedback about previously completed depression and anxiety quizzes, or (c) a help-seeking list of resources. No significant between-group intervention effects were found in service utilization, although the intensive intervention reduced stigma associated with mental health relative to the control condition. Donohue et al. (2016) compared standard engagement (SE) with SE plus discussion of mental health/substance use in collegiate athletes. Results demonstrated that participants who were randomly assigned to the more involved engagement condition were more likely to consent to participate in goal-oriented intervention specific to sport and life in general, but no significant intervention effects were found in therapeutic attendance. Collectively, engagement-oriented interventions appear to increase commitment and positive attitudes towards mental health help seeking in collegiate athletes but have thus far not been found to increase attendance to psychological interventions.

The majority of research examining mental health service utilization in college athletes has focused on attitudes, perceived facilitators and barriers specific to access to care, and preferences towards psychological interventions using questionnaires or focus group methodology (Gulliver et al., 2012b; Lopez & Levy, 2013; Moreland et al., 2018; Watson, 2005). However, researchers have cautioned about using self-reports of willingness and intentions as proxies for actual behavioral treatment attendance (see comprehensive review by Moreland et al., 2018). To our knowledge, only three studies involving collegiate athletes have examined psychological help seeking behavior (i.e., attendance) as an identified outcome in controlled research (Donohue et al., 2004; Donohue et al., 2016; Gulliver et al., 2012a). Therefore, determining factors that are likely to influence actual mental health service utilization may assist outreach efforts and intervention development.

2 | CONTEXT OF CURRENT STUDY

The current study occurred as a secondary aim within an overarching five-year controlled intervention outcome study that was initially funded in 2012 by the National Institutes on Drug Abuse in the United States. The chief aim of the overarching outcome study was to empirically develop the first sport specific substance abuse intervention program for collegiate athletes capable of addressing comorbid mental health concerns. Immediately before initiating this trial administrators from the Athletics Department and campus counseling center of the host university indicated that athletes were grossly underutilizing mental health assessment and intervention services, and as indicated in the aforementioned review there were no interventions available from the research literature to encourage participation of athletes in mental health intervention. Thus, at the start of the overarching study (results published in Donohue et al., 2018a), there was an established need to formally develop methods of

referring and engaging collegiate athletes to mental health services while carefully monitoring factors that have been indicated to potentially influence the pursuit of such care. To better assist generalization of study results to campus counseling centers, inclusionary criteria specific to the overarching study were relaxed to permit collegiate athletes to participate regardless of mental health diagnostic severity or type (participants did have to evidence alcohol or drug use at least once during the 4 months before the study); and standardized methods of mental health service engagement were longitudinally developed in a series of three sequentially occurring phases throughout the overarching study. Each phase offered on a random basis one of two engagement interventions that were designed to improve service utilization.

Two-hundred and eighty-nine collegiate athletes were self- or other-referred to the overarching outcome study and included in the current study that was chiefly focused on evaluating their commitment and utilization of psychological assessment and intervention services. It was hypothesized that more women than men, Caucasian than ethnic/racial minority, seniors than freshmen, NCAA than club and intramural, off-season than in-season, with a history of mental health/sport psychology experience than without, higher mental health symptom severity than lower, team/coach referrals than other referrals; and receiving enhanced engagement interventions than SE would commit to, and attend, psychological assessment and intervention services.

3 | METHODS

3.1 | Participants

Participants were 289 collegiate athletes (i.e., NCAA = 131, intramural = 120, club = 38) at a Division I NCAA university in the United States. The mean age of participants was 19.85 years (*SD* = 1.97). As can be seen in Table 1, approximately half of the students were female, 41% were Caucasian, students were most frequently in their first year of college (36%), 45% were NCAA athletes, and 62% of the students reported that they were currently participating in their sport (i.e., in-season). The majority of students (88%) reported no prior experience with mental health counseling or sport psychology. The most common referrals were self-initiated to obtain course credit in an entrance level psychology class (56%).

3.2 | Procedure

3.2.1 | Method of recruitment and flow of participants through study

Collegiate athletes were referred to the current study to determine their interest in participating in one of two psychological interventions aimed at improving their performance in sports and life in general (the optimum performance program in sports [TOPPS] or traditional campus counseling). Referrals occurred through the athletics department (i.e., administrators, office of student conduct, athletic trainers, medical staff; *n* = 8), coaches/teammates (*n* = 28), after study presentations at campus events and team workshops (*n* = 90), and to earn class credit (*n* = 163). For this study participants were required to be at least 18 years old, involved in organized sport competition while enrolled in the university, and use alcohol or non-prescribed drugs at least once during the past 4 months.

Upon completion of a demographic questionnaire and symptom checklist 90-revised (SCL90-R; Derogatis et al., 1976), participants were randomly assigned to one of two engagement interventions that were designed to encourage their participation in TOPPS or traditional campus counseling. The engagement interventions lasted approximately 20 min and were provided on an individual basis (i.e., one interviewer and one participant) by trained undergraduate and graduate school students. The providers used standardized checklists and semi-structured interviews to assist

TABLE 1 Demographic and engagement intervention variables for athletes who (1) committed to participate in psychological programming, (2) attended psychological assessment, and (3) attended psychological intervention

	Total (*N* = 289)		Consented to intervention (*N* = 87)			Attended assessment (*N* = 65)			Attended intervention (*N* = 48)		
Variables	***N***	**%**	***N***	**%**	χ^2	***N***	**%**	χ^2	***N***	**%**	χ^2
Gender					0.00			0.28			1.95
Male	145	50.2	44	30.3		35	24.1		29	20.0	
Female	144	49.8	43	29.9		30	20.8		19	13.2	
Ethnicity					7.51			6.79			6.06
White/Caucasian	117	40.5	40	34.2		24	20.5		19	16.2	
Black/African American	44	15.2	9	20.4		8	18.2		5	11.4	
Asian/Asian American	24	8.3	6	25.0		6	25.0		5	20.1	
Hispanic/Latino	34	11.8	14	41.2		13	38.2		10	29.4	
Pacific Islander	11	3.8	1	9.1		1	9.1		1	9.1	
Other	59	20.4	17	28.8		13	22.0		8	13.5	
Class standing					7.34			10.59**			9.91*
Freshman	105	36.3	22	21.0		13	**12.4**		11	**10.5**	
Sophomore	87	30.1	28	32.2		22	25.3		12	13.8	
Junior	60	20.8	23	38.3		18	30.0		14	23.3	
Senior	37	12.8	14	37.8		12	32.4		11	**29.7**	
Type of athlete					1.71			2.18			1.32
NCAA	132	45.7	44	33.3		32	24.2		24	18.2	
Club	34	11.8	11	32.4		10	29.4		7	20.6	
Intramural	123	42.6	32	26.0		23	18.7		17	13.8	
Season					1.49			0.88			0.33
In season	178	62.0	59	33.1		44	24.7		32	18.0	
Out of season	109	38.0	28	25.6		21	19.3		16	14.7	
Mental health[a]					4.58			7.58*			4.84
Healthy	146	50.5	42	28.8		31	21.2		22	15.1	
Subclinical	105	36.3	28	26.7		19	18.1		15	14.3	
Clinical	38	13.1	17	44.7		15	**39.5**		11	28.9	
History of counseling					0.14			0.00			0.00
Yes	35	12.1	12	34.3		8	22.8		6	17.1	
No	254	87.9	75	29.5		57	22.4		42	16.5	
Referral type					16.50**			20.63**			17.18**
Athletic department	8	2.8	2	25.0		2	25.0		2	25.0	
Performance workshop	90	31.1	35	**38.9**		28	**31.1**		21	**23.3**	
Coach/teammate	28	9.7	15	**53.6**		13	**46.4**		10	**35.7**	
Class credit/ subject pool	163	56.4	35	**21.5**		22	**13.4**		15	**9.2**	
Engagement strategy					13.73**			15.36**			10.16*
SE	35	12.1	2	**5.7**		2	**5.7**		2	**5.7**	
SE + DMH	126	43.6	37	29.4		22	17.4		16	12.7	

TABLE 1 (Continued)

	Total (*N* = 289)		Consented to intervention (*N* = 87)			Attended assessment (*N* = 65)			Attended intervention (*N* = 48)		
Variables	***N***	**%**	***N***	**%**	χ^2	***N***	**%**	χ^2	***N***	**%**	χ^2
SE + DMH + DPA	66	22.8	26	39.4		22	**33.3**		18	**27.3**	
SE + DMH + DCC	25	8.7	8	32.0		6	24.0		5	20.0	
SE + DMH + DSC	37	12.8	14	37.8		13	**35.1**		7	18.9	

Note: Bold = cells with adjusted standardized residual $p < 0.05$ corrected for false discovery rate.

Abbreviations: DCC, discussion of cultural choice; DMH, discussion of mental health; DPA, discussion of personal ambitions; DSC, discussion of sport culture; SCL-R-90, symptom checklist 90-revised; SE, standard engagement.

[a]Based on SCL-R-90 global score (0–59 healthy, 60–69 subclinical, 70 and above clinical).

*$p < 0.05$ (uncorrected).

**$p < 0.05$ (corrected for false discovery rate).

protocol adherence. The engagement interventions offered changed over time and were available based on three sequential phases that occurred across several years to foster recruitment into an intervention trial.

Phase I: The first participants in the study were randomly assigned via a coin flip to SE ($n = 35$) or SE plus discussion of mental health/substance use (SE + DMH; n = 44). It was hypothesized that SE and DMH would lead to better commitment and attendance to psychological assessment and intervention. SE was initiated with pleasant greetings and attempts to make participants feel welcome, including conversation about sports. Interviews underscored the intervention outcome study for which they had an opportunity to participate (Donohue et al., 2018a), including its purpose, method of assessment, descriptions of TOPPS and traditional campus counseling, benefits and risks for participation, and opportunities to have questions answered. SE and DMH involved implementation of all components of the aforementioned SE, as well as a review of substance use rates in collegiate athletes, attempts to solicit negative consequences from participants in regard to their substance use, discussion about famous athletes who had reportedly benefitted from psychological intervention, and reviewing a list of negative consequences that sometimes result from substance use. The participants' responses to the SCL90-R were also reviewed, including the provision of empathy for concerns and encouragement that symptoms could be improved with psychological intervention.

Phase II: The second group of participants randomly received SE and DMH ($n = 82$) or SE and DMH and discussion of personal ambitions (SE + DMH + PA; $n = 66$). It was hypothesized that participants who were randomly assigned via coin flip to SE and DMH and PA would evidence significantly greater commitment and attendance to psychological services than participants who were assigned to SE and DMH only. The SE and DMH and DPA condition involved SE and DMH with the addition of discussion about the participants' DPA using a modified version of the semi-structured interview for ethnic consideration in therapy scale format (SSIECTS; Donohue et al., 2006). The ethnic consideration in therapy scale (ECTS) is a psychometrically validated scale that includes six items (7-point Likert-type response set; 7 = extremely agree, 4 = unsure, 1 = extremely disagree). Four items assess the extent to which individuals perceive their ethnic culture is important to them (Ethnic Cultural Importance subscale; my ethnic culture is a big part of my everyday life, my ethnic culture is of great importance to me, there are many things I like about my ethnic culture, my ethnic culture should be addressed in therapy). Two items assess problems that are perceived to be due to one's ethnic culture (Ethnic Cultural Problems subscale; others have said things to me about my ethnic culture that have been offensive to me, I have experienced problems due to my ethnic culture). A validated semi-structured interview is used to review participant responses with the participant, including positive discussion for agreement responses with ethnic cultural importance items and disagreement with ethnic cultural problem

items and empathy for agreement responses with ethnic cultural problem items. In the SE and DMH and DPA condition the ECTS was modified to replace "ethnic" with "personal ambitions."

Phase III: The third group of participants were randomly assigned via coin flip to SE and DMH and discussion of sport culture (DSC; SE + DMH + DSC; $n = 37$) or SE and DMH and discussion of the culture of their choice from a menu of options (SE + DMH + DCC; $n = 25$). It was hypothesized that participants who were randomly assigned to SE and DMH and DCC would commit to, and attend, more psychological services than participants who were randomized to SE and DMH and DSC. The SE and DMH and discussion about participants' DSC (SE + DMH + DSC) included SE and DMH and a review of the participants' sport culture using a modified version of the SSIECTS (Donohue et al., 2006); the ECTS was modified to discuss "sport culture." The SE and DMH and the participants' choice culture from a menu of options (SE + DMH + DCC) included SE and DMH and a review of the participants' culture that was ranked as being most important by the participant from a menu of options (i.e., ethnic, sport, religious, sexual orientation, gender) using the SSIECTS format (Donohue et al., 2006); the ECTS was modified to discuss the "culture of choice."

Descriptions of the available psychological interventions (i.e., TOPPS, traditional campus counseling) were approved by the respective Directors of these programs. The study was approved by the local institutional review board and a federal certificate of confidentiality from the National Institutes of Health was obtained before initiating the study to refute potential mandates in judicial proceedings. No adverse events were determined to be due to the study.

4 | MEASURES

4.1 | Demographics questionnaire

This measure included an assessment of participant demographics, including gender, ethnicity/race, class standing, type of athlete, in- or off-season, mental health level (see SCL90-R below), history of counseling and referral type (see Table 1 for description of these factors).

4.2 | Symptom checklist 90-revised

The SCL90-R was used as an index of overall mental health. The SCL90-R includes 90 items (e.g., "Feeling afraid in open spaces or on the streets") that assess the extent to which participants are bothered by mental health symptoms using a five-point Likert-rating scale (0 = not at all, 4 = extremely). Item responses were summed to obtain the GSI (higher scores indicate greater mental health severity). Reliability and validity of the GSI is well established in community samples (Derogatis, 1994; Horowitz et al., 1988) and collegiate athletes (Donohue et al., 2019). The SCL90-R may be used to assess healthy, subclinical, and clinical levels of mental health (Derogatis et al., 1976).

4.3 | Verbal commitment to psychological assessment and intervention

Immediately after participants received their respective engagement intervention, they were queried to report their interest (yes, no) in completing psychological assessment and up to 12 scheduled one-hour sessions of TOPPS or traditional campus counseling at random.

4.4 | Attendance to psychological assessment

The psychological assessment battery (approximately 2 h) was scheduled approximately one week after a verbal commitment was provided to attend this session. Participants either attended or did not attend this assessment session.

4.5 | Attendance to psychological intervention

The first psychological intervention session was scheduled approximately one week after the psychological assessment session. Participants either attended or did not attend this intervention session.

5 | DATA ANALYSIS

Chi squared analyses were performed to determine which study variables were associated with (a) commitment to participate in psychological assessment and intervention, (b) attendance to psychological assessment session, and (c) attendance to psychological intervention session. To avoid distorting relationships among variables through selection bias (or conditioning on a collider; Rohrer, 2018), the entire sample was used in each analysis (subjects were pooled across experimental phases). Statistically significant results were decomposed by examining standardized residuals for each group. A sensitivity analysis conducted after the current study revealed that a sample of this size had 80% power to detect a small-to-medium effect size in χ^2 analyses involving six groups (specifically, a W of 0.21, which can be interpreted similarly to a Pearson's correlation; the corresponding W for two-group analyses was 0.17). Sensitivity analyses were not conducted for adjusted standardized residual comparisons because we had no a priori expected distributions of the cell counts in each analysis.

To examine which of the variables were uniquely predictive of commitment and service utilization, we entered variables statistically significantly associated with commitment or utilization into logistic regression analyses. For each regression, an area under the curve (AUC) was calculated, which represents the probability that a randomly selected participant who continued clinical engagement had a higher predicted score than a randomly selected participant who did not. An AUC whose 95% confidence interval does not include 0.50 signifies that the regression classified cases better than chance alone would predict. A natural log odds coefficient significantly greater than zero indicated a variable predicted greater commitment or attendance, whereas a log odds coefficient significantly less than zero indicated that variable was associated with reduced commitment or utilization. We reference coded nominal predictors and analyzed ordinal predictors without transformation. We used a critical α level of 0.05 for all comparisons. We applied the Benjamini and Hochberg (1995) correction to p values across all independent variables within each of the three dependent variables to control false discovery rate.

6 | RESULTS

As indicated in Table 1, of the 289 participants interviewed, 87 committed to be scheduled for assessment and intervention, 65 attended the psychological assessment session, and 48 attended at least one psychological intervention session.

6.1 | Chi squared analyses

Table 1 shows the χ^2 results describing how participant characteristics and engagement interventions were associated with commitment to psychological assessment and intervention, assessment attendance, and psychological intervention attendance.

6.1.1 | Gender, race or ethnicity, athlete type, and in- or off-sport season

There were no significant differences between men and women, among racial/ethnic groups, among types of athlete, or whether the athlete was in- or off-season on commitment or attendance at assessment or at least one intervention session (all *p*s > 0.15).

6.1.2 | Mental health history and symptom severity

History of receiving mental health services was not associated with commitment or assessment or intervention attendance (*p*s > 0.5). Current psychiatric symptom levels were associated with assessment attendance (all other *p*s > 0.08). Adjusted residual analyses revealed that those with clinically significant levels of psychopathology were more likely to attend assessment than non-symptomatic groups.

6.1.3 | Class standing

Class standing was associated with utilizing assessment services after correcting for the false discovery rate; it was also associated with utilizing at least one intervention session without that correction. Adjusted residual analyses revealed that freshmen were less likely to attend either assessment or intervention sessions, and seniors were more likely to attend at least one intervention session.

6.1.4 | Referral source

Referral source was associated with commitment, assessment attendance, and intervention attendance. Adjusted residual analyses revealed that those referred from Performance Workshop Presentations and coaches/teammates were more likely to commit and utilize services, whereas those referred to obtain course credit for study participation were less likely to do so.

6.1.5 | Engagement condition

Engagement intervention type was associated with commitment and assessment utilization after controlling for the false discovery rate; it was also associated with intervention utilization without that control. Adjusted residual analyses revealed that the SE + DMH + DPA strategy was associated with greater assessment and intervention utilization, and the SE + DMH + DSC strategy was associated with greater assessment utilization. Conversely, the standard engagement strategy was associated with lower commitment and assessment utilization.

TABLE 2 Natural log odds ratios (standard errors) for variables predicting commitment and service utilization

Variable	Commitment	Assessment	Intervention
School year	–	0.31 (0.15)*	0.36 (0.16)*
Mental health symptom severity group	–	0.58 (0.22)**	–
Referral (vs. participant pool)			
Athletic department	0.29 (0.87)	0.93 (0.94)	1.21 (0.89)
Performance workshop presentation	0.75 (0.30)*	0.92 (0.35)**	0.91 (0.40)*
Coach or teammate	1.20 (0.44)**	1.38 (0.48)***	1.34 (0.51)**
Engagement (vs. standard method)			
DMH	1.75 (0.76)*	1.09 (0.79)	0.64 (0.80)
DMH + DPA	2.11 (0.78)**	1.99 (0.80)*	1.53 (0.80)
DMH + DCC	1.61 (0.86)	1.16 (0.91)	0.74 (0.93)
DMH + DSC	1.89 (0.82)*	1.90 (0.85)*	0.67 (0.89)
AUC (95% CI)	0.67 (0.60, 0.74)	0.75 (0.68, 0.82)	0.72 (0.64, 0.81)

Note: "–" indicates predictor not entered.

Abbreviations: AUC, area under the curve for predicting clinical engagement; CI, confidence interval; DCC, discussion of cultural choice; DMH, discussion of mental health; DPA, discussion of personal ambitions; DSC, discussion of sport culture; SE, standard engagement.

*$p < 0.05$.

**$p < 0.01$.

***$p < 0.005$.

6.2 | Logistic regressions

As demonstrated in Table 2, each of the three clinical engagement variables was significantly predicted by the independent variables that emerged from the χ^2 analyses.[1] Assessment use was more accurately predicted than commitment to receive services, with intervention use's predictive accuracy falling between those two.

Compared to SE, DMH + DPA uniquely predicted a 725% increase in commitment and a 628% increase in assessment use. DMH + DSC also uniquely predicted a 561% increase in commitment and a 566% increase in assessment use. SE + DMH engagement uniquely predicted 476% greater commitment.

Compared to recruitments from the participant pool, Performance workshop referrals uniquely predicted greater clinical engagement (113% increase in commitment, 150% increase in assessment, and 149% increase in intervention). Referrals from coaches or teammates also uniquely predicted greater clinical engagement (230% increase in commitment, 297% increase in assessment, and 282% increase in intervention). Each year in school beyond the first uniquely predicted 37% greater assessment and 43% intervention use, and each step in mental health symptom severity beyond healthy uniquely predicted 79% greater assessment use.

[1]The AUCs for logistic regressions including all independent variables as predictors fell within the confidence intervals of the AUCs for the logistic regressions that included only the independent variables related to each clinical outcome (0.73 for consent to be assessed, 0.77 for receiving assessment, and 0.78 for receiving intervention) as predictors. Thus, adding all independent variables did not improve prediction of clinical engagement. Furthermore, entering all independent variables as predictors in these models yielded higher (i.e., less desirable) values of Akaike's Information Criterion (342 vs. 349 for commitment, 289 vs. 295 for assessment, and 250 vs. 252 for intervention). Consequently, after accounting for their reduced parsimony, the logistic regression models using all possible predictors fit more poorly than those with only the predictors identified in the chi squared analyses.

7 | DISCUSSION

The current study used a multiphase longitudinal randomized controlled trial design to examine the influence various factors have on collegiate athletes' mental health service commitment and utilization. In support of the study hypotheses, χ^2 analyses revealed that class standing, mental health symptom severity, referral type, and type of engagement intervention were significantly related to at least one level of service utilization. Inconsistent with our study hypotheses, analyses showed gender, ethnicity/race, type of athlete, being in- or off-season, and history of counseling evidenced no relation to mental health commitment or attendance.

Findings related to class standing were consistent with Masuda et al. (2012) and Mendoza et al. (2015), as results revealed fewer freshmen pursued psychological assessment and intervention, while more seniors attended intervention. This finding is concerning given that freshmen student-athletes are at a greater risk for mental health symptomology when compared to their older teammates (Yang et al., 2007). Therefore, practitioners are encouraged to consider the wide-scale implementation of evidence-supported outreach programming to motivate freshmen student-athletes to participate in psychological treatment. We believe the implementation of cost-effective mental health awareness programs that incorporate the internet (Gulliver et al., 2012a; van Raalte et al., 2015) and video-based technologies (Kern et al., 2017) may be especially promising in this regard. Consistent with these efforts, formalized procedures have been disseminated to assist implementation of mental health screening procedures in NCAA athletes (Tomalski et al., 2019) and sport specific screens have been validated to accurately identify and predict appropriate mental healthcare referrals in collegiate (Donohue et al., 2019; Hussey et al., 2019) and professional athletes (Donohue et al., 2018b; Rice et al., 2019). This is important because the results suggest collegiate athletes who evidence relatively high mental health symptom severity may be particularly motivated to pursue psychological assessment; a finding that is consistent with previous studies involving collegiate students from the general population (American College Health Association, 2009; Blanco et al., 2008; Eisenberg et al., 2011).

Referrals from team-based sport performance workshops and from coaches and teammates were associated with greater attendance across all levels of service. Moreover, logistic regression analyses indicated that referrals consequent to sport performance workshops and from teammates and coaches/athletic trainers uniquely predicted intervention attendance. These findings support the important role coaches, athletic trainers and teammates play in mental health engagement, which is consistent with past reports that coaches may act as "gatekeepers" to mental health treatment (Biggin et al., 2017) and extends research that has determined trainers and parents are likely to facilitate mental health service utilization (Moreland et al., 2018). It should be emphasized, however, that some coaches underestimate the prevalence and seriousness of mental health concerns in student-athletes (Biggin et al., 2017) and mental health concerns may be perceived negatively (Gulliver et al., 2012b). Therefore, it is important to educate and train coaches to be advocates in mental health awareness programs. van Raalte et al. (2015) provide a template for the development of web-based awareness programs. Finally, sport performance workshop presentations (which were implemented within the context of teams and supported by coaches in the current study) yielded higher attendance than expected across all levels of service, suggesting sport performance professionals have a role in athletes' utilization of mental health programming (e.g., sport psychologists, certified mental performance consultants through the Association for Applied Sport Psychology).

Previous research suggests outreach programs for student-athletes can increase awareness of the importance of mental health and reduce stigma associated with the pursuit of mental health intervention (Beauchemin, 2014; Breslin et al., 2017). The current data suggest DMH and either personal ambitions (SE + DSM + DPA) or DSC (SE + DSM + DSC) may have a direct benefit on psychological assessment utilization in collegiate athletes. These results are encouraging and consistent with previous studies reporting attitudinal benefits of mental health engagement interventions (Donohue et al., 2004; Donohue et al., 2016;; Gulliver et al., 2012a). However, continued engagement during assessment sessions may be needed to ensure student-athletes receive interventions, as the unique effects of engagement strategy did not continue to receiving interventions. It is also important to

emphasize that the methodology that was used to examine each pair of engagement interventions in experimental sequence was a study limitation, as the finish of phase II and III was not based on a priori decision making but rather convenience (i.e., end of semester and end of study, respectively) and our underlying practical motivation to incrementally improve engagement strategies. Moreover, the number of participants in each experimental phase varied, was relatively low, and participants in experimental conditions were combined across time points. Therefore, although the developed SE + DSM + DSC, and particularly the SE + DSM + DPA, engagements may offer promise in subsequent randomized controlled trials with sufficient power, the results must be interpreted with caution. To assist future studies, the current results provide preliminary service use estimates.

The current study did not identify service utilization differences with respect to gender, ethnicity, athlete type, and being in- or off-season. The absence of gender and ethnicity differences may be a result of efforts to destigmatize mental health interventions through the engagement process and adjusting intervention rationales to be specific to goal accomplishment, which is more consistent with sport culture and the results of Wrisberg et al. (2009). These investigators found ethnicity was unrelated to willingness to attend mental skills training, which may be perceived as less stigmatizing than mental health programming. This finding, if confirmed, provides additional support for the use of engagement strategies like those evaluated here, in overcoming some of the more common barriers to mental health service utilization that have been identified in the literature to date.

Regarding athlete type, studies of psychologically-based service utilization have primarily included samples of elite athletes (Gulliver et al., 2012b; Maniar et al., 2001; Watson, 2005; Wrisberg et al., 2009). Therefore, inclusion of NCAA, club and intramural athletes in the current study provides a unique comparison of athlete type in mental health service utilization that assists in generalization of results. The findings revealed athlete type was not associated with varying rates of participation in goal-oriented psychological intervention that was designed to address both sport performance and mental health. This finding is encouraging because it suggests sport-specific psychologically based intervention is potentially relevant to (or desired by) all collegiate athlete populations, better assisting generalization of study results to other nations and potentially supporting sport-specific psychological interventions as a mental health enhancement alternative for both elite and nonelite athletes.

Other investigators have hypothesized that when student-athletes are in-season, they may be less likely to attend psychological treatments due to increased time demands (Etzel et al., 1991). However, data from the current study demonstrate time of season (i.e., being in- or off-season) is unrelated to service utilization. Some participants in the current study informally reported that they experience increased stress during the on-season, which may increase perceptions of need for goal-oriented intervention. Nevertheless, because their schedules are noticeably busier during the on-season (The National Collegiate Athletic Association, 2009) it may be particularly difficult for collegiate athletes to pursue psychological intervention during this time. On the other hand, off-season athletes have more time to attend psychological intervention, but may be less likely to pursue intervention during this time due to relatively lower stress levels (e.g., less participation in competitive sport activities, more time available for coursework). Future research is needed to determine if these assumptions are valid.

Studies have indicated that previous experience in psychologically-based interventions that are focused on sport performance have been shown to positively impact collegiate athletes' attitudes towards these services in the future (Anderson et al., 2004; Gulliver et al., 2012a; Wrisberg et al., 2009). The current study results add to this body of literature suggesting a history of mental health service utilization may be unrelated to participation in the examined psychological interventions. It is important to interpret the latter findings within study context, however. For instance, all participants received very detailed rationales for the interventions, including interactive engagement interviews that may have alleviated concerns that are often present when considering mental health services. To some extent these interventions may have compensated for a lack of therapeutic experience (i.e., those without previous mental health experience may have been able to appreciate or envision programming in a non-stigmatizing context). Moreover, confounding variables, such as underlying motivation for services, are likely to vary across studies and across time. Indeed, the current study occurred in three phases across several years. Therefore, it is possible inherent unexamined changes occurred over the years that may have at least partially influenced study findings. Future studies of mental

health service utilization will need to examine both participation and underlying attitudes for service provision, which was a limitation in the current study.

The current study incorporated novel referral systems, such as those originating from class presentations and opportunities to receive course credit. Indeed, a variety of referral systems were examined, with athletes in each of these systems evidencing their own unique motives for pursuing goal-oriented services. Formal comparisons of the various referral systems permitted an assessment of their potential pros and cons. For instance, the aforementioned novel referral systems provided opportunities to economically speak to a relatively large audience of athletes, potentially decreasing stigma in their pursuit of mental health care and providing opportunities for some athletes to participate in programming that may have otherwise been perceived to be unavailable. However, these referrals were less efficient as compared with some of the more traditional referrals (i.e., from coaches and teammates, subsequent to sport performance workshops). These results have implications for mental health awareness programs, such as Athletes Connected (Kern et al., 2017).

In summary, the results of this study assist development and substantiation of methods of preparing and potentially enhancing mental health service utilization in collegiate athletes, both at the systemic and clinical level. The results support implementation of intervention programs that are focused on encouraging athletic administrators, coaches and teammates to make appropriate referrals to mental health services (van Raalte et al., 2015) and implementation of mental health screens in collegiate athlete populations, particularly during the freshman year. Moreover, the current findings provide preliminary data that strategic referrals consequent to team-based performance workshops, discussing elevations in mental health symptomology after administration of mental health screens, and engagement interventions that stress DMH and personal ambitions are promising in collegiate athletes' utilization of psychological services. Future controlled studies involving collegiate athletes will need to replicate these results in other mental health programs.

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REFERENCES

American College Health Association. (2009). National College Health Assessment Spring 2008 reference group data report (Abridged). *Journal of American College Health*, *57*(5), 477–488. https://doi.org/10.3200/JACH.57.5.477-488

Anderson, A. G., Hodge, K. P., Lavallee, D., & Martin, S. B. (2004). New Zealand athletes' attitudes towards seeking sport psychology consultation. *The New Zealand Journal of Psychology*, *33*(3), 129–136.

Barnard, J. D. (2016). Student-athletes' perceptions of mental illness and attitudes toward help-seeking. *Journal of College Student Psychotherapy*, *30*(3), 161–175. https://doi.org/10.1080/87568225.2016.1177421

Beamon, K. (2014). Racism and stereotyping on campus: Experiences of African American male student-athletes. *Journal of Negro Education*, *83*(2), 121–134.

Beauchemin, J. (2014). College student-athlete wellness: An integrative outreach model. *College Student Journal*, *48*(2), 268–280.

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society*, *57*(1), 289–300. https://doi.org/10.1111/j.2517-6161.1995.tb02031.x

Benton, S. A., Robertson, J. M., Tseng, W. C., Newton, F. B., & Benton, S. L. (2003). Changes in counseling center client problems across 13 years. *Professional Psychology: Research and Practice*, *34*(1), 66–72. https://doi.org/10.1037/0735-7028.34.1.66

Biggin, I. J., Burns, J. H., & Uphill, M. (2017). An investigation of athletes' and coaches' perceptions of mental ill-health in elite athletes. *Journal of Clinical Sport Psychology*, *11*(2), 126–147. https://doi.org/10.1123/jcsp.2016-0017

Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S., & Olfson, M. (2008). Mental health of college students and their non-college- attending peers: Results from the national epidemiologic study on alcohol and related conditions. *Archives of General Psychiatry*, *65*(12), 1429–1437. https://doi.org/10.1001/archpsyc.65.12.1429

Breslin, G., Shannon, S., Haughey, T., Donnelly, P., & Leavey, G. (2017). A systematic review of interventions to increase awareness of mental health and well-being in athletes, coaches and officials. *Systematic Reviews*, *6*(1), 177. https://doi.org/10.1186/s13643-017-0568-6

Brown, G. T., Hainline, B., Kroshus, E., & Wilfert, M. (2014). Mind, body and sport: understanding and supporting student-athlete mental wellness. *NCAA*. Retrieved from. http://ualbanysports.com.s3.amazonaws.com/documents/2019/12/11/614039.pdf

Center for Collegiate Mental Health. (2018). *2017 Annual report*. (Publication no. STA 18-166). Retrieved from https://files.eric.ed.gov/fulltext/ED586224.pdf

Derogatis, L. R. (1994). Scl-90-r: Administration, scoring, and procedures manual. *National Computer Systems*.

Derogatis, L. R., Rickels, K., & Rock, A. (1976). The SCL–90 and the MMPI: A step in the validation of a new self-report scale. *British Journal of Psychiatry*, *128*, 280–289. https://doi.org/10.1192/bjp.128.3.280

Donohue, B., Dickens, Y., Lancer, K., Covassin, T., Hash, A., Miller, A., & Genet, J. (2004). Improving athletes' perspectives of sport psychology consultation: A controlled evaluation of two interview methods. *Behavior Modification*, *28*, 181–193.

Donohue, B., Chow, G. M., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Allen, D. N. (2015). Piloting a family-supported approach to concurrently optimize mental health and sport performance in athletes. *Clinical Case Studies*, *14*(3), 159–177. https://doi.org/10.1177/1534650114548311

Donohue, B., Dowd, A., Philips, C., Plant, C. P., Loughran, T., & Gavrilova, Y. (2016). Controlled evaluation of a method to assist recruitment of participants into treatment outcome research and engage student-athletes into substance abuse intervention. *Journal of Clinical Sport Psychology*, *10*(4), 272–288. https://doi.org/10.1123/jcsp.2015-0022

Donohue, B., Galante, M., Maietta, J., Lee, B., Paul, N., Perry, J. E., Corey, A., & Allen, D. N. (2019). Empirical development of a screening method to assist mental health referrals in collegiate athletes. *Journal of Clinical Sport Psychology*, *13*(4), 561–579. https://doi.org/10.1123/jcsp.2018-0070

Donohue, B., Gavrilova, Y., Galante, M., Burnstein, B., Aubertin, P., Gavrilova, E., Funk, A., Light, A., & Benning, S. D. (2018b). Empirical development of a screening method for mental, social, and physical wellness in amateur and professional circus artists. *Psychology of Aesthetics, Creativity, and the Arts*, *14*(3), 313–324. https://doi.org/10.1037/aca0000199

Donohue, B., Gavrilova, Y., Galante, M., Gavrilova, E., Loughran, T., Scott, J., Chow, G., Plant, C., & Allen, D. N. (2018a). Controlled evaluation of an optimization approach to mental health and sport performance. *Journal of Clinical Sport Psychology*, *12*(2), 234–267. https://doi.org/10.1123/jcsp.2017-0054

Donohue, B., Strada, M. J., Rosales, R., Taylor-Caldwell, A., Hise, D., Ahman, S., Lefforge, N., Kopof, M., Devore, G., Soares, B., Radkovich, B., & Laina, R. (2006). The semistructured interview for consideration of ethnic culture in therapy scale: Initial psychometric and outcome support. *Behavior Modification*, *30*(6), 867–891. https://doi.org/10.1177/0145445505276096

Dugan, J. P., Torrez, M. A., & Turman, N. T. (2014). *Leadership in intramural sports and club sports: Examining influences to enhance educational impact*. NIRSA.

Eisenberg, D., Hunt, J., Speer, N., & Zivin, K. (2011). Mental health service utilization among college students in the United States. *The Journal of Nervous and Mental Disease*, *199*(5), 301–308. https://doi.org/10.1097/nmd.0b013e3182175123

Erdur-Baker, O., Aberson, C. L., Barrow, J. C., & Draper, M. R. (2006). Nature and severity of college students' psychological concerns: A comparison of clinical and nonclinical national samples. *Professional Psychology: Research and Practice*, *37*(3), 317–323. https://doi.org/10.1037/0735-7028.37.3.317

Etzel, E. F., Ferrante, A. P. & Pinkney, J. W., (Eds.). (1991). *Counseling college student athletes: Issues and interventions*. Fitness Information Technology.

Gallagher, R. P. (2015). *National survey of college counseling centers 2014*. Retrieved from http://d-scholarship.pitt.edu/28178/1/survey_2014.pdf

Gorczynski, P., Coyle, M., & Gibson, K. (2017). Depressive symptoms in high-performance athletes and non-athletes: A comparative meta-analysis. *British Journal of Sports Medicine*, *51*(18), 1348–1354. https://doi.org/10.1136/bjsports-2016-096455

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012b). Barriers and facilitators to mental health help-seeking for young elite athletes: A qualitative study. *BMC Psychiatry*, *12*(1), 157–170. https://doi.org/10.1186/1471-244X-12-157

Gulliver, A., Griffiths, K. M., Christensen, H., Mackinnon, A., Calear, A. L., Parsons, A., Bennett, K., Batterham, P. J., & Stanimirovic, R. (2012a). Internet-based interventions to promote mental health help-seeking in elite athletes: An exploratory randomized controlled trial. *Journal of Medical Internet Research*, *14*(3), 120–137. https://doi.org/10.2196/jmir.1864

Gulliver, A., Griffiths, K. M., Mackinnon, A., Batterham, P. J., & Stanimirovic, R. (2015). The mental health of Australian elite athletes. *Journal of Science & Medicine in Sport*, *18*, 255–261. https://doi.org/10.1016/j.jsams.2014.04.006

Horowitz, L. M., Rosenberg, S. E., Baer, B. A., Ureno, G., & Villasenor, V. S. (1988). Inventory of interpersonal problems: Psychometric properties and clinical applications. *Journal of Consulting & Clinical Psychology*, *56*, 885–892. https://doi.org/10.1037/0022-006x.56.6.885

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among college students. *Journal of Adolescent Health*, *46*(1), 3–10. https://doi.org/10.1016/j.jadohealth.2009.08.008

Hussey, J., Donohue, B., Barchard, K., & Allen, D. N. (2019). Family contributions to sport performance and their utility in predicting appropriate referrals to mental health optimization programs. *European Journal of Sport Science*, *19*(7), 972–982. https://doi.org/10.1080/17461391.2019.1574906

Kern, A., Heininger, W., Klueh, E., Salazar, S., Hansen, B., Meyer, T., & Eisenberg, D. (2017). Athletes connected: Results from a pilot project to address knowledge and attitudes about mental health among college student-athletes. *Journal of Clinical Sport Psychology*, *11*, 324–336. https://doi.org/10.1123/JCSP.2016-0028

Kontos, A. P., & Breland-Noble, A. M. (2002). Racial/ethnic diversity in applied sport psychology: A multicultural introduction to working with athletes of color. *The Sport Psychologist*, *16*(3), 296–315. https://doi.org/10.1123/tsp.16.3.296

Lopez, R. L., & Levy, J. J. (2013). Student athletes' perceived barriers to and preferences for seeking counseling. *Journal of College Counseling*, *16*(1), 19–31. https://doi.org/10.1002/j.2161-1882.2013.00024.x

Lubker, J. R., Visek, A. J., Geer, J. R., & Watson, J. C., II (2008). Characteristics of an effective sport psychology consultant: Perspectives from athletes and consultants. *Journal of Sport Behavior*, *31*(2), 147. Retrieved from. https://search.proquest.com/openview/6306b713e8ce988b84a2096a0d4fd25d/1?pq-origsite=gscholar%26cbl=30153

Maniar, S. D., Curry, L. A., Sommers-Flanagan, J., & Walsh, J. A. (2001). Student–athlete preferences in seeking help when confronted with sport performance problems. *The Sport Psychologist*, *15*(2), 205–223. https://doi.org/10.1123/tsp.15.2.205

Martens, M. P., Dams-O'Connor, K., & Beck, N. C. (2006). A systematic review of college student-athlete drinking: Prevalence rates, sport-related factors, and interventions. *Journal of Substance Abuse Treatment*, *31*(3), 305–316. https://doi.org/10.1016/j.jsat.2006.05.020

Martin, S. B. (2005). High school and college athletes' attitudes toward sport psychology consulting. *Journal of Applied Sport Psychology*, *17*(2), 127–139. https://doi.org/10.1080/10413200590932434

Martin, S. B., Akers, A., Jackson, A. W., Wrisberg, C. A., Nelson, L., Leslie, P. J., & Leidig, L. (2001). Male and female athletes' and nonathletes' expectations about sport psychology consulting. *Journal of Applied Sport Psychology*, *13*(1), 18–39. https://doi.org/10.1080/10413200109339002

Martin, S. B., Wrisberg, C. A., Beitel, P. A., & Lounsbury, J. (1997). NCAA Division I athletes' psychological skills and attitudes toward seeking sport psychology consultation: The development of an objective instrument. *The Sport Psychologist*, *11*, 201–218. https://doi.org/10.1123/tsp.11.2.201

Masuda, A., Anderson, P. L., & Edmonds, J. (2012). Help-seeking attitudes, mental health stigma, and self-concealment among African American college students. *Journal of Black Studies*, *43*(7), 773–786. https://doi.org/10.1177/0021934712445806

Mazzer, K. R., & Rickwood, D. J. (2009). Community gatekeepers' advice to young people to seek help from mental health professionals: Youth workers and sport coaches. *International Journal of Mental Health Promotion*, *11*(2), 13–23. https://doi.org/10.1080/14623730.2009.9721783

Mendoza, H., Masuda, A., & Swartout, K. M. (2015). Mental health stigma and self-concealment as predictors of help-seeking attitudes among Latina/o college students in the United States. *International Journal for the Advancement of Counselling*, *37*(3), 207–222. https://doi.org/10.1007/s10447-015-9237-4

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 Association of Intercollegiate Athletics. (2017). *About the NAIA*. Retrieved from http://www.naia.org/ViewArticle.dbml?DB_OEM_ID=27900%26ATCLID=205323019

National Collegiate Athletic Association. (2016). *National Collegiate Athletic Association sports sponsorship and participation rates report 1981–82 to 2015–16*. Retrieved from http://www.ncaapublications.com/productdownloads/PR1516.pdf

National Intramural and Recreational Sports Association. (2015). *Leaders in collegiate recreation*. Retrieved from https://nirsa.net/nirsa/

NCAA Sport Science Institute and the NCAA. (2016). *Mental health best practices: Interassociation consensus document best practices for understanding and supporting student-athlete mental wellness*. Retrieved from https://ncaaorg.s3.amazonaws.com/ssi/mental/SSI_MentalHealthBestPractices.pdf

Neal, T. L., Diamond, A. B., Goldman, S., Liedtka, K. D., Mathis, K., Morse, E. D., Putukian, M., Quandt, E., Ritter, S., Sullivan, J. P., & Welzant, V. (2015). Interassociation recommendations for developing a plan to recognize and refer student-athletes with psychological concerns at the secondary school level: A consensus statement. *Journal of athletic training*, *50*(3), 231–249. https://doi.org/10.4085/1062-6050-50.3.03

Pennington, B. (2008). *Rise of college club teams creates a whole new level of success*. The New York Times.

Reardon, C. L., & Factor, R. M. (2010). Sport psychiatry: A systematic review of diagnosis and medical treatment of mental illness in athletes. *Sports Medicine*, *40*, 961–980. https://doi.org/10.2165/11536580-000000000-00000

Reetz, D. R., Bershad, C. B., Leviness, P., & Whitlock, M. (2016). *The Association for University and College Counseling Center Directors Annual Survey*. Retrieved from https://www.aucccd.org/assets/documents/aucccd%202016%20monograph%20-%20public.pdf

Rice, S. M., Parker, A. G., Mawren, D., Clifton, P., Harcourt, P., Lloyd, M., Kountouris, A., Smith, B., McGorry, P. D., & Purcell, R. (2019). Preliminary psychometric validation of a brief screening tool for athlete mental health among male elite athletes: The Athlete Psychological Strain Questionnaire. *International Journal of Sport and Exercise Psychology*, 1–16. https://doi.org/10.1080/1612197X.2019.1611900

Rice, S. M., Purcell, R., De Silva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016). The mental health of elite athletes: A narrative systematic review. *Sports Medicine*, *46*(9), 1333–1353. https://doi.org/10.1007/s40279-016-0492-2

Robbins, S., May, T., Corazzini, J., & Gelso, C. (1985). Perceptions of client needs and counseling center staff roles and functions. *Journal of Counseling Psychology*, *32*(4), 641–644. https://doi.org/10.1037/0022-0167.32.4.641

Rohrer, J. M. (2018). Thinking clearly about correlations and causation: Graphical causal models for observational data. *Advances in Methods and Practices in Psychological Science*, *1*(1), 27–42. https://doi.org/10.1177/2515245917745629

Sontag-Padilla, L., Woodbridge, M. W., Mendelsohn, J., D'Amico, E. J., Osilla, K. C., Jaycox, L. H., Eberhart, N. K., Burnam, A. M., & Stein, B. D. (2016). Factors affecting mental health service utilization among California public college and university students. *Psychiatric Services*, *67*(8), 890–897. https://doi.org/10.1176/appi.ps.201500307

Sundgot-Borgen, J., & Torstveit, M. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sport Medicine*, *14*, 25–32.

The National Collegiate Athletic Association. (2009). *Defining countable athletically related activities*. Retrieved from https://www.ncaa.org/sites/default/files/Charts.pdf

Tomalski, J., Clevinger, K., Albert, E., Jackson, R., Wartalowicz, K., & Petrie, T. A. (2019). Mental health screening for athletes: Program development, implementation, and evaluation. *Journal of Sport Psychology in Action*, *10*, 121–135. https://doi.org/10.1080/21520704.2019.1604589

van Bottenburg, M., Rijnen, B., & van Sterkenburg, J. C. (2005). *Sports participation in the European Union: Trends and differences*. Arko Sports Media/WHJ Mulier Institute.

van Raalte, J. L., Andrews, S., Cornelius, A. E., Diehl, N. S., & Brewer, B. W. (2015). Mental health referral for student-athletes: Web-based education and training. *Journal of Clinical Sport Psychology*, *9*, 197–212. https://doi.org/10.1123/jcsp.2015-0011

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

Watson, J. C. (2005). College student-athletes' attitudes toward help-seeking behavior and expectations of counseling services. *Journal of College Student Development*, *46*, 442–449. https://doi.org/10.1353/csd.2005.0044

Watson, J. C. (2006). Student-athletes and counseling: Factors influencing the decision to seek counseling services. *College Student Journal*, *40*(1), 35–43.

Wrisberg, C. A., Simpson, D., Loberg, L. A., Withycombe, J. L., & Reed, A. (2009). NCAA Division-I student-athletes' receptivity to mental skills training by sport psychology consultants. *The Sport Psychologist*, *23*(4), 470–486. https://doi.org/10.1123/tsp.23.4.470

Xiao, H., Carney, D. M., Youn, S. J., Janis, R. A., Castonguay, L. G., Hayes, J. A., & Locke, B. D. (2017). Are we in crisis? National mental health and treatment trends in college counseling centers. *Psychological services*, *14*(4), 407–415. https://doi.org/10.1037/ser0000130

Yang, J., Peek-Asa, C., Corlette, J. D., Cheng, G., Foster, D. T., & Albright, J. (2007). Prevalence of and risk factors associated with symptoms of depression in competitive collegiate student athletes. *Clinical Journal of Sport Medicine*, *17*(6), 481–487. https://doi.org/10.1097/jsm.0b013e31815aed6b

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