

## Pre-post evaluation of the “Supporting Student-Athlete Mental Wellness” module for college coaches

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### **Abstract:**

This study sought to determine whether completion of the National Collegiate Athletic Association’s “Supporting Student-Athlete Mental Wellness” online module for coaches increased mental health literacy, reduced stigma, and increased intentions to: 1) communicate proactively with team members about the importance of mental health care seeking, and 2) respond appropriately to support an athlete believed to be struggling with a mental health issue. College head coaches completed pre-test surveys ( $n = 969$ ) and immediate post-test surveys ( $n = 347$ , completion rate = 36%). Module completion was associated with increased mental health literacy, decreased stigma about help seeking and increased intentions to engage in culture setting communication. These findings suggest that the online module is a good start for coach education about mental health; however, additional modifications may be warranted to the extent coach referral to sports medicine staff or provision of emotional support to student-athletes struggling with mental health concerns are considered desired behaviors.

**Keywords:** coaches | evaluation | mental health | mental health literacy | sport

### **Article:**

Young adulthood is a period of peak presentation for mental health disorders such as anxiety and depression (Kessler et al., 2007), making college an important setting for their early identification and management (McGorry, Purcell, Goldstone, & Amminger, 2011). Although young adult sport participants tend to be healthier physically than the general population, estimates of the prevalence of depression and anxiety are similar between college student-athletes to their non-athlete peers (Armstrong & Oomen-Early, 2009; Kroshus & Davoren, 2016; Rao & Hong, 2016; Wolanin, Hong, Marks, Panchoo, & Gross, 2016). Early and appropriate mental health care is critical for limiting the morbidity of mental illness (Kessler et al., 2007). Barriers to care seeking are often heightened among athletes due to perceived stigma or a belief that care seeking would decrease athletic participation opportunities (Gulliver, Griffiths, & Christensen, 2012; Jones, 2016; Putukian, 2016; Van Raalte, Cornelius, Andrews, Diehl, & Brewer, 2015; Wahto, Swift, & Whipple, 2016; Watson, 2005). However, sports participation does not have to negatively influence mental health care seeking: college student-athletes have the advantage relative to non-athlete peers of having a close community of

teammates and multiple adult mentors in the form of coaches, athletic trainers, academic support staff, and athletics administrators. This means that there are many people who have regular and meaningful contact with student-athletes who could be attentive to indicators of their well-being or distress (Brown, Hainline, Kroshus, & Wilfert, 2014).

Coaches in particular can play an important role in supporting a culture supportive of the secondary prevention of mental illness by creating a stigma-free team environment, noticing when an athlete is struggling, and encouraging care seeking from appropriate professional resources. Formal and informal, verbal and non-verbal communication from coaches informs athletes about what behaviors (i.e., sport and non-sport specific) are normative and desirable (Cheek, Hill, Carlson, Lock, & Peebles, 2015; Kroshus, Garnett, Baugh, & Calzo, 2015; Mazzer & Rickwood, 2009; Pierce, Liaw, Dobell, & Anderson, 2010; Steinfeldt, Gilchrist, Halterman, Gomory, & Steinfeldt, 2011) and can influence the athlete's own attitudes about seeking and accepting professional psychological services (Kroshus, 2017). To engage in this role, coaches must themselves have attitudes supportive of mental health care seeking. They must also have adequate mental health literacy. Sørensen et al.'s (2012) multidimensional conceptualization of health literacy means being able to identify problem situations (e.g., knowing symptoms are potentially problematic) and having the skills to respond appropriately (e.g., encouraging care-seeking and providing general emotional support). We are not aware of research to-date about factors related to the mental health literacy of college coaches. However, nearly half of high school coaches do not feel confident in their ability to appropriately support a team member who is struggling with anxiety or depression (Kroshus, Coppel, Chrisman, & Herring, In press).

One strategy to address mental health literacy and reduce stigma about care-seeking is education (Francis, Pirkis, Dunt, Blood, & Davis, 2002; Kelly, Jorm, & Wright, 2007). The Interassociation Consensus Document: Mental Health Best Practices ("Mental Health Best Practices," 2016) recommends that coaches be provided with annual education about mental health, including both the prevalence and signs and symptoms of mental health disorders among college students. In support of institutional adherence to this best practice recommendation, an online educational module for coaches entitled "Supporting Student-Athlete Mental Wellness" (<http://s3.amazonaws.com/ncaa/files/ssi/mental-health/toolkits/coach/story.html>) has been provided by the NCAA Sport Science Institute (hereafter referred to as the "online module") under the umbrella of their "Coaches Assist" resources. This module has not been evaluated to-date. A lack of program evaluation has been identified as a weakness of much education provided in sports settings and on college campuses more broadly. Evaluation is critical for ensuring that programming being provided to sports stakeholders is optimally useful (McGlashan & Finch, 2010).

The primary research question for the present evaluation was whether completion of the online module leads to greater mental health literacy and reduced stigma about athletes seeking help. A secondary research question was whether module completion was associated with distal outcomes of coach intentions to engage in two key groups of behaviors: 1) communicate proactively with team members about the importance of mental health care seeking, and 2) respond appropriately to support a student-athlete believed to be struggling with a mental health issue (providing general emotional support and referring athletes to sports medicine staff for subsequent evaluation and care). Consistent with the conceptual model used to guide the

development of the online module, we examined whether change in our proximal outcomes was associated with change in distal outcomes.

## **Methods**

### Sample

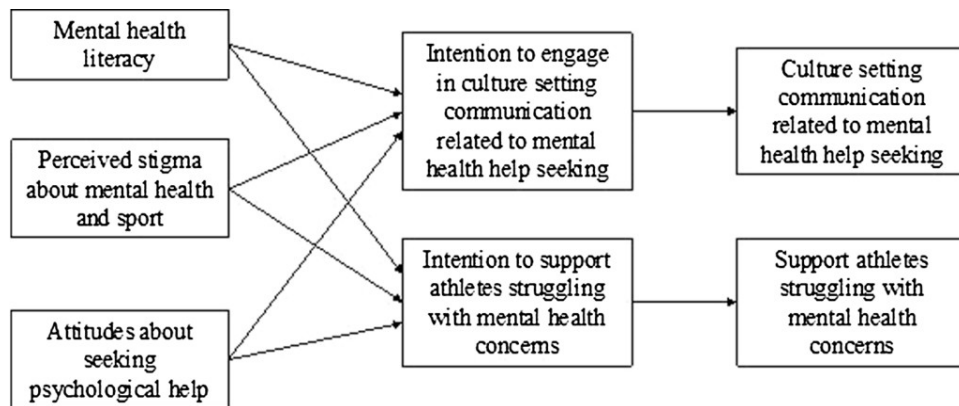
Head coaches of 20 NCAA sports teams ( $n = 9217$ ) were contacted by email sent from the NCAA Sport Science Institute and/or their coaching association, in both cases reviewing a standardized email provided by the research team (see Supplementary File 1 [available online] for list of participation by sport). Two reminder emails were sent at approximately one-week intervals. Coaches interested in participating in the research study reviewed an information sheet describing the study and then clicked a link to access the survey, which was hosted on the Qualtrics platform. A total of 969 coaches chose to participate in the study (10.5% response rate).

### Procedure

All coaches completed an initial block of questions assessing demographics, prior year behaviors, attitudes about psychological help seeking, perceived mental health literacy, and behavioral intentions. Coaches then completed the online educational module, followed by completion of another short set of survey questions (perceived mental health literacy, behavioral intentions and perceptions about the acceptability and utility of the educational program). All research activities were approved by the NCAA Research Review Board.

### Description of educational module

The “Supporting Student-Athlete Mental Wellness” online module for coaches addresses: 1) signs and symptoms of mental illness; 2) the role of the coach in creating a team environment supportive of mental health care seeking; 3) the role of the coach in encouraging care-seeking and providing emotional support to a student-athlete who is struggling with a possible mental health problem; 4) how to identify and respond to non-emergency and emergency mental health situations; and 5) coach stigma about athletes seeking mental health care. Figure 1 presents a conceptual model for the theory of change in this module and Table 1 presents primary intervention components with a brief description of the hypothesized preventive influence of each component.



**Figure 1.** Theoretic framework informing coach educational module.

**Table 1.** Coach Education Module Components and Strategies

Component	Objective	Example Intervention Component
1. Mental health literacy	Increase knowledge about signs and symptoms of mental illness	Present mental wellness on a continuum with thriving and resilience on one end and severe functional impairment on the other end.
2. Perceived stigma about mental health and sport	Reduce stigmatizing beliefs about the sport-related consequences of seeking mental health care	Distinguish between mental toughness and mental wellness. Demonstrate that characteristics of mental toughness allows a student-athlete to perform at a high level, grow, and improve while trying to practice and compete through mental illness can have a detrimental effect on athletic performance and overall health.
3. Intention about culture setting communication	Increase coach intentions to engage in specific behaviors related to establishing a team culture supportive of mental health help seeking, such as telling athletes that mental health help seeking is important to them.	Challenge coaches to nurture a supportive and positive environment by acknowledging that mental health stigma exists and that they can play a key role in helping student-athletes get the mental health help that they need.
4. Intention to support athletes struggling with mental health concerns	Increase coach intentions to engage in specific behaviors related to supporting team members who they suspect may be struggling with a mental health concern, such as providing emotional support.	Challenge coaches to make it an expectation on their team to acknowledge and share feelings. Lead by example and make it clear that their approach to mental illness is no different than supporting a student-athlete with a severe physical injury.

## Measures

### Measure development and pilot testing

A pilot study was undertaken to refine our approach to measuring constructs for which we were unable to find an appropriate sport- or coach-relevant measure. We also sought to examine the psychometric properties of other potential scales for use in this population, both to ensure their reliability and to determine whether a shortened version could be used for reasons of feasibility

(Shrout & Yager, 1989). Head coaches ( $n = 121$ ) from one NCAA Division I conference were contacted by email sent from the conference commissioner and invited to participate in an anonymous online survey about mental health. One reminder email was sent at a one-week interval. Head coaches were asked to forward the email invitation to their assistant coaches so as to increase the total sample size. A total of 119 coaches (73 head coaches) completed the survey, for a head coach response rate of 60.33%. In addition to answering survey questions, coaches provided written feedback about content and clarity of the measures. The specific methods through which the measure for each construct was developed, refined or tested are described in the respective measure subsection below. All final measures are provided as Supplementary File 2 (available online).

## Measures

### Mental health literacy

Mental health literacy was conceptualized using Sørensen et al.'s (2012) multidimensional health literacy framework, in that we focused on coach ability to apply relevant mental health knowledge in their unique setting. A subjective approach to assessing mental health literacy was used following approaches to measuring this construct in other domains (Altin, Finke, Kautz-Freimuth, & Stock, 2014). Because the target behaviors for the educational model being evaluated were specific to coaches and the coach role, we used items developed specifically for this study, conceptualized as an index rather than a latent construct. Thus, coaches were asked to subjectively assess their mental health literacy in three domains by responding to the following prompt: "Please indicate how strongly you agree or disagree with the following statements: (a) I would be able to tell if a student-athlete were experiencing a mental health problem; (b) I would know what to do if I thought a student-athlete were experiencing a mental health problem; and (c) I would be able to do what was needed to help a student-athlete experiencing a mental health problem." Responses to each item were on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree), with a possible range of 3 to 21, where higher scores indicate greater mental health literacy.

### Stigma about mental health help seeking and sport performance

Although mental health stigma measures exist (e.g., Eisenberg, Downs, Golberstein, & Zivin, 2009), formative feedback from sport stakeholders (coaches, athletes and clinicians working in sports settings) indicated that stigma related to mental health help seeking in sport environments was a unique construct, reflecting performance-related considerations. This measure development process was informed by Eisenberg et al.'s (2009) more generalized approach to assessing private stigma; the construct assessed was personal beliefs about the sport-related outcomes of mental health care seeking (e.g., personal stigma), but reflecting perceived concrete outcomes (e.g., impaired sport performance or commitment) rather than the coach's affective response to mental health care seeking. An initial pool of items encompassing potential sport-relevant outcomes of mental health care seeking were generated from a review of literature about stigma related to mental health help seeking in the sport context (Gulliver et al., 2012; Jones, 2016; Putukian, 2016; Van Raalte et al., 2015; Wahto et al., 2016; Watson, 2005), and with feedback from coaches and athletes, as well as sports medicine and mental health professionals

who provide care to college student-athletes. A total of 14 items were generated for inclusion in the pilot study, with items following the prompt: “I believe that an athlete who has received mental health treatment will...” All items are listed in the Supplementary File 3 (available online). Response options were on a 6-point Likert-type scale (1 = strongly disagree, 6 = strongly agree), where higher scores indicate greater perceptions of stigma. All 14 items in the pilot survey loaded strongly onto a single latent construct (Eigenvalue = 8.16, factor loadings  $\geq 0.50$ ) and had very high internal consistency reliability (Cronbach’s alpha = 0.95). Next, we sought to create a more parsimonious but still reliable measure. First, items with the highest factor loadings ( $\geq 0.80$ ) were retained. Next, structural equation modeling was used to examine whether there were correlations between subsets of these 5 items that were exogenous to their loadings onto the latent construct. While this 5-item variable was a reasonable fit for the data ( $\chi^2(5) = 8.97, p = .110, CFI = 0.992, RMSEA = 0.083, SRMR = 0.018$ ), an inspection of modification indices revealed notable and theoretically consistent correlations between two items, one of which was subsequently removed. The resultant 4-item variable was a better fit for the data ( $\chi^2(2) = 0.01, p = .996, CFI = 1.00, RMSEA = 0.000, SRMR = 0.001, Eigenvalue = 2.85, factor loadings  $\geq 0.82$ ), with no notable modification indices. Construct validity of the measure was established by its correlation with the coach’s own attitudes about seeking professional psychological help ( $B = -0.21, p < .001$ ). This four-item measure was subsequently included in the evaluation survey, with adequate internal consistency reliability at baseline (Cronbach’s alpha = 0.92).$

#### Intentions about culture setting communication

Coaches responded to the following prompt: “During the next 12 months, how likely are you to do each of the following: (a) Tell my athletes I want them to seek professional care for mental health challenges, (b) Tell my athletes that we need to take mental health seriously, (c) Tell my athletes that they can come to me with concerns about mental health.” Responses were on a 5-point scale ranging from “definitely will” to “definitely will not.” In the pilot sample, a confirmatory factor analysis indicated that all 3-items loaded strongly onto a single latent factor (Eigenvalue = 1.65, factor loadings  $\geq 0.70$ ). This 3-item measure summed to create a linear variable with a possible score range of 3 to 15, where higher scores indicate a *lower* likelihood of engaging in the target communication behaviors. At baseline in the evaluation survey, this measure had adequate internal consistency reliability (Cronbach’s alpha = 0.71).

#### Intentions about responding to concerns

Coaches responded to the following prompt: “During the next 12 months, how likely are you to do each of the following if you think an athlete is experiencing a mental health problem: (a) Provide emotional support, (b) Encourage them to go talk to their team’s sports medicine staff.” Sports medicine staff function to facilitate referrals for mental health care to athletics, campus or community mental health professionals. Responses were on a 5-point scale ranging from “definitely will” to “definitely will not.” Responses were not conceptualized as reflecting a single latent construct and each item was treated as a separate continuous outcome variable with a possible range of 1 to 5, with lower scores indicating greater likelihood of engaging in the target behavior.

## Attitudes about own mental health help seeking

Based on coach feedback about the repetitiveness of the Attitudes Towards Seeking Professional Psychological Help scale (Fischer & Farina, 1995), and a desire to create a lower burden measure, a shortened version of this scale was generated from the results of the pilot test. Coaches in the pilot test condition completed the original 10-item scale. A factor analysis of the original measure in the pilot sample was conducted, and the five items that loaded most strongly onto the latent construct (Eigenvalue = 1.75, factor loadings  $\geq 0.56$ ) were retained for the short-form version. These items included “The idea of talking about problems with a psychologist strikes me as a poor way to get rid of emotional conflicts” (see Supplementary File 3 [available online] for all items). Responses were on a 4-point Likert-type scale (1 = disagree, 4 = agree), and summed for a range of 5 to 20 where higher scores indicated an attitude more supportive of seeking professional psychological help. In the evaluation sample, internal consistency reliability was adequate (Cronbach’s alpha = 0.77).

## Demographic characteristics

Coaches indicated their gender, the sex of the athletes they coach, their age, and the division of competition in which their team competes.

## Perceptions about the educational program

At the outset of the survey, coaches indicated whether they had ever completed the NCAA online mental health module, with responses of “yes,” “no” and “I’m not sure.” After completing the online module, coaches completed a series of three questions asking about their perceptions of its utility (Proctor et al., 2011). These items were: “I thought it was useful,” “I thought it was interesting,” and “I would recommend that other coaches complete it.”

## Analysis

Descriptive statistics were reported for the full sample at pre- and post-test.

Because of the large amount of attrition between pre- and post-tests, we sought to determine whether missingness was at random or patterned. Bivariate logistic regression was used to determine the variables that were significantly associated with being missing at post-test. This process identified age as being significantly associated with attrition. Thus, age was included in all subsequent regression models in an effort to account for age-related explanations for differences in between-person change from pre- to post-test. Multilevel linear models with within-person random effects were used to determine the role of the intervention in changing five separate variables: (1) mental health literacy, (2) stigma in sport, (3) intentions about proactive culture setting communication, (4) intentions about providing emotional support to an athlete struggling with a mental health issue, and (5) intentions about referring an athlete suspected of struggling with a mental health concern to the team’s sports medicine staff. First, separate models were run with each of these five variables as the dependent variable in multilevel regression models with predictors of time and age. Subsequently, the theoretic model was tested in three separate multivariate multilevel linear regression models, with dependent variables of

(1) intentions about proactive culture setting communication, (2) intentions about providing emotional support to an athlete struggling with a mental health issue, and (3) intentions about referring an athlete suspected of struggling with a mental health concern to the team's sports medicine staff. In each model, in addition to time and age, baseline mental health literacy, change in mental health literacy, baseline stigma in sport, change in stigma in sport, the coach's own attitudes about seeking psychological help, the coach's gender, the sex of the athletes coached and the division in which their team competes were added as predictor variables. In all analyses a threshold of  $p < .05$  was used for statistical significance. All analyses were conducted in STATA version 14.2 (College Station, TX).

**Table 2.** Descriptive Characteristics of College Coaches

Variable	Pre-test (n = 969)	Post-test (n = 347)
	n (%) or mean (SD)	
Coach gender		
Male	560 (57.85%)	193 (55.78%)
Female	403 (41.63%)	151 (43.64%)
Prefer not to answer	5 (0.52%)	2 (0.58%)
Missing	1	1
Sex of athletes coached		
Male	256 (26.64%)	81 (23.48%)
Female	536 (55.78%)	207 (60.00%)
Male and female	169 (17.59%)	57 (16.52%)
Missing (n)	8	2
Division of competition		
Division I	316 (33.12%)	112 (32.65%)
Division II	232 (24.32%)	78 (22.74%)
Division III	406 (42.56%)	153 (44.61%)
Missing (n)	15	4
Age	43.10 years (11.48)	
Attitude towards seeking psychological help	10.38 (2.65)	–
Ever completed NCAA online mental health module for coaches		
Yes	106 (11.64%)	43 (12.50%)
No	538 (59.06%)	203 (59.01%)
I'm not sure	267 (29.31%)	98 (28.49%)
Missing (n)	58	3

**Table 3.** Descriptive Statistics for Module Evaluation Measures and Pre- and Post-Test

Variable	Pre-test (n = 969)	Post-test (n = 347)
	Mean (SD)	
Mental health literacy	12.44 (2.57)	11.18 (1.83)
Stigma about help seeking and sport	7.95 (3.64)	7.41 (3.40)
Intentions about culture setting communication	5.33 (1.83)	4.67 (1.65)
Intentions about response to concern		
Provide emotional support	1.17 (0.43)	1.21 (0.44)
Encourage them to go talk to the team's sports medicine staff	1.59 (0.97)	1.55 (0.80)

## Results



A total of 969 coaches completed pre-test surveys (response rate = 10.5%) and 347 completed post-test surveys (response rate among pre-test participants = 35.8%). At baseline, 57.85% of participating coaches were male, 26.64% coached male athletes, 55.78% coached female athletes and 17.59% coached both male and female athletes. One-third of participants (33.12%) coached at a Division I institution, 24.32% at a Division II institution and 42.56% at a Division III institution. Coaches responded from 20 sports, with the most frequent representation from track and/or cross country running (20.19% of study participants), golf (20.19%), basketball (13.14%) and soccer (11.15%) (see Supplementary File 1 [available online] coach participation by sport). Eleven percent of the sample (11.64%) had previously completed the NCAA’s online mental health module. Additional descriptive statistics, separately for participants in the pre- and post-test, are presented in Tables 2 and 3.

Results of the multilevel regression models in which each target cognition were predicted by time and age are presented in Table 4. There is a significant effect of time on mental health literacy ( $B = -1.28, SE = 0.13, p < .001$ ), sport stigma ( $B = -0.37, SE = 0.13, p = .002$ ), culture setting behavioral intentions ( $B = -0.82, SE = 0.08, p < .001$ ), and sports medicine referral intentions ( $B = -0.06, SE = 0.03, p = .044$ ). The effect of time was not significant on intentions to provide emotional support to a struggling athlete. This means that coach mental health literacy, culture setting intentions and referral intentions were higher at post-test compared to pre-test, and sport stigma was lower. Within-person differences accounted for between 42% and 79% of variability in the differences in these repeated measures.

**Table 4.** Multilevel Regression Predicting Change in Measured Variables by Time

	<b>Model 1</b> Y <sub>ij</sub> = Mental health literacy	<b>Model 2</b> Y <sub>ij</sub> = Sport stigma	<b>Model 3</b> Y <sub>ij</sub> = Culture setting communication	<b>Model 4</b> Y <sub>ij</sub> = Provide emotional support	<b>Model 5</b> Y <sub>ij</sub> = Refer to sports medicine
Time	<b>-1.28 (0.13)</b> <b>&lt;0.001</b>	<b>-0.37 (0.12)</b> <b>0.002</b>	<b>-0.82 (0.08)</b> <b>&lt;0.001</b>	0.03 (0.02) 0.100	<b>-0.06 (0.03)</b> <b>0.044</b>
Age	-0.01 (0.01)	-0.01 (0.01)	1. (0.01)	0.001 (0.001)	-0.005 (0.003)
	0.164	0.464	0.146	0.350	0.82
ICC	0.728	0.790	0.728	0.336	0.789

Note. Y<sub>ij</sub> refers to the dependent variable in the respective model.  
 $p < .05$  bolded for emphasis.

The test of the full theoretic model predicting behavioral intentions is presented in Table 5. There was a significant effect of time on intentions about culture setting communication ( $B = -0.89, SE = 0.10, p < .001$ ), with intentions about communication also significantly associated with baseline mental health literacy ( $B = -0.18, SE = 0.03, p < .001$ ), change in mental health literacy ( $B = -0.07, SE = 0.03, p = .040$ ), baseline sport stigma ( $B = 0.08, SE = 0.02, p < .001$ ), baseline coach attitudes about their own help seeking ( $B = -0.14, SE = 0.03, p < .001$ ), the gender of the coach ( $B = 0.61, SE = 0.15, p = .001$ ) and coaching both male and female athletes as compared to male athletes only ( $B = 0.55, SE = 0.21, p = .009$ ). This means that factors related to coaches having higher intention to engage in culture setting communication included: completing the module, having greater mental health literacy (both at baseline, and mental health literacy increasing as a result of completing the module), having lower perceived sport stigma, and having personal attitudes that are supportive of help seeking, and identifying as a female. There was not a significant effect of time on either of the measures of intention relating to responding

to a problem situation, meaning that, after controlling for other coach variables, the module did not change these target outcomes. Coach intentions about providing emotional support to athletes were significantly associated with baseline mental health literacy ( $B = -0.02$ ,  $SE = 0.01$ ,  $p = .003$ ), baseline sport stigma ( $B = 0.01$ ,  $SE = 0.004$ ,  $p = .013$ ), baseline attitudes ( $B = -0.02$ ,  $SE = 0.01$ ,  $p = .006$ ) and the gender of the coach ( $B = -0.08$ ,  $SE = 0.04$ ,  $p = .026$ ). This means that coaches who were female, more mental health literate, had less stigmatizing beliefs about the athletic consequences of mental health help seeking, and had personal attitudes more supporting of help seeking, were more likely to intend to provide emotional support to athletes. Coach intentions about referring athletes to sports medicine staff were significantly associated with baseline sport stigma ( $B = 0.03$ ,  $SE = 0.01$ ,  $p = .001$ ), their own attitudes ( $B = -0.04$ ,  $SE = 0.01$ ,  $p = .002$ ) and whether they coached in Division III as compared to Division I ( $B = 0.39$ ,  $SE = 0.08$ ,  $p < .001$ ). This means that coaches who had less stigmatizing beliefs about the athletic consequences of mental health help seeking, more supportive attitudes, and who coached in Division III were more likely to intend to refer athletes to their sports medicine staff.

**Table 5.** Full Multilevel Regression Model Predicting Change in Behavioral Intentions

	<b>Model 1</b> <b><math>Y_{ij} = \text{Culture setting}</math></b> <b>communication</b>	<b>Model 2</b> <b><math>Y_{ij} = \text{Emotional support}</math></b>	<b>Model 3</b> <b><math>Y_{ij} = \text{Refer to sports}</math></b> <b>medicine</b>
Time	<b>-0.89 (0.10)</b> <b>&lt;0.001</b>	0.004 (0.02) 0.865	-0.05 (0.04) 0.194
Baseline mental health literacy	<b>-0.18 (0.03)</b> <b>&lt;0.001</b>	<b>-0.02 (0.01)</b> <b>0.003</b>	0.03 (0.01) 0.022
Change in mental health literacy	<b>-0.07 (0.03)</b> <b>0.040</b>	-0.003 (0.01) 0.699	0.02 (0.01) 0.133
Baseline sport stigma	<b>0.08 (0.02)</b> <b>&lt;0.001</b>	<b>1. (0.004)</b> <b>0.013</b>	<b>0.03 (0.01)</b> <b>0.001</b>
Change in sport stigma	0.02 (0.04) 0.651	1. (0.01) 0.397	0.01 (0.02) 0.715
Attitudes	<b>-0.14 (0.03)</b> <b>&lt;0.001</b>	<b>-0.02 (0.01)</b> <b>0.006</b>	<b>-0.04 (0.01)</b> <b>0.002</b>
Age	1. (0.01) 0.344	0.001 (0.001) 0.453	-0.002 (0.003) 0.618
Gender of coach (ref= female)	<b>0.61 (0.15)</b> <b>0.002</b>	<b>0.08 (0.04)</b> <b>0.026</b>	0.05 (0.09) 0.543
Sex of athletes (ref= male only)			
Female only	-0.17 (0.20) 0.403	0.03 (0.04) 0.456	0.15 (0.10) 0.129
Male and female	<b>0.55 (0.21)</b> <b>0.009</b>	-0.02 (0.04) 0.691	0.05 (0.10) 0.667
Division (ref= I)			
Division II	-0.12 (0.158) 0.498	0.04 (0.04) 0.265	0.13 (0.09) 0.130
Division III	-0.16 (0.16) 0.295	-0.03 (0.03) 0.445	<b>0.39 (0.08)</b> <b>&lt;0.001</b>
ICC	0.641	0.529	0.773

Note.  $Y_{ij}$  refers to the dependent variable in the respective model.  
 $p < .05$  bolded for emphasis.

As presented in Table 6, more than three-quarters of respondents agreed or strongly agreed that the education was useful (81.62%), interesting (75.61%), and something that they would recommend to other coaches (77.95%).

**Table 6.** Perceptions About Educational Module

	<b>Strongly agree n (%)</b>	<b>Somewhat agree n (%)</b>	<b>Neutral n (%)</b>	<b>Somewhat disagree n (%)</b>	<b>Strongly disagree n (%)</b>
I thought it was useful	142 (38.38%)	160 (43.24%)	55 (14.86%)	8 (2.16%)	5 (1.35)
I thought it was interesting	111 (30.08%)	168 (45.53%)	70 (18.97%)	14 (3.79%)	6 (1.63%)
I would recommend that other coaches complete it	142 (38.17%)	148 (39.78%)	63 (16.94%)	14 (3.76%)	5 (1.34%)

## Discussion

These results suggest that exposure to the Supporting Student Athlete Mental Wellness online module achieves its proximal goals of increasing coach mental health literacy and decreasing stigma about the sport consequences of mental health help seeking. Exposure to the module is also associated with increased intentions to engage in culture-setting communication and to refer a struggling student-athlete to sports medicine staff for subsequent evaluation, referral or care. In testing the full conceptual model, change in intention to engage in culture-setting communication was predicted by change in mental health literacy, as well as baseline coach variables (mental health literacy, sport stigma and coach attitudes about their own help seeking). These results provide support to the theorized model underlying module development for this target outcome. Further research is needed to understand whether coach intentions about culture-setting communication translate into practice, and to the extent there is an intention-behavior gap what type of resources or environmental support could help facilitate this communication.

The test of the full conceptual model predicting change in intentions about responding to problem situations suggests that there was minimal impact of the module on these cognitions. There was no significant difference in emotional support and referral behavioral intentions between pre- and post-test, and changes in theorized predictors (sport stigma and mental health literacy) were not associated with change in these behavioral intention outcomes. There are many possible reasons for why this may have been observed. It may take more time for improved mental health literacy and reduced stigma to produce change in these particular outcomes. The change in the proximal cognitions measured may not have been sufficient to change this behavioral intention outcome. Other individual-level factors that were not addressed within the module may be influencing behavioral intentions. For example, it may be that coaches view the provision of emotional support and identifying athletes who are struggling as outside of their job description and something that should be left to mental health professionals.

While most coaches are not mental health professionals and should not engage in behaviors requiring licensure as a mental health professional, they are nonetheless often in a position to notice athletes who may be struggling and to encourage appropriate care seeking. They may also potentially be an important source of emotional support for those athletes who are making the decision to seek mental health care and who are undergoing treatment, which itself can help reduce stigma on their team related to mental health care seeking. This may be as simple as expressing validation or empathy.

Coaches are often master communicators and training in empathic listening and responding is likely to be a natural extension of their professional communication skills. With this in mind, it may be useful to add instruction early in coach training about mental health to begin to shape the job description of the coach to be inclusive of providing proactive support for athlete well being. Coaches may also have inadequate self-efficacy related to engaging in these behaviors, making evidence-based approaches to increasing self-efficacy (e.g., modeling) a promising component of future educational program development work. Perhaps most critically, coach behaviors (and behavioral intentions) related to provision of help may be constrained by environmental factors (Bronfenbrenner, 1979). For example, at the high school level, coaches who were aware of their school's mental health management plan were more confident in their ability to appropriately support to athletes who were experiencing mental health challenges (Kroshus et al., In press).

The Inter-association Consensus Document: Mental Health Best Practices ("Mental Health Best Practices," 2016) recommends that institutions establish a referral protocol for mental health concerns, and that this protocol be communicated to coaches. Additional research is warranted to understand the extent to which these protocols are being communicated to coaches, and whether there are best practices in communication that could be shared across institutions. Outside of formal actions by athletic departments, the messages they send about the importance of coach actions to support student-athletes who are struggling with mental health issues (e.g., referral to sports medicine) could theoretically help both de-stigmatize these behaviors and also provide additional incentive to act and support for action regardless of the coach's own beliefs. This may include informal communication between stakeholders in the athletics department, attention and resource allocated to the issue of mental health, and the nature of reinforcement coaches and athletes receive for engaging with issues related to mental health. Future programming efforts may benefit from taking a systems-level approach to changing behavior related to mental health on campus, focusing on changing formal processes and informal communication practices, and getting buy-in from stakeholders at all levels of athletics (e.g., athletic directors, medical staff, coaches, athletes).

In all models tested, the coach's own baseline attitude about seeking psychological help was an important determinant of behavioral intentions. Such attitudes are likely shaped over time as a result of interpersonal exposures that encourage self-reliance and that stigmatize mental illness (Clement et al., 2015). These exposures have traditionally been heightened in sports settings (Gulliver et al., 2012; Jones, 2016; Putukian, 2016; Van Raalte et al., 2015; Wahto et al., 2016; Watson, 2005), meaning that coaches may have been repeatedly exposed to such messages over the course of their own playing career. Although conceptualizations of gender in sport settings are becoming more inclusive (Anderson, 2009), a dominant ethos in many sport settings—both male and female—continues to be rooted in traditional masculinity (Adams, Anderson, & McCormack, 2010). For males and females, these messages in the sport setting are compounded or buffered by messages about gender-appropriate behavior that they receive from outside of sport (Hardy, 2015; Krane, 2001). Prior research about help seeking related to concussion found that on average males and females had mean differences in conformity to traditional masculine norms, with these differences explaining differences in help-seeking behavior (Kroshus, 2017).

In the present study, the coach's gender was a significant predictor of intentions to engage in culture setting communication and to provide emotional support to struggling athletes, with female coaches being more likely to engage in these behaviors than male coaches. These results are consistent with findings from a meta-analysis that females have attitudes more supportive of seeking professional psychological help than males (Nam et al., 2010). Individuals interested in developing more impactful mental health education for coaches should explore gendered determinants of differences in attitudes towards seeking professional psychological help among coaches and whether there are gendered "scripts" that impede coach willingness to engage in target behaviors. Such efforts would not necessarily lead to explicitly gender-segregated content. Rather, an interactive component of the module could be developed that provides coaches with opportunities to have personally relevant expectancies corrected, allowing for individualization of the content viewed. Gender differences notwithstanding, the apparent willingness of many coaches to engage in proactive culture setting communication is a positive sign that today's coaches may be able to help disrupt and reshape normative messaging in sport settings about mental health help seeking.

### Limitations

A primary limitation of this study was that individual coaches served as their own controls, with comparisons made between surveys completed immediately pre- and post-module. Given the NCAA's goal of disseminating the module to all coaches around the time that data collection occurred, having a control group unexposed to the module was not realistic. As a result, we were also unable to measure change in behavior among coaches exposed and unexposed to the module, and instead assessed change in behavioral intentions. Future research is needed to understand the extent to which change in the factors assessed in the present study (mental health literacy, stigma, and behavioral intentions) are associated with change in coach behaviors and to make comparisons between individuals randomized to complete or not complete the module. There was also low coach response rate at baseline and the attrition between pre- and post-test. Further, football coaches were not included in the sampling frame due to the time of year at which data collection occurred; however, football administrators expressed interest in participating in subsequent research on this topic. It is possible that participating coaches were more concerned about mental health than those who declined participation, meaning that these findings may not be generalizable to all coaches.

Future research efforts should consider adding participant incentives or focusing on a limited subset of coaches in order to employ a more targeted recruitment strategy that may provide more generalizable response rates. As only head coaches were invited to participate in the study, future research should also include assistant coaches to determine whether there are differences in mental health literacy and behaviors by coaching position. Finally, there are many exogenous factors other than behavioral intentions that could influence coach behavior (Sheeran & Webb, 2016) and situating the cognitions assessed herein within a larger ecological model could help identify areas for intervention to support coach action.

### Conclusion

Coaches can play a central role in shaping sport cultures that are supportive of mental health care seeking, and of themselves encouraging and supporting mental health care seeking by athletes who are struggling with potential mental health problems. The present findings suggest that the Supporting Student Athlete Mental Wellness online module is a good start for coach education about mental health. However, additional modifications may be warranted to the extent supporting coach response to students with mental health concerns is a goal. Additional work is also needed to understand how the module could better meet the learning needs of the around one-fifth of coaches who did not find it useful. Such modifications are encouraged to occur in partnership with coaches, following guidelines of the Knowledge-to-Action cycle for Knowledge Translation (Graham et al., 2006) to include end users throughout program development and ongoing iteration. Such work should be continually resituated within a broader ecological context, understanding that coaches take messages about what is valued from their environment and that even the most optimized online educational module has limited scope by itself to sustainably change coach behavior.

### **Clinical Implications**

Clinicians seeking to provide mental health-related education to coaches can view the Supporting Student Athlete Mental Wellness online module as a good start for knowledge translation. However, to the extent supporting coach response to students with mental health concerns is a goal, additional direct engagement with coaches may be warranted to identify their learning needs and behavioral barriers. It is possible that some of these learning needs (e.g., institutional protocols) and behaviors barriers (e.g., access to clinicians) may be setting specific. Thus, even a well-designed but more general online module may require supplementary in-person contact with coaches.

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