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ORIGINAL RESEARCH

The Role of Athletic Identity in the Relationship Between Difficulty Thinking or Concentrating and Academic Service Use in NCAA Student-Athletes

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The NCAA Growth, Opportunities, Aspirations and Learning of Students in College data were used to explore the relationship between self-reported high levels of difficulties thinking or concentrating and grade point average (GPA) in college student-athletes. We specifically investigated the mediators of the relationship between self-reported high levels of difficulties thinking or concentrating and GPA. Results revealed there was a significant indirect effect between self-reporting the highest level of difficulties thinking or concentrating and service use through GPA, moderated by identity, full model: $F(4, 14738) = 184.28$, $p < .001$; $R^2 = .22$. The athletic/academic identity variable acted as a moderator of the mediating effect of GPA on the relationship between self-reported high levels of difficulties thinking or concentrating and the use of academic resources on campus. If a student-athlete who is self-reporting high levels of difficulties thinking or concentrating identifies more as a student, GPA is likely to prompt academic service use. However, if the student-athlete identifies more as an athlete, GPA is less likely to lead to use of campus academic support resources.

Keywords: cognition, college student-athlete, social identity, athletic identity, academic services

Difficulties concentrating are regularly reported in college students (DuPaul et al., 2001; Garnier-Dykstra, Pinchevsky, Caldeira, Vincent, & Arria, 2010; Heiligenstein, Conyers, Berns, & Miller, 1998; Lewandowski, Lovett, Codding, & Gordon, 2008). For example, in one study, 54% of college students without any disability (n = 496) reported that they were either "often" or "almost always" easily distracted (Lewandowski et al., 2008). Others have reported that inattentive symptoms and difficulties concentrating are significantly and negatively associated with college grade point average (GPA; $r = –.26$; Schwanz, Palm, & Brallier, 2007). These same relations have been reported in children as well (Merrell & Tymms, 2001). Thus,

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inattentive symptoms and difficulties concentrating are common in college students and negatively affect functioning in the academic setting.

Far fewer studies have investigated inattentive symptoms and difficulties concentrating in the general population of college student-athletes. Of the very few that have investigated the topic, prevalence rates of significant and impairing inattentive symptoms (e.g., attention deficit hyperactivity disorder [ADHD]) in NCAA Division I college student-athletes were twice what is most often reported in the general nonathlete college population (Alosco, Fedor, & Gunstad, 2014). Even though there are no studies of inattention and difficulties concentrating in typical college student-athletes, given the time restrictions, travel, and physical demands imposed by participating in their sport, it is likely that these demands impart stress that, in turn, negatively affects attention and the abilities to concentrate (Combs, Canu, Broman-Fulks, Rocheleau, & Nieman, 2015). In fact, multiple investigators have reported on the increased stress that college student-athletes face as a function of participation in their sport (Anshel & Wells, 2000; Lewis, 1991; Petrie, 1992; Yusko, Buckman, White, & Pandina, 2008).

Studies assessing inattention and difficulties concentrating in college student-athletes are clinically significant for several reasons: (a) as noted above, inattention and difficulties concentrating is common in college students (Lewandowski et al., 2008); yet, we know very little about inattention and difficulties concentrating in college student-athletes; (b) by participating in their sport, there is an increased likelihood of stress in college student-athletes which, in turn, may negatively affect attention (Combs et al., 2015); (c) inattention and difficulties concentrating negatively affects GPA (Schwanz et al., 2007); and (d) college student-athletes perceive pressure to perform well in the college academic setting (Ferris, Finster, & McDonald, 2004; Potuto & O'Hanlon, 2007; Wilson & Pritchard, 2005). Thus, while very few extant data have considered the topic of inattention and difficulties concentrating in college student-athletes, there are a multitude of reasons to explore this clinically significant subject.

Most universities have programs that are specifically designed to assist the college student-athlete in successfully managing academic demands (Burns, Jasinski, Dunn, & Fletcher, 2013; Curry & Maniar, 2003; Harris, Altekruse, & Engels, 2003). While less common, some universities have programs that are designed to assist the college student-athlete in managing mental health problems (Watson & Kissinger, 2007). Despite these services being available to student-athletes, not all student-athletes access these potential sources of support (Burns et al., 2013; Comeaux, 2015; Gill & Farrington, 2014; Lopez & Levy, 2013).

Factors that prevent or facilitate help-seeking behavior among student-athletes are important yet not often considered. The present study represents an attempt to fill this research void and considers relationships between self-reported difficulties thinking or concentrating and academic outcomes as well as between self-reported difficulties thinking or concentrating and support service use by college student-athletes. Multiple negative outcomes have been linked to college student-athletes who are not successful academically, including substance abuse (Evans, Weinberg, & Jackson, 1992) and difficulties transitioning to life after sport (Cummins & O'Boyle, 2015). Given these potential outcomes, research is needed to understand the interconnected factors and develop strategies to help student-athletes adjust well to the demands of being a student-athlete while on campus.

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Issues of social identity have been described as central toward understanding general college student adjustment (Torres, Jones, & Renn, 2009) and, more specifically, college student-athlete adjustment (Brewer, Van Raalte, & Linder, 1993; Comeaux & Harrison, 2007; Murphy, Petitpas, & Brewer, 1996). Social identity theory defines a person's identity as one's membership in, and identification with, various social groups (Tajfel, 1978). As both a student and an athlete, student-athletes have multiple social identities (Roccas & Brewer, 2002; Sturm, Feltz, & Gilson, 2011), yet one identity may be more preferred or dominant (Lally, 2005). Likewise, the student and athlete role demands, and ultimately identities, may compete with one another (Killeya-Jones, 2005; Miller & Kerr, 2002).

The athletic identity literature, especially Burke's model of identity (Burke, 1991) states stress may result from instances when individuals' self-perceptions, behaviors, environment, and/or social situations are not congruent with their identity standard. In an effort to relieve the distress and reaffirm one's identity, a person may then change his or her behavior, thereby changing the situation and altering the inputs so these inputs match his or her identity standard. Having a strong athletic identity has been linked to positive outcomes such as greater global self-esteem (Marsh, Perry, Horsely, & Roche, 1995); yet, it has also been linked to negative self-perceptions concerning occupational aspirations (Good, Brewer, Petitpas, Van Raalte, & Mahar, 1993) and academic achievement (Cornelius, 1995; Stryker & Serpe, 1994). Athletic identity can be influenced by contextual factors such as the motivational climate (White & Duda, 1994). This suggests that athletic identity may be malleable and may serve as a mechanism associated with functional outcomes such as GPA.

Present Study

Given the lack of data on college student-athlete self-reported difficulties thinking or concentrating, support service use, and mechanisms that may explain these relationships in college student-athletes, this study sought to complete a two-phase preliminary investigation using a large existing data source, the 2006 *National Collegiate Athletic Association (NCAA) Growth, Opportunities, Aspirations and Learning of Students in College (GOALS)* study. Phase one of our study was descriptive and explored the relationship between high levels of self-reported difficulties thinking or concentrating and GPA in college student-athletes. Given the strong positive relationship between high levels of inattention and difficulties concentrating and negative academic outcomes reported in late adolescents and young adults (Gjervan, Hjemdal, & Nordahl, 2012; Matheson et al., 2013; Sibley et al., 2012), we hypothesized high levels of self-reported difficulties thinking or concentrating would be associated with lower GPA.

Phase two of the project investigated the association between high levels of self-reported difficulties thinking or concentrating and GPA. If high levels of self-reported difficulties thinking or concentrating are associated with having a lower GPA in college student-athletes, are there additional risk factors operating that prevent student-athletes from using services that are designed to improve their academic functioning? We hypothesized that the extent to which a student-athlete identifies with the athletic identity will negatively affect his or her engagement

with on-campus academic services and resources. To test this hypothesis, we conducted moderated mediation analyses in which we examined the indirect effect of self-reported difficulties thinking or concentrating on using academic services through GPA, moderated by athletic identity. Specifically, we expect that GPA will significantly mediate the association between experiencing the highest level of self-reported difficulties thinking or concentrating and use of academic services for individuals low in athletic identity, whereas for those high in athletic identity, the association between GPA and use of services will be nonsignificant.

Our interest in examining GPA is manifold: (a) difficulties thinking and concentrating are negatively associated with college student GPA (Frazier, Youngstrom, Glutting, & Watkins, 2007); (b) academic support service use is associated with increased GPA in college students (Grillo & Leist, 2013); yet, having a low GPA does not predict college student use of academic services (Amenlkhienan & Kogan, 2004); (c) GPA represents an inclusionary criteria for continued participation in intercollegiate athletics (e.g., must have a 1.8 GPA after first year to continue athletic participation) and is therefore a variable of interest to student-athletes, coaches, and athletic administrators; and (d) GPA is a measure that is collected at least twice per year and can be a quick way to ascertain risk and need for mandated academic services.

Our phase two analyses will be carried out using a procedure developed by Preacher, Rucker, and Hayes (2007). See Figure 1 for a visual depiction of this model. The overarching goal of phase two was to provide information that can be used by the campus administrators and providers who work with the student-athletes who report difficulties thinking or concentrating.

Methods

Procedures

In 2006, GOALS survey responses were received from over 19,786 student-athletes representing all three divisions at 620 NCAA member institutions. Respondents answered 260 questions and provided information about their lives as student-athletes across a spectrum of domains, including: (a) academic engagement and success, (b) athletics experiences, (c) social experiences, (d) career aspirations, (e) health and well-being, (f) campus and team climate, and (g) time commitments (Paskus, 2006). The 2006 GOALS study data were released to outside researchers in September 2014.

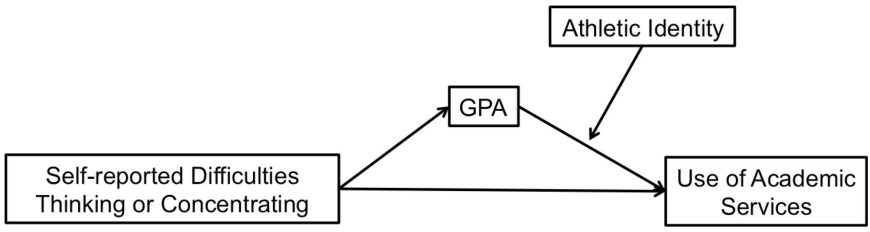

Figure 1 — Conceptual model.

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NCAA research staff created a computer program that sampled institutions at random and selected one to three sports at each NCAA member institution for study participation. The institutional response rate in Divisions I and II was 66%, and 54% among Division III institutions. To minimize institutional burden, schools were asked to collect responses from no more than three of their athletic teams. Ultimately, students from 2,026 individual sport teams at 1,026 member institutions were asked to participate in the study. Responses were collected from teams at 620 institutions. In this process, data were accrued from 19,786 student-athletes. Please see Table 1 for demographic information regarding the 2006 GOALS sample.

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Table 1 Descriptive Data

	Full sample (*N* = 19,786)		High difficulties thinking or concentrating[1] (*n* = 1472)	
	n (%)	*M* (*SD*)	*n* (%)	*M* (*SD*)
Difficulty Thinking or Concentrating (Days/Month)				
15+ Days	1472 (7.4%)		-	
8–14 Days	1672 (8.5%)		-	
4–7 Days	2808 (14.2%)		-	
1–3 Days	4415 (22.3%)		-	
None	8081 (40.8%)		-	
Gender				
Male	11,875 (60.0%)		816 (44.6%)	
Female	7911 (40.0%)		656 (55.4%)	
Race				
White	13430 (67.9%)		982 (71.1%)	
African-American	2175 (11.0%)		185 (13.4%)	
Other	2206 (11.1%)		214 (15.5%)	
Class Standing				
Freshman	6279 (31.7%)		449 (30.7%)	
Sophomore	5069 (25.6%)		438 (30.0%)	
Junior	4826 (24.4%)		378 (25.9%)	
Senior	3083 (15.6%)		196 (13.4%)	
Graduate Student	96 (0.5%)		1 (.1%)	
Roster Spot				
First Team	11139 (56.3%)		836 (57.4%)	
Second Team	4544 (23.0%)		324 (22.3%)	
Third Team	2364 (11.9%)		184 (12.6%)	
Practicing/Not competing	1348 (6.8%)		112 (7.7%)	

(continued)

Table 1 (*continued*)

	Full sample (*N* = 19,786)		High difficulties thinking or concentrating[1] (*n* = 1472)	
	n (%)	*M* (*SD*)	*n* (%)	*M* (*SD*)
Scholarship Status				
None	10276 (51.9%)		687 (46.9%)	
Partial athletic	5832 (29.5%)		489 (33.4%)	
Full athletic	3396 (17.2%)		289 (19.7%)	
Self-Reported Likelihood of Becoming a Professional Athlete[2]		2.30 (1.54)		2.43 (1.69)
Athletic Identity[3]		3.93 (1.43)		4.42 (1.48)
GPA[4]		6.12 (1.68)		5.62 (1.70)
Use Available of Academic Services[5]		1.90 (0.57)		2.00 (0.61)
Had a diagnosed/treated emotional or psychological problem or symptom while in college				
Yes	1112 (6.6%)		225 (17.2%)	
No	15740 (93.4%)		1086 (82.8%)	
Had a diagnosed/treated substance abuse problem while in college				
Yes	310 (1.9%)		73 (5.6%)	
No	16480 (98.2%)		1228 (94.4%)	

Notes. Values within category that do not total 100% are due to missing data.

[1]High inattentiveness is operationalized as those student-athletes reporting experiencing difficulty concentrating 15+ days per month.

[2]Self-reported likelihood of becoming a professional athlete is coded such that 1 = "very unlikely" and 6 = "very likely."

[3]Athletic identity was assessed with the statement "I view myself more as an athlete than a student" and responses were coded such that 1 = "strongly disagree" and 6 = "strongly agree."

[4]GPA is coded such that 1 = "D or below (<1.5)" and 9 = "A (3.84-4.00)."

[5]Use of academic services is coded such that 1 = "Do not use services" and 3 = "Use services frequently," where services include academic advisors (for both course selection and degree progress), tutors (for both material review and assistance with assignments), note-takers, study hall, and faculty mentors.

The 2006 GOALS survey was a self-administered, anonymous survey completed by student-athletes at their institution. In a few cases, institutions opted to present students with an electronic version of the questionnaire. Surveys were administered in a proctored setting in which only the faculty athletics representative and the team members were present; no athletics personnel (e.g., coach, trainers, etc.) were allowed in the room during the GOALS survey administration.

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Quasi-Independent Variables

Self-Reported Difficulties Thinking or Concentrating. One of the 260 questions included in the 2006 GOALS questionnaire asked student-athletes to rate the frequency of difficulties thinking or concentrating: "During the last 30 days, on how many days (if any) did you have difficulty thinking or concentrating?" Responses were coded using a 1–5 Likert scale anchored by 1 (none) to 5 (15+ days). As noted in Table 1, 7.4% of the student-athletes reported having difficulty thinking or concentrating a majority of the time (15+ days in the previous month). Considering self-reported difficulties thinking or concentrating as a continuous variable, on average the sample endorsed difficulty thinking or concentrating between 1–3 days (coded = 2) and 4–7 days (coded = 3; $M = 2.13$, $SD = 1.29$).

Identity. The extent to which a student-athlete identified with the athletic or academic roles was assessed by the following question: "How much do you agree or disagree with the following statement: I view myself as more of an athlete than as a student?" Responses were coded using a 1–6 Likert scale anchored by 1 (strongly disagree) to 6 (strongly agree); high scores on this item represent a greater athletic than student identity. On average, the total sample endorsed having a moderate athletic identity ($M = 3.93$, $SD = 1.43$).

Grade Point Average. Student GPA was assessed with one item asking the student-athlete to report their current GPA on a 4.0 scale. These responses were coded such that an "A" average = 1; "A–" = 2; "B+" = 3; and so on. A small portion of the student-athletes ($n = 237$, 1.2% of the sample) had yet to receive grades or did not know their GPA. These student-athletes were excluded from all analyses. On average, the sample endorsed having a GPA between a B+ and B ($M = 3.88$, $SD = 1.68$).

Dependent Variable

Campus Service Use: Academic Resources. The use of available academic services and resources was assessed on the 2006 GOALS questionnaire by the following question: "Which of the following academic or career support services does the athletic department at your school provide for athletes?" Various academic support services were listed: academic advisors (for both course selection and degree progress), tutors (for both material review and assistance with assignments), note-takers, study hall, and faculty mentors. Students rated whether each service was something they "have access to and use frequently," "have access to and use occasionally," "have access to but do not use," "do not have access to," or are "not sure we have this service." Because the purpose of this study is to examine the predictors of students using available services, we coded students who answered, "do not have access to" and "not sure" as missing, then treated the remaining three options as a Likert-type scale ranging from 1 (have access but do not use) to 3 (have access to and use frequently). An omnibus academic resources variable was computed by summing the various academic resource service options. On average, the sample as a whole reported modest service use ($M = 1.90$, $SD = 0.57$). To ensure that our recoding of service usage did not alter the obtained results, we reran all analyses with "do not have access to" and "not sure we have this service"

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as equivalent to "have access to but do not use," as all NCAA athletes have the services listed. The pattern of results obtained is identical to what is presented here with those two categories coded as missing.

Results

Phase 1

The first phase was descriptive: Who are student-athletes who experience the highest levels of difficulties thinking or concentrating, and what does experiencing such symptoms lead to in terms of academic performance and mental health? See the right half of Table 1 for demographic information regarding those student-athletes who endorse high levels of difficulties thinking or concentrating (i.e., difficulty thinking or concentrating on 15+ days in the last month).

Demographically, there are some small but statistically significant differences between those student-athletes who experience the highest level of difficulties thinking or concentrating and those who experience less. To examine these demographic differences, we constructed a series of general linear models in which the demographic in question was held to predict the dichotomous difficulties thinking or concentrating variable (i.e., whether the student-athlete endorse difficulties thinking or concentrating on 15+ days per month or not). Female student-athletes are significantly more likely than male student-athletes to experience this high level of difficulties thinking or concentrating, $F(1, 18446) = 6.08$, $p < .001$, $R^2 = .0003$, although this difference is very modest. Likewise, there is a significant difference among the races in probability of having the highest level of difficulties thinking or concentrating, with those student-athletes who identify as "other" having the highest probability, followed by those who identify as "African-American" followed by those who identify as "White," $F(1, 17434) = 9.25$, $p < .001$, $R^2 = .001$. Again, this demographic explains very little variance in the likelihood of having the highest level of difficulties thinking or concentrating. In terms of academic year, sophomores had the highest likelihood of difficulties thinking or concentrating, followed by juniors, then freshmen, then seniors, then graduate students, $F(1, 18287) = 5.65$, $p < .001$, $R^2 = .001$. Similar to the above statistically significant findings, this demographic explains very little variance in the likelihood of having the highest level of difficulties thinking or concentrating.

In terms of athletic performance, there was no difference among the different types of roster spots (e.g., first team, second team), $F(1, 18244) = 1.36$, $p > .25$, $R^2 = .0002$. Those student-athletes on a full athletic scholarship had the greatest likelihood of having high levels of difficulties thinking or concentrating, followed by those on a partial athletic scholarship, followed by those not on an athletic scholarship, $F(1, 18347) = 12.86$, $p < .001$, $R^2 = .001$. There was also a significant association between self-reported likelihood of playing their sport professionally and the likelihood of experiencing the highest level of difficulties thinking or concentrating, such that the stronger the student-athlete's belief that he or she will become a professional athlete, the greater the likelihood that he or she will report difficulty thinking or concentrating, $t(18293) = 4.51$, $p < .001$, $R^2 = .001$. Not surprisingly, there was a significant association between athletic identity and

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difficulties thinking or concentrating, such that the more a student-athlete identifies as an athlete (as opposed to as a student), the greater the likelihood that he or she will experience the highest level of difficulties thinking or concentrating, $t(18261) = 13.83$, $p < .001$, $R^2 = .01$.

In terms of academic performance, student-athletes who endorsed higher levels of difficulties thinking or concentrating had significantly lower GPAs, $t(15702) = -11.63$, $p < .001$, $R^2 = .01$, and used services slightly more, $t(17202) = 7.29$, $p < .001$, $R^2 = .003$, than did those who did not endorse high levels of difficulties thinking or concentrating.

Finally, in terms of mental health, those student-athletes who experience the highest level of difficulties thinking or concentrating also experience greater likelihood of having been diagnosed or treated for an emotional or psychological disorder while in college, $t(16683) = 16.39$, $p < .001$, $R^2 = .02$, as well as a greater likelihood of having been diagnosed or treated for a substance abuse problem while in college, $t(16624) = 10.68$, $p < .001$, $R^2 = .01$.

Phase 2

The aim of the second phase of this work was inferential: What process leads student-athletes who experience difficulties thinking or concentrating to pursue the academic support services available to them? Results from conditional process analysis (Hayes, 2013) revealed that there was a significant indirect effect between experiencing the highest level of difficulties thinking or concentrating and academic support service use through GPA, moderated by identity, $F(4, 14738) = 184.28$, $p < .001$, $R^2 = .22$.

As seen in Table 2, experiencing the greatest level of difficulties thinking or concentrating was significantly associated with the mediator (GPA), which in turn was significantly associated with academic support service usage. This latter association was significantly moderated by athletic identity (Index of Moderated Mediation = –.0056, CI = [–.0083, –.0033]). Probing this interaction revealed that at the lowest level of athletic identity (i.e., the 10th percentile of athletic identity), GPA was significantly and positively associated with service use, unstandardized $b = 0.08$ (.01), $t = 15.24$, $p < .001$. At the highest level of athletic identity (i.e., the 90th percentile of athletic identity), the association between GPA and service usage was still significantly and positively different from zero, $b = 0.04$(.005), $t = 7.66$, $p < .001$. However, in line with our hypothesis, this association was significantly weaker than the association between GPA and service usage at the lowest level of identity, interaction: $F(1, 14520) = 23.81$, $p < .001$, R^2 change = .002.

Discussion

To our knowledge, this preliminary investigation represents the first empirical investigation of the impact of high levels of difficulties thinking or concentrating on college student-athletes' GPA. In phase 1 (descriptive study), our results suggest that females, sophomores, and those with substance use disorders and/or mental health diagnoses are most likely to report having difficulties thinking or concentrating for 15+ days in the previous month. Demographic variables not

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Table 2 Moderated Mediation Analysis

		Consequent						
		M (GPA)			Y (service usage)			
Antecedent		Coeff	*SE*	*p*		Coeff.	*SE*	*p*
X (difficulties thinking or concentrating)	*a*	0.600	.05	< .001	*c′*	–0.065	0.02	< .001
M (GPA)		—	—	—	b_1	–0.075	0.01	< .001
V (athletic identity)		—	—	—	b_2	–0.087	0.01	< .001
M × V		—	—	—	b_3	0.008	0.00	< .001
Constant	i_1	3.893	0.02	< .001	i_2	2.627	0.04	< .001
		R^2 = .008				R^2 = .218		
		$F(1, 15924) = 131.02$, $p < .001$				$F(4, 14738) = 184.28$, $p < .001$		

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associated with self-reported difficulties thinking or concentrating included sport type, self-reported athletic ability, NCAA division, and race/ethnicity.

High levels of difficulties thinking or concentrating were also associated with lower college GPA. The relationship between inattention and concentration problems and negative academic outcomes in college students is a well-replicated finding (Frazier et al., 2007; Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999; Schwanz et al., 2007). These data suggest that these findings may possibly be extended to college student-athletes.

The athletic/academic identity variable acts as a moderator of the mediating effect of GPA on the relationship between high levels of difficulties thinking or concentrating and the use of academic support resources on campus. If the student-athlete who is experiencing high levels of difficulties thinking or concentrating identifies more as a student, GPA is likely to prompt academic service use. However, if the student-athlete identifies more as an athlete, GPA is less likely to lead to use of campus academic resources. This is an interesting finding with clear intervention implications; for those student-athletes who identify more as athletes, a retroactive, "wait-to-fail" approach may be present. For those student-athletes who identify more as students, a more proactive approach seems likely.

Although many individual demographic, precollege, and social factors have been previously demonstrated to impact college student-athlete academic performance (Gaston-Gayles, 2004; Pascarella, Edison, Hagedorn, Nora, & Terenzini, 1996; Petrie & Russell, 1995; Sellers, 1992), to our knowledge no previous investigations studied the relationship between social identity, academic resource use, and self-reported difficulties thinking or concentrating. The complex relationship between self-reported difficulties thinking or concentrating and academic resource use in college student-athletes warrants further attention. Given the data suggesting that college environmental characteristics also impact college student-athlete academic performance (Comeaux, 2010; Gaston-Gayles & Hu, 2009; Umbach, Palmer, Kuh, & Hannah, 2006), interventions that consider the student-athlete identity may be particularly beneficial to consider.

One such intervention is the Scholar-Baller (SB) program (Harrison & Boyd, 2007), which consists of a SB team of educators, practitioners, researchers, professional athletes, and entertainers who work with participating universities to help student-athletes create compatible identities as both students and athletes. The SB curriculum was developed to promote academic and social success and campus integration in college student-athletes. For example, one of the curriculum units, "Self Identity and Social Identity," aims to assist student-athletes in developing stronger levels of self and social identity (Harrison & Boyd, 2007).

Limitations and Implications

While these data are novel and hold potential intervention implications, these findings must be considered in the context of our study limitations. First, the cross-sectional nature of these data limit interpretation of the results; it is certainly possible that both difficulties thinking or concentrating and athletic identity may change during the course of a student-athletes' college career. A longitudinal study that dynamically assesses these variables could provide a better understanding of the impact of difficulties thinking or concentrating on academic resource use. Second, a large number of statistical tests were conducted in the present analyses, which may have inflated the risk of Type I error. However, the risk of Type I error was likely mitigated by our theory-based approach. Third, the GOALS question, "During the last 30 days, on how many days (if any) did you have difficulty thinking or concentrating?", contains two parts: "difficulties thinking" and "difficulties concentrating". Concentration has been defined in a variety of ways (Abernethy, 1993) but it is generally considered to be related to attention, especially the ability to select attention (LaBerge, 1990). *Difficulties thinking* is a more diffuse and ill-defined term that may relate to a variety of cognitive domains including memory, information processing, attention, and/or problem solving. Given the GOALS wording, it is not possible to determine which part of the question the student-athlete was endorsing, "difficulties concentrating" or "difficulties thinking." Thus, future work should consider these relationships more precisely by more clearly operationalizing the involved constructs. For example, although "difficulties concentrating" is related to inattention, a future project could investigate inattention and use the World Health Organization Adult ADHD Rating Scale (Kessler et al., 2005) to more comprehensively assess for self-reported inattention. Fourth, given that there are specific measures used to assess athletic identity (e.g., Athletic Identity Measurement Scale; Brewer et al., 1993), these results should be considered preliminary until replicated using a validated measure of athletic identity. Finally, it is possible that after receiving academic services, student-athletes are more likely to identify more as students. Whether this relationship works in both directions should be considered in future longitudinal research.

Bearing in mind these limitations, the results of this investigation suggest some initial implications for professionals who work with college student-athletes. First, the finding that 7.4% of the student-athletes surveyed reported having difficulties thinking or concentrating for the majority of days of the previous month suggests that professionals who work with student-athletes should screen for elevated rates of self-reported difficulties thinking or concentrating. Difficulty thinking or concentrating can be related to many long-term or transient problems or conditions. Thus, a positive screen will need to be followed up with a more complete evaluation

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to determine the etiology of the difficulty thinking or concentrating and allow for a more targeted intervention.

In student-athletes who identified more as students, these high levels of difficulties thinking or concentrating were alone associated with academic resource use. However, in those student-athletes that identified more as athletes, a lower GPA needed to be present before the student-athlete with high levels of difficulties thinking or concentrating used services. This suggests that in addition to screening for self-reported difficulties thinking or concentrating, professionals may also wish to assess the student-athletes' identity.

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Conclusions drawn from or recommendations based on the data provided by the National Collegiate Athletic Association are those of the authors based on analyses/evaluations of the authors and do not represent the views of the officers, staff or membership of the NCAA.

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