

Journal of Issues in **Intercollegiate Athletics**

Exploring Success: Variations in Division I Student-Athlete Academic and Athletic Performance

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The student-athlete literature is rife with studies examining factors that improve or inhibit academic or athletic performance. This study examined how different types of Division I FBS performers differ on three conceptual frameworks representing internal factors. Each of the frameworks – Mindset, Personal Growth Initiative, and Student-Athlete Experiences – have positive attributes relative to performance, development, and well-being. There were meaningful differences between high and low academic performers on academic experiences. Student-athletes in this sample also displayed a growth mindset towards academic and athletic abilities, as well as high levels of Personal Growth Initiative. In addition, student-athletes who performed at high levels athletically did not report fewer experiences academically. This study also contributed an athletic performance metric, the College Athletic Performance Indicator (CAP-I 1.0), that can be used and improved upon to quantify individual athletic performance in higher education, irrespective of sport. Implications for student-athlete development professionals are discussed.

In recent years, intercollegiate athletics has reached new heights, and student-athletes are increasingly held accountable in both the classroom and on the playing field. This is particularly prevalent among student-athletes attending National Collegiate Athletic Association (NCAA) Division I institutions (Wrisberg, Simpson, Loberg, Withycombe, & Reed, 2009). The rise in coaches salaries corresponding with athletic team successes, especially compared to academic team successes, is also documented (Wilson & Burke, 2013; Wilson, Schragger, Burke, Hawkins, & Gauntt, 2011). Reform groups such as the Knight Commission on Intercollegiate Athletics (KCIA) have advocated for higher academic benchmarks, including incentivizing academic outcomes (KCIA, 2010) and examining governance challenges that interfere with academic reform (KCIA, 2013). Accordingly, the National Collegiate Athletic Association (NCAA) has continued to develop increasingly rigorous accountability metrics such as the Academic Progress Rate (APR) and adopted higher eligibility standards. More locally, institutional academic support units and student-athlete development professionals balance an expansive repertoire of support services for student-athletes to facilitate their holistic development in the areas of academic opportunity, personal development, and success (National Association of Academic Advisors for Athletics, 2014).

NCAA Division I student-athletes face a standard to compete and perform at the highest level of amateur sport with coaches and athletic departments under increasing pressure to produce winning teams and generate revenue (Eitzen, 2009). As a result, researchers have identified sources of role conflict among student-athletes based on competing time demands and pressures to perform both academically and in athletic competition (Killeya-Jones, 2005; Marx, Huffmon, & Doyle, 2008). At every level, the stakes are high and it is incumbent upon student-athletes to perform at optimal levels to reach their full potential.

Realistically, both a high and low academically performing student-athlete can graduate, given the low performer meets minimal eligibility and institutional benchmarks. A high or low athletic performer can also be considered successful by fulfilling their four-year athletic commitment to their team and institution. Even so, student-athletes face different expectations to be successful from multiple sources (Carodine, Almond, & Gratto, 2001) encountering both praise and criticism (Thelin, 1996). Examples include male student-athletes facing pressure from teammates to excel (Marx et al., 2008), and female student-athletes reporting stress due to high expectations to perform from coaches, professors, and roommates (Heller, Bloom, Neil, & Salmela, 2005). Anxiety around poor athletic performance has been documented (e.g., Wiggins, Lai, & Deiters, 2005; Pinkerton, Hinz, & Barrow, 1989), along with concern surrounding the ability to maintain academic requirements and excellence in the classroom (Miller & Kerr, 2002). Due to these exceptional demands placed on student-athletes, there is a need to understand the factors associated with high or low academic and athletic performance.

Statement of Purpose

The purpose of this study was to explore differences in internal factors related to student athlete success among NCAA Division I Football Subdivision (FBS) high and low academic and athletic performers. Internal factors were chosen as they can be developed in students, and current research primarily depicts external factors as beyond student control (e.g., policy, finances) or as pre-college factors encompassing matriculation credentials (e.g., grade point

average, standardized test scores). Additionally, few studies categorize variations in academic and athletic performance (e.g., Gaston-Gayles, 2005; Gaston-Gayles, 2004). The three internal factors investigated in this study were categorized as psychological (academic and athletic Mindset), developmental (Personal Growth Initiative), and behavioral (Student-Athlete Experiences). The research question addressed in this study is: How do academic and athletic performers of various ability levels differ on academic and athletic Mindset, Personal Growth Initiative, and Academic, Social, and Everyday Experiences?

Review of Student-Athlete Success Literature

The academic and athletic performance of student-athletes in higher education has garnered significant interest among various stakeholders. Interestingly, few studies measure both the academic and athletic performance of a student-athlete, the predominant areas in which they are most commonly evaluated. This limitation neglects to recognize the intricacies of the role as both a student and athlete. Interestingly, ‘student-athlete success’ has many interpretations, due to the varying criteria used throughout the literature to define success or performance. The primary academic success measures used are graduation rates (Gottschalk & Milton, 2010), and college GPA which are used to compare performance among student-athlete groups (Maloney & McCormick, 1993). Athletic success, however, is not as well defined. Some studies use factors such as roster spot or frequency of competition, post-season competition, and individual accolades earned by the student-athlete (Rankin, Merson, Garvey, Sorgen, Menon, Loya, & Oseguera, 2016). Other studies rely on scales that assess positive aspects of athletic performance such as how often one expects to be successful, the motivation to compete, or sport specific statistics (Catina & Iso-Ahola, 2004; Reese, 2005; Zizzi, Deaner, & Hirschhorn, 2003). This student-athlete success study focused on exploring factors among high and low performing student-athletes.

Conceptualization of Precollege, External, and Internal Factors

The precollege, external, and internal factor themes were assigned by the researchers based on strongest category alignment. It can be deliberated, for example, that faculty-student interaction (themed an external factor for this study) is motivated by internal factors. The rationale for this current assignment is that while psychological characteristics may be the catalyst to a student interacting with faculty members, the student-faculty exchange involves both the student and an external factor outside of individual control (faculty member). This example emerges with other external factors that may have an underlying internal influence (e.g., coaches influence, group membership), yet still require an exchange beyond individual student control.

Academic Performance

Precollege factors. Recognizing that pre-college factors are numerous and wide in scope (e.g., institutional conditions at the post-secondary level, socioeconomic factors, family educational attainment), for the purposes of this study, pre-college factors are limited to indicators the NCAA recommends potential student-athletes are screened for – high school grade point average and college admission exam scores. On the academic end of the spectrum, grade

point average (GPA) is the common denominator within initial eligibility policies, which has been found to consistently predict success in higher education (Comeaux & Harrison, 2007). In addition, lower high school GPAs were found to negatively affect students in college (Comeaux & Harrison, 2007; Sellers, 1992). On the contrary, some studies found standardized test scores paired with high school academic courses (Ervin et al., 1985) or standardized test scores paired with motivation (Gaston-Gayles, 2004) to be better indicators of higher education success over GPA. Other studies indicated standardized test scores did not correlate with first semester grades (Sedlacek & Adams-Gaston, 1992). These characteristics provide a projection of future academic outcomes; however, they are unmalleable once student-athlete matriculation to higher education occurs. It is important to note that metrics beyond grade point average and standardized test scores have been used and tested to predict future success, including learning strategies and techniques, cognitive strategies, and content knowledge (Lombardi, Conley Downs, Downs, & Conley, 2012).

External factors. A timeless truth related to high academic performance is the role of meaningful contact and interaction with faculty (Rankin et al., 2016; Pascarella & Terenzini, 1980). For instance, student-faculty interaction can affect overall student motivation (Trolian, Jach, Hanson, & Pascarella, 2016). Interaction with peers outside of the athletic department also leads to increases in academic related skills (Gayles & Hu, 2009) and a greater balance between academic and athletic motivation (Gaston-Gayles, 2005). Isolating athletic cultures that perpetuate less energy and time devoted to academics appear detrimental to academic performance (P. A. Adler & P. Adler, 1991; Meyer, 1990; P. Adler & P. A. Adler, 1985) and various secondary higher education gains (e.g., artistic and business interests; Astin, 1984). While time spent with teammates can strengthen bonds, it limits interaction with non-athletes (Wolf-Wendel, Toma, & Morphew, 2001).

Additional external factors affecting academic outcomes include coaches' influence (Simons et al., 1999), athletic department successes and strategy (Rishe, 2003; Cunningham, 2002), competition season (Scott et al., 2008), group membership (Aries et al., 2004; Eitzen, 2009), scholarship support (Le Crom, Warren, Clark, Marolla, & Gerber, 2009; Milton, Freeman, & Williamson, 2012; Rubin & Rosser, 2014), and perceptions of climate and respect (Rankin et al., 2016). Other studies have investigated the place of residence of male and female first-year student-athletes (i.e., on or off campus) and this relationship to academic performance (Snyder, Kras, Bressel, Reeve, & Dilworth, 2011). More stringent academic policies have positively affected graduation rates over time (Suggs, 1999; Heck & Takahashi, 2006), and students entering with lower levels of achievement tend to earn lower grades their first year in college (Gaston-Gayles, 2009).

Internal factors. Overall, student-athletes with a strong commitment to the academic role display positive attributes including: a repertoire of study skills and sense of self-worth, increased intrinsic motivation toward academic tasks, and greater academic performance especially compared to student-athletes with an imbalance between academic and athletic roles or a stronger commitment to the athletic role (Miller & Kerr, 2002; Simons, Van Rheenen, & Covington, 1999; Snyder, 1985). Greater identification with the athletic role appears to create an inverse relationship with academic adjustment and challenges with personal-emotional adjustment (Melendez, 2010). While all Division I student-athletes are required to balance

academic and athletic roles, some students have a greater affinity towards the academic versus the athletic role and vice versa.

Studies have also shown that student-athletes who display various positive personal qualities perform better academically. For example, student-athletes with greater levels of hope also have higher semester GPAs and were more willing to commit to new goals (Melendez, 2010; Snyder, 1985). Possessing a positive self-concept emerged as positively correlated with higher GPAs and persistence (Tracey & Sedlacek, 1987). Other qualities resulting in stronger relationships with GPAs and persistence include: focusing on long-term over short-term needs, positive coping abilities, leadership experience, practical experience between college major and career opportunities, a strong support system, and community involvement (Tracey & Sedlacek, 1984; Tracey & Sedlacek, 1987). Student-athletes who suffer from higher levels of stress and competitive trait anxiety attain lower GPAs (Petrie & Russell, 1995). Once matriculating to college, first-year academic success has been identified as a critical outcome in future performance and persistence (Allen, Robbins, Casillas, & Oh, 2008).

Athletic Performance

Precollege factors. On the athletic side, the size of a high school is indicative of starting status among college football athletes (Spieler, Czech, Joyner, Munkasy, Gentner, & Long, 2007). A larger high school often means more players on the roster, allowing high school football to mirror collegiate style football in elements such as advanced techniques and a competitive playbook (Spieler et al., 2007). A larger high school also allows for position specialization (Spieler et al., 2007), which is beneficial when entering college with greater experience and focused time in a position.

External factors. With respect to external factors tied to athletic success, external pressures from peer groups (especially in high profile sports) to strengthen one's athletic commitment influences on-field performance (Simons et al., 1999), as well as the realization that one has more to gain from athletic over academic success (Rishe, 2003; P.A. Adler & Adler, 1991). Socialization factors such as extrinsic awards recognizing prestige are also influential in establishing a greater emphasis on sport (Snyder, 1985). Danish (1983) suggests athletic performance is influenced by the choice to pursue activities that support optimal athletic performance, which by default interferes with academic time allotment. The messages student-athletes receive from the media, especially African American males idealizing professional sport (Harrison, 2002; Sailes, 1993) and being celebrated on campuses mainly for athletic accomplishments propagates an athletic performance focus (Harrison, 2002). Similar to external academic factors, the coach-athlete relationship is influential to athletic performance (Stirling & Kerr, 2009), as well as faculty-student engagement and the number of interactions with athletic personnel (Rankin et al., 2016). Along the line of relationships, team dynamics can play a role in athlete investment, which may influence athletes to perform their given role at a higher level, in addition to seeking tasks that fall beyond that role (Czekanski & Turner, 2014).

Internal factors. Internal factors related to athletic performance include the role of psychological skills. High athletic performers have the ability to cope with adversity, and exude strong coping skills overall (Spieler et al., 2007). Zizzi et al. (2003) highlight the multitude of psychological skills found to influence various outcome variables – including relaxation, self-

talk, self-regulation, self-monitoring, concentration, goal setting, imagery, and cohesion. Golby & Wood (2016) substantiate these ideas through highlighting the role of mental toughness within the positive psychology movement in athletic populations and beyond.

The effect of beliefs on oneself has also been studied related to success in sport (Catina & Iso-Ahola, 2004). High performing athletes generally feel good about themselves, which aligns with the idea that high performance is predicated on salient views of self (Taylor & Brown, 1988). Furthermore, high athletic performance is tied to specific personality traits, including dispositional and state hope (Curry, Snyder, Cook, Ruby, & Rehm, 1997), as well as openness, conscientiousness, or neuroticism (Schneider, Rench, Lyons, & Riffle, 2011; Piedmont, Hill, & Blanco, 1999). A link between higher capacity for emotional skills (i.e., awareness, control, utilization) and increases in sport-specific baseball performance exists (Zizzi et al., 2003). Beyond psychological skills training, mindfulness-based interventions have been used to gauge sport performance differences pre- and post-intervention (Gross, Moore, Gardner, Wolanin, Pess, & Marks, 2016).

Conceptual Frameworks

Academic and Athletic Mindset

It is vital to continue investigating internal factors connected with performance as they have the potential to influence outcomes. Dweck's (2006) Mindset framework, more formally known as Implicit Theories of Self, examines the beliefs and attitudes individuals hold towards their abilities. Through this psychological construct, an individual is categorized with a growth or fixed mindset. A growth mindset is derived from the belief that abilities are malleable; whereas a fixed mindset is defined as the belief that abilities are a concrete entity (Dweck, 2006). There are many positive conclusions about holding an incremental (growth) theory of intelligence over an entity (fixed) theory, including: increases in academic motivation and performance, positive responses to academic challenges, a focus on learning goals that expand knowledge versus performance goals documenting ability, motivation to seek challenges and perceive risks as beneficial to development, and attribute shortcomings to a lack of effort rather than a lack of ability (Dweck, 1999; Henderson & Dweck, 1990; Blackwell, Dweck, & Trzesniewski, 2007; Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999; Robins & Pals, 2002).

Personal Growth Initiative

Personal Growth Initiative (PGI; Robitschek, Ashton, Spring, Geiger, Byers, Schotts, & Thoen, 2012) is the active and intentional engagement in growth-enhancing behaviors and change benefiting all areas of life (Robitschek, 1998; Robitschek, 1999). Higher levels of PGI are associated with greater levels of well-being (Robitschek & Keyes, 2009), lower levels of anxiety and depression (Robitschek & Kashubeck, 1999), an increase in healthy coping (Robitschek et al., 2012), and growth across life domains, especially concerning personal identity (Thoen & Robitschek, 2013). College students with high PGI reported higher levels of instrumentality, assertiveness, internal locus of control, and lower levels of chance-oriented locus of control (Robitschek, 1998). Similar to Mindset, collegiate athletic performance has not been studied through the lens of the PGI framework.

Student-Athlete Experiences

Originally focused on evaluating educational outcomes, the field of higher education has shifted over decades to obtain student insights on educational experiences (Astin, 1993b). Various metrics have emerged to capture actual student experiences, such as the Academic and Intellectual Development Construct (Pascarella & Terenzini, 1980), The National Survey of Student Engagement (NSSE; Kuh, 2001), The College Student Report, and the College Student Experiences Questionnaire (CSEQ; Cox, Sandstedt, Martens, Ward, Webber, & Ivey, 2004). These scholarly reports and metrics support our understanding of effective practices and stimuli promoting a positive and meaningful higher education experience for students.

These studies have also been the impetus to over 30 years of scholarly research examining the experiences of collegiate athletes (Paule & Gilson, 2010). The literature on intercollegiate athletic participation shows positive educational experiences resulting in beneficial personal and academic gains (Danish, Petitpas, & Hale, 1993). Experiences of student-athletes tend to influence additional college outcomes such as learning and self-awareness, and motivation to succeed academically (Wolniak, Pierson, & Pascarella, 2001). Umbach, Palmer, Kuh, and Hannah (2006) determined that student-athletes tend to be as engaged in higher education experiences, if not more, compared to non-athlete peers. The findings of Shulman and Bowen (2001) and Bowen and Levin (2003) create a juxtaposition with some of these findings, as those works tend to be more critical of the intercollegiate athletic experience.

The Student-Athlete Experiences Inventory (SAEI; Cox et al., 2004), used to capture student-athlete experiences in the present study, quantifies the various academic, social, and other assorted (hereafter everyday) experiences student-athletes engage in during college. Higher scores on each of the three SAEI subscales were meaningfully related to practical gains on the Student-Athlete Gains Inventory (Cox et al., 2004). Experiences that were academic and social in nature were more predictive of gains than everyday experiences (Cox et al., 2004). Cox et al. (2004) suggest additional research should focus on studying the effect of experiences on various educational outcomes and gains, which is one of the goals of this study.

Methods

Research Question

The primary question guiding this study was: How do academic and athletic performers of various ability levels differ on academic and athletic Mindset, Personal Growth Initiative, and Academic, Social, and Everyday Experiences? This study was designed to examine how academic and athletic performers of various ability levels differ on these psychological, developmental, and behavior-based frameworks chosen to reflect internal factors.

Description of Sample Selection

Primary data was collected from 331 Division I FBS student-athletes representing six institutions within the Pac-12 and Mountain West conferences located in the Pacific Northwest, Pacific Southwest, and Desert Regions. A nonprobability sampling method, or convenience sampling, was used for this study. Convenience sampling encompasses members of the population who meet certain criteria, are easy to access, and willing to participate (Dornyei,

2007). The six institutions invited to participate were selected based on established relationships with academic support administrators who could assist with data collection. The sample of student-athletes differed in sport type, gender, academic standing (juniors, seniors, as well as postgraduate), and race/ethnicity. Specifically, 29 of the 30 sports sponsored by the Pac-12 and Mountain West conferences were represented. The percentage of male participants was 40.79% (135), while the percentage of female participants was 57.10% (189). This distribution is slightly different than the national average, which shows there are still more male than female student-athletes participating in championship sports (NCAA, 2016). The population consisted primarily of juniors (36.6%; 121), seniors (43.8%; 145), and postgraduates (8.2%, 27). Tables 1, 2, and 3 display institutional representation, sport, and self-identification data for this study compared to 2015-16 data from both the Pac-12 and Mountain West Conferences.

Table 1

Institution Representation as a Percentage

Institution	<i>N</i> = 331	%
<i>Pac-12</i>		
Institution 1	33	10.0
Institution 2	60	18.1
Institution 5	35	10.6
Institution 6	36	10.9
<i>Mountain West Conference</i>		
Institution 3	121	36.6
Institution 4	43	13.0
<i>Other</i>		
Did not specify / outside of the six participating schools	3	0.9

Table 2

Sport Representation as a Percentage (Compared to the Pac-12 and Mountain West Conferences)

Sport	Men			Women		
	<i>N</i> = 331	Pac-12	MWC	<i>N</i> = 331	Pac-12	MWC
Baseball	7.3	10.59	7.87			
Basketball	1.5	4.67	5.58		3.6	5.86
Beach Volleyball	0.6					
Cross Country	4.55	4.18	4.18	4.55	5.65	7.30
Field Hockey				0.6	1.27	
Football	13.3	35.00	41.50			
Golf	0.6	3.27	3.39	1.2	2.38	2.88
Gymnastics	0.3	1.03	0.61	3.0	3.32	2.39
Lacrosse			1.53	0.3	4.22	2.28
Rowing	2.4			2.4	14.82	2.42
Rugby				0.9		
Soccer	3.6	3.73	4.91	5.7	9.23	11.16
Softball		0.00		8.5	5.13	7.23
Swimming & Diving	5.4	4.50	2.56	7.6	6.56	10.00
Tennis	1.2	2.46	2.56	1.8	2.69	3.37
Track & Field	3.6	11.29	9.25	7.3	13.86	16.86
Volleyball		1.38		4.5	5.29	6.21
Water Polo	0.3	2.75	1.50	0.9	2.88	1.86
Wrestling	0.3	2.70	3.39		0.00	
Other Sport	2.1					

Note: The Pac-12 and Mountain West Conference data is from the 2015-16 academic year and can be accessed from the NCAA's demographic database; sports that are not represented by the conferences or within the study are left blank; conference data on indoor and outdoor Track & Field were averaged for the Track & Field designation within this study. Fonts in bold type are from this study.

Table 3

Participant Description as a Percentage (Compared to the Pac-12 and Mountain West Conferences)

Description of Self	%	Pac-12		MWC	
		Men	Women	Men	Women
African American or Black	7.9	19.36	10.75	19.38	9.44
Asian or Pacific Islander	6.9	3.27	3.96	1.13	2.11
Hispanic or Latino American	9.7	7.34	6.53	7.20	6.63
Native American or Indian American		0.59	0.70	0.27	0.42
White, non-Hispanic (includes Middle Eastern)	58.3	47.56	56.93	49.80	58.18
Multi-racial	4.2	5.65	5.55	5.77	7.61
Not listed		9.85	8.63	9.43	6.67
Prefer not to respond	1.8				
Did not respond	11.18				

Note: The Pac-12 and Mountain West Conference data is from the 2015-16 academic year and can be assessed from the NCAA's demographic database; descriptions that are not represented by the study are left blank. Fonts in bold type are from this study.

Data Collection

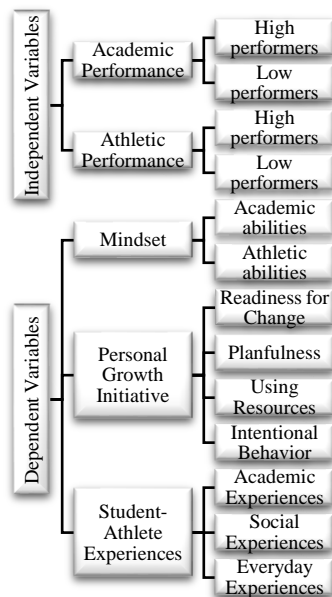
The survey was devised through the university’s design suite system, Qualtrics. The six consenting athletic department administrators received an email with study materials and options for distribution, including a study introductory video link (bit.ly/studyintroductoryvideo), a student-athlete email, and a study flyer. The data collection process took approximately 14 weeks, or about one academic semester.

Participants were informed of participation time, as well as IRB approved study compensation used to increase response rate. This encompassed entry into an Amazon gift card drawing, practical tips that could be implemented during a student’s collegiate career, and community service recognition for participation in a service activity benefiting research in sport. The Amazon gift card drawing was approved by the home institution’s athletic compliance department. The consenting administrators also received a follow-up report of the results and ideas for practice to use at their respective institutions.

Data Analysis

A two-factor Multivariate Analysis of Variance (MANOVA) was used to address the research question, which is appropriate when examining group differences on a set of two or more dependent variables. The between-group pattern differences in this study were classified as academic and athletic performance (independent variables), each with two levels – high and low performance. A two-way MANOVA was used to analyze differences in the internal factors (dependent variables) defined as Mindset, PGI, and SAE among academic and athletic performers of varying ability levels. The participants were assigned to four student groups, or between-group independent variables based on their academic performance (GPA) and scores on the athletic performance metric (see figure 1).

Figure 1: Study Independent and Dependent Variables



Instrumentation

Academic performance. Academic performance was measured by self-reported college cumulative grade point average (GPA). The continuous variable GPA was split into high and low groups. A traditional median can be problematic, with respect to losing power and inconsistencies (Cohen, 1983). Gelman and Park (2008) recommend splitting a predictor into a three part, trichotomized variable coded as -1, 0, 1. The upper and lower parts were used to distinguish between high and low academic performers.

Athletic performance. The questions used to quantify athletic performance throughout the literature were gathered from Potuto and O'Hanlon (2007), Rankin et al. (2016), and the NCAA GOALS metrics (2011). Once the initial inventory was reviewed and revised, it was disseminated to 14 scholars and national experts asking for participation in the construction of a new athletic performance metric, the Collegiate Athletic Performance Indicator (CAP-I 1.0). The expert panel rated the five common items evaluating athletic performance (i.e., potential, roster status, postseason, athletic awards, scholarship). The student-athletes answered the five items through the survey, and the researchers assigned point values for the answer to each item response, as well as emphasis points to capture item ranking. A separate paper detailing the development, application, and evaluation of the CAP-I 1.0 will ensue. The full metric is included in the appendix.

Academic and athletic mindset. The eight-item questionnaire from Dweck's Self-Theories: Their Role in Motivation, Personality, and Development (1999) textbook was used. Participants indicated on a 7-point Likert scale the extent to which they agreed with eight statements about intelligence (e.g., you have a certain amount of intelligence and you can't really do much to change it), with higher mean scores (4.0 – 6.0) representing a growth mindset and lower mean scores (1.0 – 3.0) representing a fixed mindset. The internal consistency of this scale was satisfactory with a coefficient alpha reliability of .71 (Sarrazin et al., 1996). To measure athletic mindset, 'athletic ability' was substituted for 'intelligence' based on procedures from Dweck and Henderson (1989).

Personal growth initiative (PGI). The PGI scale (PGIS-II) encompasses four subscales: Using Resources (e.g., "I ask for help when I try to change myself"); Intentional Behavior (e.g., "I take every opportunity to grow as it comes up"); Planfulness (e.g., "I set realistic goals for what I want to change about myself"); and Readiness for Change (e.g., "I can tell when I am ready to make specific changes in myself"). Participants rated how much they agreed or disagreed with each of the 16 statements on a 7-point Likert scale; higher mean scores on the PGIS-II indicate higher levels of PGI, or a person's active and intentional involvement in changing and developing as a person (Thoen & Robitschek, 2013). Robitschek et al. (2012) reported a four-factor structure supported by confirmatory factor analysis. Test-retest reliability figures were .82, .67, .70, and .62 for one, two, four, and six weeks (Robitschek et al., 2012).

Student-athlete experiences (SAE). On the Student-Athlete Experiences Inventory (SAEI), participants were asked to indicate how often they had participated on a 4-point scale in three types of experiences: academic (e.g., sought feedback from a friend or professor relative to written work); social (e.g., taking part in a discussion focusing on personal improvement and

enrichment); and everyday (attended an athletic department sponsored personal development event). The score range was between 10 (low end) and 40 (high end) for each subscale, which quantifies the types of experiences among college athletes (Cox et al., 2004). Exploratory Factor Analysis on the SAEI led to a 39-item inventory with these three factors. In conjunction with the SAEI, the SAGI was also created to establish the instrument’s criterion validity which demonstrated meaningful practical and liberal arts gains on the SAGI (Cox et al., 2004). The 17-item SAGI established strong predictive validity. The coefficient alpha reliability values were satisfactory for all three factors, at .89, .79, and .82 (Cox et al., 2004).

Results

The purpose of this study was to explore differences in internal factors related to student athlete success among NCAA Division I Football Subdivision (FBS) high and low academic and athletic performers. The means and standard deviations for high and low performers on the dependent variables academic and athletic Mindset, PGI, and SAE are displayed in Tables 5, 6, and 7 respectively. Although not all variables were statistically significant, there were meaningful differences between high and low academic performers on academic experiences. The results of the between-subject follow-up analysis of variance revealed that high academic performers had a significantly larger number of academic experiences than the low academic performers.

Academic and Athletic Mindset

Research Question: How do academic and athletic performers of various ability levels differ on academic and athletic Mindset? There was a nonsignificant interaction between academic and athletic performance on both academic and athletic mindset. The main effects for academic and athletic performance were also nonsignificant. High and low academic and athletic performers did not differ on academic or athletic Mindset.

Table 4

High and Low Performers on the Academic and Athletic Mindset Dependent Variables

		Academic Performance					
		Low			High		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Athletic Performance	Low	15			20		
	Academic Mindset		5.317	1.205		5.463	.779
	Athletic Mindset		5.410	1.010		4.988	.994
	High	47			39		
	Academic Mindset		5.200	.824		5.215	1.158
	Athletic Mindset		5.343	.875		4.849	1.241
	Total	62			59		
	Academic Mindset		5.228	.921		5.299	1.045
Athletic Mindset		5.359	.901		4.896	1.157	

Personal Growth Initiative

Research Question: How do academic and athletic performers of various ability levels differ on Personal Growth Initiative? There was a nonsignificant interaction for academic and athletic performers on Personal Growth Initiative; there was a nonsignificant main effect for academic and athletic performance. High and low academic and athletic performers did not differ on PGI.

Table 5

High and Low Performers on the Personal Growth Initiative Dependent Variables

		Academic Performance					
		Low			High		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Athletic Performance	Low	14			44		
	Change		5.518	.737		5.538	.796
	Planfulness		5.514	.893		5.490	.857
	Resources		5.357	1.336		5.000	1.175
	Behavior		5.696	.816		5.775	.854
	High	20			38		
	Change		5.538	.796		5.382	.920
	Planfulness		5.490	.857		5.437	.893
	Resources		5.000	1.175		4.860	1.455
	Behavior		5.775	.854		5.809	.907
	Total	58			58		
	Change		5.621	.778		5.435	.876
Planfulness		5.659	.816		5.455	.874	
Resources		5.069	1.329		4.909	1.356	
Behavior		5.819	.755		.797	.882	

Note: PGI, Change = Readiness for Change; PGI, Planfulness = Organization of Strategies; PGI, Resources = Using Resources; PGI, Int. Behavior = Intentional Behavior.

Student-Athlete Experiences

Research Question: How do academic and athletic performers of various ability levels differ on Academic, Social, and Everyday Experiences? There was a significant main effect for academic performance: Wilks' $\lambda = .865$, $F(3, 107) = 5.565$, $p < .05$, $\eta^2 = .135$, with high academic performers indicating a significantly larger number of academic experiences than low academic performers: $F(1, 109) = 13.868$, $p < .05$, $\eta^2 = .113$. There was a nonsignificant interaction for academic and athletic performers on SAEI, and a nonsignificant main effect for athletic performance. In summary, high academic performers had a greater quantity of academic experiences compared to low academic performers.

Table 6

High and Low Performers on the Student-Athlete Experience Dependent Variables

		Academic Performance					
		Low			High		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Athletic Performance	Low	14			44		
	Everyday Experiences		1.833	.522		1.806	.451
	Social Interactions		2.409	.441		2.530	.505
	Academic Experiences		2.271	.432		2.507	.591
	High	20			35		
	Everyday Experiences		1.964	.575		1.905	.550
	Social Interactions		2.664	.583		2.536	.497
	Academic Experiences		2.935	.572		2.703	.541
	Total	34			79		
	Everyday Experiences		1.812	.464		1.927	.592
	Social Interactions		2.501	.489		2.582	.528
	Academic Experiences		2.450	.562		2.788	.559

Correlations between subscales. There were non-significant correlations ($r = >.300$) between all other scale and subscale combinations. The pattern of moderately-to-strongly correlated variables permitted breaking the dependent variables into three groups (academic and athletic Mindset, PGI, and SAEI) to conduct the multivariate analysis of variance. The correlations are organized by dependent variable and the entire list of correlations is displayed in Table 8.

Table 7

Pearson Product-moment Correlations for all Dependent Variables

Scale / Subscale	1	2	3	4	5	6	7	8	9	10	11
1. Mindset, Aca	-	-	-	-	-	-	-	-	-	-	-
2. Mindset, Ath	.510*	-	-	-	-	-	-	-	-	-	-
3. Mindset, Total	.860*	.878*	-	-	-	-	-	-	-	-	-
4. PGI, Change	.166	.225	.227	-	-	-	-	-	-	-	-
5. PGI, Plan	.227	.208	.250	.779*	-	-	-	-	-	-	-
6. PGI, Resources	.172	.180	.204	.532*	.564*	-	-	-	-	-	-
7. PGI, Int Behav	.206	.192	.230	.679*	.670*	.515*	-	-	-	-	-
8. PGI, Total	.230	.238	.270	.874*	.904*	.775*	.831	-	-	-	-
9. SAEI, Aca	.085	.088	.098	.265	.306	.296	.373	.366	-	-	-
10. SAEI, Soc Int	.084	.062	.081	.232	.277	.251	.331	.322	.653*	-	-
11. SAEI, Every	.103	.044	.080	.287	.287	.363	.269	.358	.669*	.916*	-
12. SAEI, Total	.106	.070	.098	.303	.329	.358	.358	.399	.829*	.862*	.916*

Note: For all scales, higher scores are indicative of stronger correlations. Mindset, Aca = Academic; Mindset, Ath = Athletic; PGI, Change = Readiness for Change; PGI, Plan = Planfulness; PGI Resources = Using Resources; PGI, Int Behav = Intentional Behavior; SAEI, Aca = Academic Experiences; SAEI, Soc Int = Social Interactions; SAEI, Every = Everyday Experiences. * $p < .01$.

Discussion

The primary research question determined the only differences between high and low performers on the three frameworks (academic and athletic Mindset, PGI, and SAEI) was in academic experiences. Namely, high academic performers had more academic experiences compared to low academically performing student-athletes.

Mindset and Performance

Academic mindset. On the basis of high GPAs (83.28% of the sample had over a 3.0; 39.00% over a 3.5) and prevalence of a growth mindset (79.95% of the sample held a growth mindset towards academic ability), this study helps underscore a growth mindset as an internal factor among academically high performing student-athletes in higher education. In fact, the prevalence of a growth mindset among both high and low academic performers in this study's population is a distinctly different narrative from the negative portrayals and stereotypes of student-athlete performance and behavior in the classroom (e.g., Hodge, Burden, Robinson, & Bennett, 2013; Harrison, Stone, Shapiro, Yee, Boyd, & Rullan, 2009; Sailes, 1993).

The prevalence of a growth mindset with respect to academics was an unexpected result in the context of the mindset literature on differences in academic performers in the K-12 and college settings (e.g., Blackwell et al., 2007; Dweck, 1999; Dweck & Leggett, 1998; Mueller & Dweck, 1997). Within a pilot study conducted in fall 2015 (N = 100), there was an equal distribution of growth and fixed academic mindset among student-athletes – albeit from one school, whereas six schools were represented within this study. Furthermore, Dweck conveys a typical breakdown of 40-40-20: 40% of a classroom population will have a growth mindset, 40% will have a fixed mindset, and 20% will display ambiguous beliefs towards their academic abilities (Dweck, 2008). These two supporting points led to the expectation there would be a balanced representation of growth versus fixed mindset in the study sample.

Half the study sample (49.6%) was from the Pac-12 conference, with four of the 12 conference schools included in the top 25 of the 2017 U.S. News Best National Universities ranking (U.S. News & World Report, 2017). Given the selectivity factors, these institutions may require more growth-oriented behaviors to be successful and matriculate in this higher education setting. Additionally, differences in educational opportunities, such as for-credit onboarding and transitional courses (Weight & Huml, 2016), as well as an increase in global study opportunities for student-athletes (NCAA, 2019) support the development of a growth mindset.

Supplemental analyses were conducted and confirmed that combining the two different academic conferences represented in this study (Pac-12, Mountain West) did not impede the results. Further, many existing studies focus on high-profile sports and negative academic implications, which can perpetuate unfavorable stereotypes about student-athletes. This study, however, focused on all student-athletes broadly – including men's and women's revenue-generating and non-revenue generating sports. Though the purpose was not to compare differences between sports, the results do shed more of a positive light on academic performance overall.

Athletic mindset. Similar to the prevalence of an academic growth Mindset, nearly 65.3% of the study population demonstrated a growth mindset towards athletic abilities. Only 8% of the population, or 26 participants, had a fixed mindset about their athletic abilities

(identified as scores between 1.0 and 3.5 on the 7-point Likert-type scale). The absence of differentiation between the mindsets was further captured by only 8.00% of the population displaying a fixed mindset towards their athletic abilities.

Though a majority of the research sample embodied a growth mindset at the time of this study, they were still earning only about half of the points they were capable of earning on the CAP-I 1.0 encompassing measurements on athletic awards, roster status, scholarship, and potential ($M = 133.45$ out of a possible 260 points). Thus, middle range or high-level performers operating within fixed beliefs may be capable of much more, evidenced by the athletic performance scores in this study. While the majority of student-athletes displayed a growth mindset towards athletic abilities, over a third of the population (34.7%) scored between the fixed and ambiguous end of the athletic mindset scale. Unlike academic mindset, there was a slightly greater contrast between the athletic mindset of the low and high athletic performers at 4.972 and 5.159 respectively. Acknowledging a score of 7.00 is on the high end, there is room for improvement despite scoring in the growth category.

The passages above illustrate the predicament of a high performer with limiting beliefs, yet there is another type of athlete – and one that we tend to focus on in the literature – in understanding lower levels of performance (e.g., Rankin et al., 2016; Gaston-Gayles, 2009; Maloney & McCormick, 1993; Sellers, 1992). This study resembles that practice by dividing the population into high and low performers. On an application level, there is a tendency to focus on influencing low performers to work toward the top. It is important to look at mid-to low-level performers who may be having average thoughts and subsequently taking less than optimal actions.

Personal Growth Initiative and Performance

The majority of student-athletes rated themselves high on the 7-point Personal Growth Initiative Scale, with a nonsignificant difference between high and low academic and athletic performers. This is not unexpected as scholarly literature ties athletic participation positively to personal growth and interpersonal skills (e.g., Weight, Navarro, Huffman, & Smith-Ryan, 2014; Cooper & Weight, 2011; Irwin, Hays, & Irwin, 2011; Potuto & O'Hanlon, 2007; Umbach et al., 2006; Astin, 1993a). Student-athletes consistently report they have grown as a person, pursued new interests, and experienced growth related to time spent with teammates on and off the field (Aries et al., 2004; Richards & Aries, 1999). The athletic identity alone may play a large part in student-athletes personal development because involvement with sport enhances leadership qualities, confidence in attaining goals, and self-reliance (Melendez, 2006; Pascarella & Terenzini, 2005; Videon, 2002).

Among the four PGI subscales, Using Resources had the lowest average ($n = 314$, $M = 4.9766$, $SD = 1.29722$) falling at least 0.58 to 0.86 points below Readiness to Change, Planfulness, and Intentional Behavior. A follow-up paired sample t-test showed statistically significant differences between Using Resources and each of the three subscales. One explanation for the lower score pertains to student-athletes habituating within their primary group of membership, detailed previously.

Historically, Personal Growth Initiative has demonstrated statistical and intuitive connections to Mindset theory (e.g., Robitschek, 2003; Robitschek, 1998; Ryff, 1989). While these studies support the relationship between high levels of Mindset and PGI, the statistical relationship within this sample reveals conflicting evidence. Specifically, the highest correlation

observed between Mindset and PGI in this study was modest at best ($r = .270$). Even though both the Mindset and PGI constructs are related to similar indicators, the two instruments are measuring different psychological constructs.

Student-Athlete Experiences and Performance

Findings from Cox et al.'s (2004) study were mirrored in the present study. Specifically, higher academic performers had a statistically greater number of academic experiences compared to lower performing students in this study. Many of the items on the academic experiences subscale can be interpreted as individual or solo activities (i.e., using a computer or library as a resource to conduct a literature search). Two of the 10 items involved outside interaction and faculty in both instances (i.e., seeking feedback from a friend or professor relative to written work). The faculty experiences overlap with the findings of the importance of faculty-student interaction detailed in numerous studies (Bean & Eaton, 2001; Tinto, 1987; Astin, 1993b; Rankin et al., 2016). This independence of students, however, is contrary to research on students born after 1990, where instructors describe challenges in managing the amount of involvement and feedback demanded by the millennial generation (U.S. Chamber Foundation, 2012).

Contrary to some of the literature pointing to a strong athletic emphasis diminishing academic pursuits (e.g., Sage, 1985; NCAA, 2011), there were no statistical differences between high and low athletic performers on their academic, social, and everyday experiences. Counterintuitively, high athletic performers actually recorded more academic, social, and everyday experiences compared to low academic performers. This contradicts some of the narrative that academic, social, and everyday activities detract from athletic performance or that student-athletes are discouraged from participating in extra activity in the higher education landscape. Danish (1983) was one of the first researchers to introduce the relationship between optimal athletic performance and less time spent pursuing higher education related activities. This study would suggest, however, that high and low athletic performers do not differ in their experiences. Drawing on the academic success literature pertaining to this population, these findings help reiterate the importance of an enriched student experience.

Student-athletes within this study were also maximizing 64.58% and 63.72% of the possible points on academic experiences and social interactions, respectively. Once more, only one of the 11 items on the social interactions scale directly references athletic department personnel (i.e., 'talking with a close friend or coach about personal things'). The relevance of meaningful relationships and immersion with peers on the social interactions scale can be traced back to the seminal works of Tinto (1987) and Austin (1993b) – specifically, capturing traditional student involvement with other students as important factors for success in higher education. And in more recent decades, this study's findings coincide with previous studies that found meaningful interactions and investment with peers outside of the athletic department as important to academic success (Comeaux & Harrison, 2007). Gayles and Hu (2009) detail interactions with students as influential to gains in learning and communication.

Study Limitations

One of the limitations of this study was an absence of differentiation between high and low academic and athletic performers. An underlying issue to the restricted range may be self-

selection bias. Simply, there is a chance that some individuals are more likely to participate in an online survey than others (Wright, 2005). According to Wright (2005), this issue of some responding, while others ignore the survey communications, leads to a systematic bias. Research also supports that higher performers tend to fill out surveys, which aligns with the high GPAs and tendency for more growth-minded and improvement-oriented individuals in this study. In the future, accessing a captive audience where all student-athletes are available in one setting might be a way to avoid this limitation.

While it is a widely acceptable practice to ask for participant GPA, there may be an issue with the construct validity of this procedure. Students with lower academic credentials tend to report their actual GPA less reliably, and in general, the extent to which students over-report their GPA is more prevalent than under-reporting (Kuncel, Credé, & Thomas, 2005). Furthermore, the Mindset, Personal Growth Initiative, and Student-Athlete Experiences are inventories derived from psychological, developmental, and behavioral underpinnings, which may be subject to social desirability bias, which is among the most common sources affecting the validity of survey research findings (Nederhof, 1985).

An additional limitation to the study involves the use of the newly developed CAP-I 1.0. Careful attention was placed on the development of the athletic performance survey instrument, including a pilot study to gain insight on survey flow and the reliability of the items. Despite these efforts, it may be difficult to capture variance between performers when examining a predominantly elite sample of athletic performers.

While basic demographic information was collected, differences among schools or student-athlete groups were not analyzed. Those details were beyond the scope of this research, as the study was designed to make generalizations about performance differences among all Division I FBS student-athletes based on internal factors.

Implications

Theoretical

A theoretical basis for assessing athletic performance using the CAP-I 1.0 inclusive of all Division I student-athletes across institutions of higher education was introduced. This allows parallel comparisons to be made not only among academic performers, but also athletic performers as well. Study findings revealed this sample of student-athletes held largely incremental theories of beliefs (a growth mindset) towards their academic and athletic abilities and demonstrated higher levels of PGI. This study also garners further theoretical support for academic experiences aligning with preparedness and performance. Based on the similarities in sport representation and personal profile characteristics, similar results may be expected among other Division I FBS populations spanning beyond the three targeted geographical regions.

Applied Practice

With an ongoing emphasis on performance in higher education, theories and conceptual frameworks such as Mindset, PGI, and SAE can be assessed within student-athlete development programs and initiatives to evaluate psychological, developmental, and behavioral improvements coinciding with academic and athletic performance. Increases in college GPA have been prevalent among African American and White college students who are taught a growth mindset

(Aronson et al., 2002), with evidence to support increases in grades among middle school students as well (e.g., Blackwell et al., 2007). This point helps advocate for teaching a growth mindset in this population of students. The average academic mindset for participants in this study was 5.1619 ($n = 326$, $SD = 1.5731$) where a score of 7.00 represents the high-end of the growth spectrum. The same improvements can be made towards an athletic mindset, as well. Despite the tendency towards an athletic growth mindset in this study (65.3%), 80.8% of the scores fell in the lower to middle third of the CAP-I 1.0. These findings could be interpreted to indicate that although student-athletes tended to have a growth mindset towards athletic ability, there is room for improvement based on athletic performance scores.

Further, athletics support staff, coaches, and practitioners alike may be able to use this population's Mindset and PGI findings to their advantage. Knowing that a growth mindset and inclination to evolve is prevalent among this population, athletes can be encouraged to continue learning, embrace challenges, persist in the face of setbacks, absorb criticism, and value effort as the path to mastery. These athletes may even be able to manage extra coaching and be held to expectations that stretch beyond their perceived limitations. When growth-oriented behaviors are exhibited, they can be validated and reinforced. The meaningful academic experiences finding can be used to further solidify the value of academic experiences as they relate to academic performance. Moreover, learning that high performing student-athletes (as categorized in this study) compared to low performing student-athletes did not differ in their experiences discredits the position that athletics interferes with academic development and vice versa.

With the finding of high academic performers engaging in more academic experiences compared to low performers, it may be beneficial to infuse these opportunities into student-athlete development programs. Athletic departments have worked to remedy the deficiency of non-sport related experiences through implementing total person programs (commonly referred to as student-athlete development programs) designed to assist athletes in holistic pursuits (Cox et al., 2004). As an example, these experiences can be infused into experiences or a syllabus for a student-athlete development course. With great foresight, Cox et al. (2004) actually reference the SAEI as a tool to measure the effectiveness of these programs in terms of facilitating academic and personal development.

Recommendations for Further Study

The predominance of a growth mindset among this population related to academic performance, reinforcement of academic experiences being integral to academic performance, and support for high athletic performers and the ability to have an immersive higher education experience lend itself to continued study. With the development of the CAP-I 1.0, follow-up studies can observe changes in Mindset and PGI of student-athletes pre- and post-interventions, while tracking any changes in athletic performance. The Mindset and PGI scales could also be adapted to this specialized population of elite athletes that reside on the high end of both ranges.

It may also be helpful to incorporate underclassmen, a delimitation of the study. This is especially important as first- and second-year student-athletes have the opportunity for more touchpoints earlier in their careers. To encompass these participants, athletic performance criteria may be weighted differently to account for the difference in opportunity to earn points on the instrument (e.g., number of athletic awards or postseason appearances compared to more senior peers). Additional comparisons could also be made across sport type, revenue versus non-

revenue sports, gender, major area of study, and how student-athletes describe themselves racially and ethnically.

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Appendix

College Athletic Performance Indicator (CAP-I 1.0) – Revised

Directions: Listed below are five athletic performance items. Please answer each open-ended or multiple-choice selection to the best of your ability. There are no right or wrong answers.

1. Considering your entire collegiate athletic career, rate the percentage (1-100%) you feel you are performing to your full athletic potential. _____
2. How would you classify your current status in your main sport during the time when you competed (not on injury list, not academically ineligible, etc.)? **If you are not in season, use the last season of competition to answer the question.*
 - First team
 - Second team
 - Third team
 - Practice or training but not competing
 - Other status _____
3. During the past five years, how often have you or your team participated in any NCAA postseason playoff competition (e.g., NCAA Regionals, NCAA Final Four)?
 - Never
 - One time
 - Two times
 - Three times
 - Four times
 - Five times
4. Have you earned any individual athletic awards in college or at your current institution?
 - Yes
 - No

4b*. Please select any athletic awards you have earned.

	I have not earned this award	1 time (1x)	2 times (2x)	3 times (3x)	4 times (4x)	5 or more times (5x+)
All-American	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All-Region	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All-Conference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
National / Conference Monthly or Weekly Award (e.g., NCAA Golfer of the Month)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Department of Athletics Award (e.g., awarded by your department)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Official Team Award (e.g., MVP, Offensive / Defensive Player of the Year)						
Other _____						

5. Please indicate your current athletic scholarship award (if any).

- Full athletic scholarship
- High partial athletics scholarship (51% and above)
- Moderate partial athletics scholarship (50% and below)
- Walk-on
- My team does not offer scholarships

* = if Yes is selected for item 4