

Need Fulfillment in Intercollegiate Student-Athletes' Dual Roles: A Mixed-Methods, Person-Oriented Investigation

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Individuals competing in intercollegiate sport are tasked with managing the dual roles of athletes and students. The purpose of the current study was to simultaneously explore student-athletes' perceived satisfaction of autonomy, competence and relatedness in sport and academics. A mixed-methods, person-oriented design was utilized. Quantitative data was collected with a sample of $N = 238$ student-athletes from various intercollegiate sports. For sport, four clusters were revealed: "Low Need Satisfaction," "Moderately Low Need Satisfaction," "Moderate Relatedness," and "High Need Satisfaction." For academics, four clusters were revealed: "Low Need Satisfaction," "Moderate Relatedness," "Moderate Autonomy and Competence," and "High Need Satisfaction." Reflexive thematic analysis of semi-structured interviews with a sub-sample of $n = 12$ student-athletes representing all clusters revealed four themes: (a) global factors sensitized for the experience of basic psychological needs, (b) contextual factors determined fluctuations in need fulfillment, (c) perceived interaction effects in the satisfaction of the three basic psychological needs within the same domain, and (d) sport participation had a cross-contextual influence on need fulfillment in academics. Findings provide an understanding of student-athletes' perceived basic psychological needs across the achievement domains of academics and sport.

Keywords: basic psychological needs, National Collegiate Athletic Association, self-determination theory



The intercollegiate athletic system in the United States places student-athletes in an environment that is arguably unlike any other sport-related achievement context. Specifically, individuals competing in intercollegiate sport are tasked with simultaneously managing the dual roles of athletes and students. There are undeniable benefits for student-athletes due to this unique organizational structure, including the potential for financial assistance from scholarships, access to academic support staff, and the development of self-esteem (Jayakumar & Comeaux, 2016; Paule & Gilson, 2010). However, despite such advantages, it should not be disregarded that student-athletes have to continuously balance the nearly year-round demands that are associated with meeting both athletic and academic performance expectations (Nichols et al., 2019).

In intercollegiate sport, student-athletes compete at an elite level in their sport, which exposes them to a range of physical, psychological, and social challenges (e.g., training volume and intensity, public scrutiny, social isolation; Gould & Whitley, 2009; Huml et al., 2019). Perhaps most noticeably, there is an inherent and continuously growing pressure to perform optimally due to the importance placed on winning (Gould & Whitley, 2009). To meet these competitive expectations, student-athletes often spend up to 40 hours per week in mandatory and voluntary sport-related activities (e.g., training, practice, video analysis; National Collegiate Athletic Association [NCAA], 2020). While such an immense time commitment may not be uncommon for elite athletes, those in intercollegiate sport must simultaneously meet the academic standards required to progress toward the completion of their post-secondary degree. In fact, student-athletes are typically mandated to maintain course loads and GPAs that exceed their universities' minimum standards for non-athletes (Huml et al., 2019). These formal expectations are in addition to the social adjustment, career exploration, and intellectual growth that every college student is confronted with (Watt & Moore, 2001).

As a result, student-athletes often report feeling “swamped” and “the monotony of scheduled class and practice times can create feelings of being shuffled from one setting to the next, with little time to meet new people, engage in academic opportunities, and other social events” (Huml et al., 2019, p. 4). Therefore, it is not surprising that many student-athletes perceive anxiety and stress as part of their participation which, for some, can result in experiences of burnout (e.g., American College Health Association, 2018; Gould & Whitley, 2009). Furthermore, a large percentage of student-athletes lack a regular, adequate amount and/or quality of sleep (American College Health Association, 2018; NCAA, 2020). Such adverse experiences can meaningfully hinder individuals' overall quality of life which is in direct contrast to the NCAA's (n.d.) mission as a governing body to safeguard “the well-being and lifelong success of college athletes” (para. 1). Consequently, to foster a positive involvement in intercollegiate sport, it is essential to comprehensively understand the psychological conditions that either facilitate or hinder student-athletes' ability to think, feel, and act optimally as they engage in their dual roles as performers in sport and academics.

According to Ryan and Deci's (2017) self-determination theory, the quality of people's cognition, affect, and behavior is determined by the satisfaction of the three inherent basic psychological needs for autonomy, competence, and relatedness. Specifically, people are more likely to experience positive cognitive, affective, and behavioral outcomes when they have choice in their engagement and can act according to their personal values (autonomy), interact effectively within their social environment (competence), and feel securely connected with others (relatedness). For example, researchers have found that the fulfillment of the three basic psychological needs allows for optimal enjoyment, performance, persistence, self-esteem, and subjective vitality in athletes' sport participation (e.g., Alesi et al., 2019; Cheval et al., 2017; Gillet et al., 2009), while simultaneously lowering individuals' reported levels of burnout (Li et al., 2013). Similar benefits have been revealed for non-athlete university students who are more likely to experience satisfaction with their major, better sleep quality, and higher levels of well-being when they perceive their autonomy, competence, and relatedness to be fulfilled (e.g., Campbell et al., 2018; Martella & Ryan, 2016; Schenkenfelder et al., 2020).

Athletes' basic psychological need satisfaction has been investigated extensively across different sports (e.g., dance, handball, soccer, tennis), age groups (i.e., children, adolescents, adults), and competitive levels (e.g., recreational, elite) (e.g., Alesi et al., 2019; Banack et al., 2011; Cheval et al., 2017; Gillet et al., 2009; Goulimaris et al., 2014). However, although a limited number of studies have been conducted in intercollegiate sport (e.g., Hollebeak & Amorose, 2005; Mack et al., 2011, Raabe & Zakrajsek, 2017; Readdy et al., 2014), there appears to be meaningfully less empirical evidence to provide an in-depth understanding of student-athletes' experiences of autonomy, competence, and relatedness in their sport participation compared to other settings. Furthermore, there is an even more noticeable lack of research investigating intercollegiate student-athletes' perceptions of their basic psychological needs in their academic experiences. This is a noteworthy gap in the literature because according to Vallerand (2000), the fulfillment of autonomy, competence, and relatedness is context-specific, which means that a person can experience varying degrees of need fulfillment across different life domains. For example, Milyavskaya and Koestner (2011) revealed significant variations in individuals' perceptions of their three basic psychological needs across six contexts (i.e., family, friends, relationships, school, work, and activities). As such, a student-athlete's fulfillment of autonomy, competence, and relatedness may be dissimilar in sport and academics.

Findings of previous research indicate that the domain-specificity of basic psychological need satisfaction is an important conceptual consideration for those tasked with fostering positive experiences in the unique achievement context of intercollegiate sport (e.g., academic counselors, coaches, sport psychology professionals). For example, Milyavskaya et al. (2009) previously found that, across four countries, adolescents who experienced a balance of need fulfillment across important life domains (e.g., school, home, friends) reported higher levels of well-being and better school adjustment than those with less consistency in their perceived autonomy, competence, and relatedness. Thus, in order to cultivate optimal cognitive,

affective, and behavioral outcomes among student-athletes across their dual roles, it appears necessary to consider—and comprehensively understand—the fulfillment of their basic psychological needs in both the sport and academic setting.

The Present Study

Accordingly, the purpose of the current study was to simultaneously explore student-athletes' perceived satisfaction of autonomy, competence, and relatedness in sport and academics. A mixed-methods, person-oriented¹ approach was used for the research. The mixed-methods design was chosen because it helped to gain an initial understanding of student-athletes' need fulfillment in sport and academics via the quantitative investigation (“what” was happening) and, subsequently, provide additional insight through the qualitative follow-up (“why” it was happening) (Moran et al., 2011; Readdy et al., 2014).

Quantitatively, the use of a person-oriented approach can help to explore potential level (e.g., high, medium, or low fulfillment across all three needs) and shape effects (e.g., distinct magnitudes in the fulfillment of one or more of the three needs) (Morin & Marsh, 2015) that may characterize student-athletes' unique experiences in sport and academics. That is, in contrast to variable-centered analyses, which are based on the assumption that all participants in a study belong to a single homogeneous group (e.g., similar manifestations of autonomy, competence, and relatedness across individuals), the person-oriented approach allows for the identification of developmental subgroups in a sample with respect to the variables of interest (Bergman et al., 2003). As such, the person-oriented quantitative data analysis offered an opportunity to explore individual variations between different student-athletes' perceived autonomy, competence, and relatedness. The resulting patterns of need fulfillment that exist for clusters of participants can help to provide insight into how individual student-athletes may experience their unique dual roles differently. A subset of members in each cluster then participated in qualitative interviews to explore their experience in greater depth “by providing much richer detail or by painting in a more complete picture that was only ‘sketched’ via the results of quantitative work” (Horn, 2011, p. 297). Consequently, the sequential method of data collection allowed for complementarity (“the enhancement or clarification of findings from one method by the use of another”) and development (“the use of findings from one phase of research to inform the development of methods for the following stage”) in this study (Moran et al., 2011, p. 365).

Overall, the mixed-methods approach embraced the current study's critical realist paradigm, which “utilizes the compatibility thesis of worldviews, supporting the point that quantitative and qualitative research can work together to address the other's limitations” (Shannon-Baker, 2016, p. 329). Ontologically, the quantitative portion of the research initially allowed for the measurement of student-athletes' basic psychological need satisfaction as a reality that can be observed (i.e., realism) (Smith et al., 2012). However, participants were also given a voice in explaining their experiences (i.e., the patterns of need fulfillment that emerged in the quantitative analyses) through the qualitative interviews, which were interpreted by the

researchers to provide an in-depth understanding of the phenomenon (subjectivist and constructionist epistemology) (Smith et al., 2012). Consequently, this design allowed for an effective investigation of the following two research questions:

[RQ1] What patterns of perceived autonomy, competence, and relatedness exist among student-athletes with respect to their sport and academic participation?

[RQ2] How do student-athletes experience these patterns of autonomy, competence, and relatedness in sport and academics?

Method

Participants

A total of 238 student-athletes (93 male, 145 female) participated in the quantitative data collection. The average age in the sample was 19.50 (\pm 1.25) years, which included 67 freshmen (28.2%), 72 sophomores (30.3%), 44 juniors (18.5%), and 51 seniors (21.4%); four individuals did not report their student grade level (1.7%). Participants self-identified as White/Caucasian (n = 196; 82.4%), African-American (n = 20; 8.4%), Asian/Pacific Islander (n = 3; 1.3%), Hispanic/Latino (n = 7; 2.9%), and more than one race (n = 8; 3.4%); four chose not to identify their race (1.7%). The sample comprised student-athletes from a range of sports: rowing (n = 42; 17.6%), synchronized figure skating (n = 39; 16.4%), volleyball (n = 43; 18.1%), cross-country and/or track and field (n = 50; 21.0%), basketball (n = 31; 13.0%), soccer (n = 18; 7.6%), beach volleyball (n = 10; 4.2%), and swimming (n = 5; 2.1%). Participants competed for intercollegiate athletic departments that were affiliated with NCAA Division I (n = 99; 41.6%), Division II (n = 83; 34.9%), and Division III (n = 56; 23.5%).

A subset of 12 student-athletes also participated in the qualitative portion of the study.

Data Collection

Institutional Review Board approval was obtained for all procedures. Current intercollegiate student-athletes who were at least 18 years old were recruited to participate in the current research. For the quantitative data collection, coaches for all NCAA Division I, II, or III affiliated intercollegiate athletic departments (whose email addresses were publicly available) within an approximately two-hour driving range of the first and third authors' institutions were contacted. More specifically, the researchers sent an email to the coaches of 158 individual teams from 11 universities in the Southeast and Northeast of the United States to provide them with the purpose of this study and ask for permission to recruit the student-athletes on the teams they coached. Thirteen coaches authorized the researchers to meet the members of their respective teams in person, describe the purpose of the study, and ask student-athletes to participate. To accommodate the different teams, all data was collected within a two-week timeframe. Of the 268 student-athletes who were present during data

Table 1*Demographics for Qualitative Sample (n = 12)*

Participant Pseudonym	Gender	Race	Age	Student Grade Level	Sport	NCAA Division
Andrew	Male	White/Caucasian	19	Sophomore	Soccer	III
Conner	Male	White/Caucasian	20	Junior	Soccer	II
Elizabeth	Female	White/Caucasian	20	Junior	Synchronized Skating	I
Grace	Female	White/Caucasian	18	Sophomore	Rowing	I
Jane	Female	White/Caucasian	20	Junior	Synchronized Skating	I
Laurel	Female	White/Caucasian	19	Sophomore	Volleyball	III
Loraine	Female	White/Caucasian	21	Senior	Synchronized Skating	I
Maggie	Female	White/Caucasian	19	Freshman	Synchronized Skating	I
Mikala	Female	White/Caucasian	20	Junior	Cross-country	III
Morgan	Female	White/Caucasian	19	Sophomore	Rowing	I
Naomi	Female	White/Caucasian	18	Freshman	Volleyball	III
Rose	Female	White/Caucasian	19	Sophomore	Rowing	I

collection, 238 agreed to partake in the research (88.8% response rate) and provided written informed consent for their involvement. Participants completed (a) a set of demographic items, (b) the Basic Needs Satisfaction in Sport Scale (BNSSS; Ng et al., 2011), and (c) a modified version of the Basic Need Satisfaction at Work Scale (BNSWS; Kasser et al., 1992).

The BNSSS is a 20-item instrument that allows for the assessment of individuals' fulfillment of autonomy (10 items), competence (five items), and relatedness (five items) in sport. Student-athletes responded to each item on a 7-point Likert scale from 1 (*not true for me*) to 7 (*very true for me*). A score for the satisfaction of each basic psychological need is computed by averaging all items on the respective subscale. Reliability analyses for the current data showed good internal consistencies ($.87 \leq \alpha \leq .89$).

The BNSWS has been developed to assess basic psychological need satisfaction in people's work domain. This version of the survey is comprised of 21 items across three subscales: autonomy (seven items), competence (six items), and relatedness (eight items). Items are rated on a 7-point Likert scale from 1 (*not at all true*) to 7 (*very true*). A score for the satisfaction of each basic psychological need is computed by averaging all items on the respective subscale. For the current study, the instrument was modified slightly to better fit the academic setting. The stem of the survey was changed from "The following questions concern your feelings about your job during the last year" to "The following questions concern your feelings about academics." Similarly, for the individual items the words "at work" were replaced with "in class" (e.g., "I get along with people in class"). Reliability analyses for the cur-

rent data revealed satisfactory internal consistency for the competence ($\alpha = .70$) and relatedness ($\alpha = .76$) subscales, but not for the autonomy subscale ($\alpha = .47$).

A subsample of the student-athletes who participated in the quantitative portion of the study were recruited for the qualitative data collection. To include participants representing all clusters that were derived in the quantitative data analysis, purposive sampling procedures were employed. More specifically, recruitment was designed to allow for the collection of data from at least two participants from each cluster that emerged for sport and academics. The first author initially contacted 24 student-athletes from the quantitative sample who collectively represented each sport and academic cluster six times via email and asked them to participate in the qualitative follow-up. Six of those student-athletes agreed to partake. Subsequently, the first author contacted additional individuals based on the clusters that were still missing in the qualitative sample. Overall, 51 student-athletes were contacted, 12 of whom agreed to participate and provided informed consent for their involvement (23.5% response rate). Semi-structured interviews were used to collect the qualitative data in this study. All 12 interviews were conducted by the second author via Zoom, audio recorded, and lasted between 52 and 85 minutes ($M = 70.7 \pm 11.2$). Each of the interviews was then transcribed verbatim. Prior to data analysis, individual transcripts were sent back to the participants as a form of member reflection (Tracy, 2010). One student-athlete made editorial revisions but did not alter the content of the interview.

The interview guide was developed based on an in-depth review of relevant research on self-determination theory in sport and academics as well as previous protocols that have been used to explore student-athletes' need fulfillment (e.g., Raabe et al., 2016; Readdy et al., 2014). The interview guide that was used in the current study was structured into three sections. First, following some initial questions regarding participants' overall experience as a student-athlete, the second author individually explained each basic psychological need and provided individuals with an opportunity to ask questions for further clarification. He then inquired about their level of satisfaction with the particular need (e.g., "How much competence do you currently experience in academics?"). Follow-up questions and probes were used to obtain additional detail and to explore factors that influenced student-athletes' need fulfillment. Second, participants were provided with a visual representation of their individual pattern of basic psychological need satisfaction (i.e., diagram for z-standardized cluster) and asked whether it accurately reflected their perceptions ("Does this diagram seem to match what you've previously described?") as well as to explain any potential discrepancies. The interview was structured to separately explore participants' need fulfillment in sport and academics in sections one and two. Third, after student-athletes' experiences in both settings had been discussed comprehensively, participants were simultaneously provided with visual representations of their clusters for sport and academics and asked to reflect on the relationship between the two.

To evaluate whether the interview guide allowed for an effective investigation of the constructs of interest and RQ2, the second author conducted a pilot interview

with one current NCAA Division III student-athlete from a sample of convenience prior to data collection. Based on the pilot, slight adjustments were made to the explanations of the three basic psychological needs and the wording of some individual questions in an attempt to enhance their clarity.

Data Analysis

The quantitative data was analyzed using SPSS version 26. As part of a preliminary analysis, a *residual analysis* was conducted to identify and remove outliers (i.e., $\pm 3 SD$). In line with the person-oriented approach, a *cluster analysis* (utilizing the Ward procedure with the squared Euclidian distance; Bergman et al., 2003) was then performed to find groups of participants with similar score patterns in the chosen operating factors (i.e., perceptions of autonomy, competence, and relatedness). The optimal number of clusters was determined based on practicality, conceptual appropriateness (i.e., alignment with the assumptions of self-determination theory), and statistical criteria. Statistically, a cluster solution was sought that entails the maximum relative increase in error sum of squares (ESS; elbow criterium; Backhaus et al., 2018) and exceeds 66.7% of explained error sum of squares (EES; two-third criterion; Bergman et al., 2003). Subsequently, the cluster solution was optimized further via a cluster center analysis. This entire procedure was completed separately for participants' basic psychological need satisfaction in sport and academics.

The qualitative data was analyzed by a research team that consisted of the first, second, third, and fifth author. All researchers are well-versed in self-determination theory and had previous experience analyzing qualitative data. The use of four independent investigators helped to enhance the trustworthiness of the analysis as "researchers often overlook important things when going through the data independently, whereas having several sets of eyes looking at the data yields better decisions and has the potential to reduce individual biases" (Hill et al., 1997, p. 524). To further enhance the rigor of the data analysis (Tracy, 2010), reflexive thematic analyses procedures in line with Braun and Clarke (2017; 2019) were utilized. First, the four researchers individually read the transcripts multiple times to familiarize themselves with the data. Second, they independently coded the transcripts to identify initial inductive meaning units in the data. Third, the investigators met four times for a total of seven hours to collaboratively organize their individually derived meaning units into lower order themes that most optimally embodied the data. Once the four authors consensually agreed on the sub-themes, they were collapsed into higher-order themes based on their relationships and significance in representing the participants' accounts. Fourth, the researchers independently reflected on the initial themes and sub-themes before reconvening to finalize a thematic structure that they consensually believed to truthfully denote the data. Fifth, all themes and sub-themes were labeled to indicate their meaning. Sixth, once the four authors had completed all aspects of the data analysis, they produced the current manuscript.

Results

Quantitative Results (RQ1)

A preliminary analysis indicated that aside from student-athletes' perceived relatedness in sport there were no significant cohort effects in the current data based on individuals' competitive level (i.e., NCAA Division I, II, and III). Therefore, this moderator variable was not considered in subsequent analyses. The residual analysis revealed one outlier based on the participant's basic psychological need satisfaction in sport. The individual's sport data was, therefore, excluded from any further analyses. Based on the previously described criteria, 4-cluster solutions indicated the best fit in both sport and academics, respectively. While the analysis of the elbow criterion initially suggested the use of a 3-cluster solution for sport (42.5% of relative increase in ESS) and academics (42.4% of relative increase in ESS), both cluster solutions were meaningfully below the intended EESS (59.4% for sport and 58.0% for academics). The 4-cluster solution helped to increase the EESS to 65.5% for sport and 64.7% for academics. Following the cluster center analysis, these 4-cluster solutions showed an explained ESS of 69.3% for sport and 66.0% for academics. All detected clusters were relatively homogeneous for both settings which was indicated by the low mean squared Euclidian distance of all participants (i.e., homogeneity coefficients; HC) within each pattern ($0.4 \leq HC \leq 1.2$ for sport and $0.5 \leq HC \leq 0.8$ academics).

Table 2

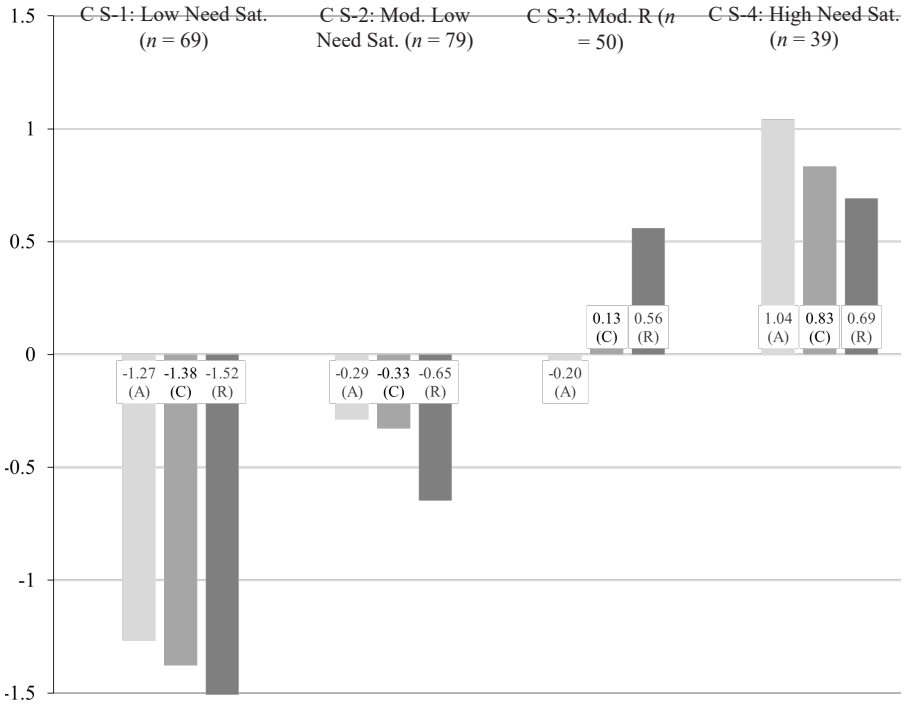
Perceived Levels of Autonomy, Competence, and Relatedness Separated by Participants' Cluster Affiliation (N = 238)

		Autonomy	Competence	Relatedness
		<i>M ± SD</i>		
Sport	Total (N = 237)	5.73 ± 0.84	5.85 ± 0.88	6.15 ± 0.90
	Cluster S-1: Low Need Sat. (n = 69)	4.60 ± 0.51	4.56 ± 0.72	4.76 ± 0.77
	Cluster S-2: Mod. Low Need Sat. (n = 79)	5.46 ± 0.46	5.53 ± 0.55	5.55 ± 0.49
	Cluster S-3: Mod. Relatedness (n = 50)	5.54 ± 0.53	5.96 ± 0.50	6.65 ± 0.35
	Cluster S-4: High Need Sat. (n = 39)	6.63 ± 0.32	6.61 ± 0.45	6.77 ± 0.35
Academics	Total (N = 238)	4.73 ± 0.71	5.15 ± 0.90	4.89 ± 0.91
	Cluster A-1: Low Need Sat. (n = 53)	4.01 ± 0.44	4.13 ± 0.66	3.73 ± 0.51
	Cluster A-2: Mod. R (n = 49)	4.23 ± 0.40	4.73 ± 0.61	5.10 ± 0.54
	Cluster A-3: Mod. Autonomy & Relatedness (n = 74)	4.97 ± 0.34	5.37 ± 0.48	4.73 ± 0.49
	Cluster A-4: High Need Sat. (n = 62)	5.45 ± 0.50	6.08 ± 0.50	5.92 ± 0.48

In the context of sport, the four clusters were: “Low Need Satisfaction” (Cluster S-1; $n = 69$), “Moderately Low Need Satisfaction” (Cluster S-2; $n = 79$), “Moderate Relatedness” (Cluster S-3; $n = 50$), and “High Need Satisfaction” (Cluster S-4; $n = 39$).

Figure 1

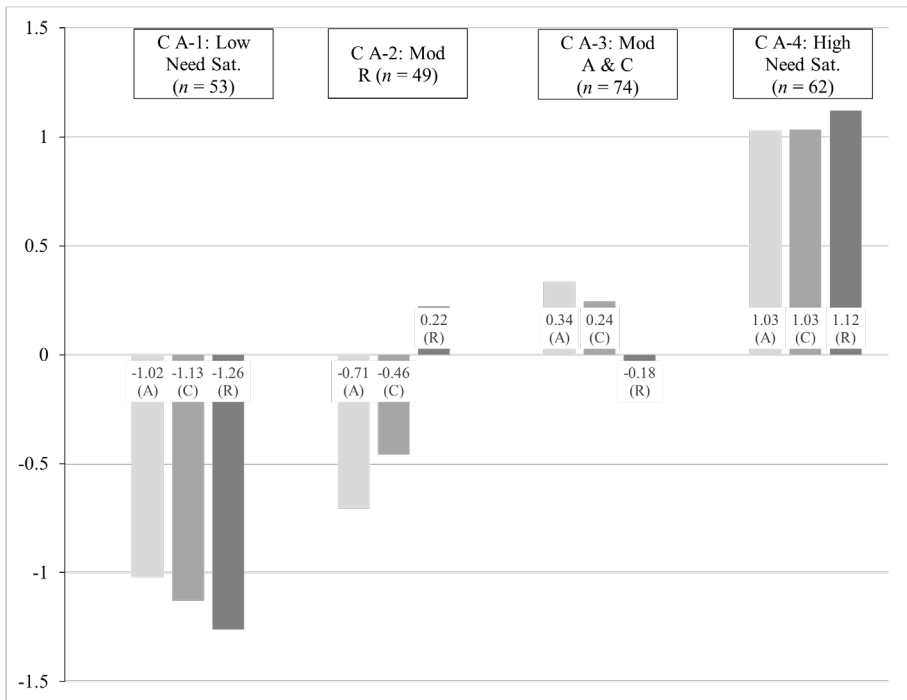
Patterns (z-standardized) of Student-Athletes' Autonomy (A), Competence (C), and Relatedness (R) in Sport (N = 237)



In the context of academics, the four clusters were: “Low Need Satisfaction” (Cluster A-1; $n = 53$), “Moderate Relatedness” (Cluster A-2; $n = 49$), “Moderate Autonomy and Competence” (Cluster A-3; $n = 74$), and “High Need Satisfaction” (Cluster A-4; $n = 62$).

Figure 2

Patterns (z-standardized) of Student-Athletes' Autonomy (A), Competence (C), and Relatedness (R) in Academics (N = 238)



Qualitative Results (RQ2)

The student-athletes who participated in the interviews represented all four patterns of basic psychological need satisfaction in sport (Cluster S-1: *n* = 3; Cluster S-2: *n* = 2; Cluster S-3: *n* = 4; Cluster S-4: *n* = 3) and academics (Cluster A-1: *n* = 2; Cluster A-2: *n* = 3; Cluster A-3: *n* = 3; Cluster A-4: *n* = 4) that were identified in the quantitative data. Reflexive thematic analysis (Braun & Clarke, 2017; 2019) of the qualitative data helped to reveal four overarching themes. Participant names in the following descriptions are pseudonyms chosen by the student-athletes.

Theme 1: Global Factors Sensitized for the Experience of Basic Psychological Needs

Participants discussed that their perceptions of autonomy, competence, and relatedness as intercollegiate student-athletes were meaningfully influenced by aspects of their involvement in sport and academics prior to college. That is, individuals had grown accustomed to certain factors that had a positive effect on their basic psychological needs, which made them more receptive to the fulfillment of those needs at the collegiate level. Participants specifically mentioned: (a) personal identification with sport sensitized for perceived autonomy in sport, (b) friendships with team-

mates sensitized for perceived relatedness in sport, and (c) importance of academic performance sensitized for perceived autonomy in academics.

Personal Identification with Sport Sensitized for Perceived Autonomy in Sport. Participants discussed that athletics had been an important part of their life for a long time, which had fostered a sense of value of, personal connection with, and identity (i.e., autonomy) in their sport. For example, when asked about her perception of autonomy, Maggie (S-3, A-2) described “the personal connection” she had with her sport because “I’ve done this since I was three years old, so it’s been basically my whole life. It’s all I’ve ever known... that’s a very special connection to me.” As a result, she continued to explain that “when it came time for me to apply to colleges, I knew that... I wanted to be able to still continue my athletic career” which displays the value (i.e., autonomy) she attributed to her sport participation. Morgan (S-3, A-4) similarly shared that “I feel like I find my identity a lot in the fact that I do row. I did in high school, I do even more so now because I’m a student-athlete at [university].” This sensitization prior to college created an inherent baseline of perceived autonomy in participants’ current engagement.

Friendships with Teammates Sensitized for Perceived Relatedness in Sport. Participants had grown accustomed to the social aspect of sports and relied on their relationships with teammates as a source of relatedness. As Laurel (S-4, A-1) stated being part of a sport team creates “automatic friends.” Several student-athletes in this study described that this sense of relatedness with their teammates was an important motivator for them. For example, Morgan (S-3, A-4) shared, “I feel like if I wasn’t as close to the girls on the team, I wouldn’t be as motivated to continue with rowing.” Grace (S-3, A-4) similarly expressed, “if I didn’t feel related, if I felt my teammates didn’t care, I wouldn’t want to do it anymore.” As Loraine (S-4, A-3) explained, participants were actively seeking out teammates as a source of relatedness, “a big reason why I was involved in synchronized skating rather than individual skating was because I wanted to build those friendships. I wanted to have those girls that I could trust and be on the ice with every day.” Participants recognized how much they valued these friendships with their teammates and, therefore, more actively sought to develop them which helped to foster their perceived relatedness.

Importance of Academic Performance Sensitized for Perceived Autonomy in Academics. Participants discussed that performing well in school has always been important to them. As Rose (S-2, A-3) shared, for many student-athletes the “inspiration to do well is definitely my desire to succeed out of college and I know that a lot of people look at your GPA.” This emphasis on academics had been instilled in most participants from an early age as Rose (S-2, A-3) continued, “my parents have also preached good grades because that can also be a deciding factor for what I do with grad school.” As a result, similar to most student-athletes in this study, Loraine (S-4, A-3) described that she had essentially “been working towards that prescribed path of what I should be doing my whole life.” In other words, participants had developed

an understanding of the value of academics prior to college which made it easier for them to experience autonomy in their current engagement.

Theme 2: Contextual Factors Determined Fluctuations in Need Fulfillment

When discussing their basic psychological need satisfaction, most participants indicated that their perceptions of autonomy, competence, and relatedness fluctuated over the course of an academic semester. They attributed these variations to multiple contextual factors: (a) standing on the team influenced perceived autonomy in sport, (b) personal connection influenced perceived autonomy in academics, (c) time and experience influenced perceived competence in academics, and (d) class structure and pedagogy influenced perceived relatedness in academics.

Standing on the Team Influenced Perceived Autonomy in Sport. Participants thought that upperclassmen typically have more choice and input in their sport participation, which fostered higher levels of autonomy for those student-athletes. Loraine (S-4, A-3) explained that as a senior she perceived a high level of autonomy because her university's:

Skating program is really built in a way that the senior class is the leader of the team... We decide things like when we were going to have curfew before competition or what outfit we are going to wear on competition day or something like that.

However, while most participants discussed this enhanced sense of autonomy as it relates to upperclassmen, the same concept also seemed to pertain to those individuals with particular positions and leadership roles in their sport. For example, Rose (S-2, A-3) was only a sophomore but expressed that "being the coxswain I am the leader of the boat so I'm the person who gets to choose which way I steer the boat and our race plan and how to implement practice." Overall, participants acknowledged that certain individuals on a team were provided with more opportunities to experience autonomy by their respective coaches than others.

Personal Connection Influenced Perceived Autonomy in Academics. Participants explained that how autonomous they felt in academics was affected by the number of choices they had, and perhaps more importantly, how much value they associated with their education. That is, as Morgan (S-3, A-4) described "there's a part of you that wants to be connected and wants to understand what you're doing on a personal level and not just because you feel like you have to do it." In line with this sentiment, many participants discussed the importance of finding a major that they had a personal connection with. Morgan (S-3, A-4) continued, "I feel a sense of autonomy through my major because it's something that I'm interested in, something I'm passionate about." Participants also perceived greater fulfillment of autonomy when they felt that classes helped to prepare them for a career upon graduation. Naomi (S-1, A-2) mentioned that "I value the classes because they're interesting to me and I know they'll be useful in the future when I have a job." As Loraine (S-4, A-3) explained, having this sense of value also allowed student-athletes to demonstrate a different attitude with respect to their course work:

Even if the assignment is harder, if I can see the values in it and I'm like, "Oh this is going to help me in life because it's going to teach me how to do this. That will be applicable to a job or to my life in the future..." Those assignments, I'm willing to put a lot of work into... in that sense, autonomy is pretty important.

Therefore, participants who were able to find meaning in their academic pursuits were more likely to engage with a sense of autonomy than those who did not perceive such value in their course work and/or major.

Time and Experience Influenced Perceived Competence in Academics.

Student-athletes discussed the challenges of balancing the demands of their sport participation with their course work. As a result, when they entered college, many participants initially struggled with their classes and perceived low levels of competence in academics. Mikala (S-1, A-1) shared "freshmen year it definitely took some adjustment." However, individuals also acknowledged that they eventually learned how to manage their time more effectively, which allowed them to not only balance the demands of the two settings but also feel more competent doing so. Reflecting back on his first two years as a student-athlete, Andrew (S-1, A-4) described that:

I'm doing a lot better now but my first year, especially my first semester coming in... I won't lie it was a big challenge, but I'm adjusted now. This last season after my sophomore year went a lot better. I knew what to expect and I had my priorities straight.

As highlighted by this quote, participants thought that upperclassmen were more likely to experience high levels of competence in academics because their time as collegiate student-athletes had allowed them to adjust to their dual roles and respective workloads.

Class Structure and Pedagogy Influenced Perceived Relatedness in Academics. Participants discussed that their sense of relatedness in academics was meaningfully affected by the structure of classes and the pedagogy of the respective instructors. For example, when asked how satisfied her relatedness was in the classroom, Jane (A-2, S-2) responded, "It's easier [to experience relatedness] when there are smaller class sizes, you know?" Similarly, the more interactive instructors conceptualized their classes, the more related participants felt to other students. Jane (A-2, S-2) expressed that she felt:

Quite a bit of relatedness, it's very easy for me to make friends in classes because a lot of my classes are discussion-based, which is helpful. It's nice to be able to build off of what someone else is saying and kind of create a conversation around these topics.

As Naomi (S-1, A-2) explained, some participants felt that when "a class is just a lecture or something... it's not always necessarily very important to have a close friendship or good support in the class because you're not really interacting with other students." Thus, student-athletes did not invest as much into the development of relationships in those courses which, in turn, did not allow them to experience the same sense of relatedness as in smaller, more interactive courses.

Theme 3: Perceived Interaction Effects in the Satisfaction of the Three Basic Psychological Needs Within the Same Domain

When asked to reflect on their autonomy, competence, and relatedness, it became apparent that student-athletes' satisfaction of each individual need also seemed to affect the perception of another need. Participants mentioned an: (a) interplay between perceived relatedness and competence in sport, (b) interplay between perceived autonomy and competence in academics, and (c) interplay between perceived competence and relatedness in academics.

Interplay Between Perceived Relatedness and Competence in Sport. As Grace (S-3, A-4) explained, most participants felt like “competence and relatedness go hand and hand” in sport. Many student-athletes in this study thought that the relatedness that existed among teammates had a direct impact on their team's performance. Conner (S-3, A-3) explained:

I think [relatedness] is a big part because soccer is a team sport and having that team unity and that team character is a big part of group success and that's what we try to preach here. We're all in it together and if someone's struggling then we all need to be there to pick them up and help support each other no matter what.

A sense of relatedness nurtured a trust among teammates that was necessary for student-athletes to perform well. Elizabeth (S-4, A-4) explained:

We do a lot of trust stuff... for instance, I was a flyer, so my three girls had to hold me and I was like 10 feet off the ice and if I didn't feel comfortable or didn't trust my teammates my body wouldn't trust what they were doing and if my body didn't trust them then things would not work out. Same thing if I didn't trust what my coaches were telling me... I wouldn't be the skater that I am today, and I wouldn't have pushed past limits and my comfort zone.

Positive teammate relationships to not only affected student-athletes perceived relatedness but also their ability to work together effectively and, in turn, their sense of competence.

Interplay Between Perceived Autonomy and Competence in Academics. Participants expressed that a sense of autonomy in academics also helped them feel more competent with respect to their course work. As Andrew (S-1, A-4) stated, “I think if you're experiencing competence then more than likely you're experiencing autonomy.” Naomi (S-1, A-2) explained that this was “because they kind of go hand in hand like if I'm not enjoying what I'm doing then I'm not going to do very good and then I won't feel very competent.” Maggie (S-3, A-2) described that when she started college she did not feel competent in academics which she attributed to a missing sense of value (i.e., autonomy) in her major. However, after she decided to change her major, she experienced “a very night and day difference because it was something I could connect to more, discuss more, and feel more open about.”

highlighting an increase in autonomy. She continued to share that in her opinion this influenced her competence because:

Education is kind of bust if we don't feel connected to it. I think that's why a lot of people don't enjoy their major or are trying to find something that they do enjoy and can be competent with because if you don't understand something fully and you can't connect with it, then you're not really learning about it.

Seeing value in their academics helped participants to engage more meaningfully with their coursework and, consequently, feel more competent.

Interplay Between Perceived Competence and Relatedness in Academics.

Participants expressed that the degree of competence they experienced in their academic courses had a meaningful influence on the relationships they were able to develop in the classroom. Maggie (S-3, A-2), for example, described a particular class in which she perceived a low level of competence and, therefore, sensed she was "like a fish out of water because I felt like everybody knew what they were doing but me... I didn't feel connected to anybody. I didn't know what I was doing. I had to ask a million questions." This quote illustrated that when student-athletes felt like their ability in a class was not comparable to other students they were not comfortable to reach out to them, thus, lowering their perceived relatedness. In contrast, Maggie (S-3, A-2) stated that:

Second semester I remember just going into my classes and really enjoying it... I not only felt connected to the subject at hand, but also the people around me... so it was very much a night and day difference from feeling like I had no idea what was going on to feeling a personal connection to something.

This relationship between competence and relatedness was not limited to classmates, but extended to faculty, as Naomi (S-1, A-2) described, "if I'm attending class and making myself look good and turning in my assignments on time then I have a better relationship with a professor." Thus, a sense of relatedness appeared to be a prerequisite for participants to feel comfortable enough to attempt to foster relationships with others in the academic setting.

Theme 4: Sport Participation Had a Cross-Contextual Influence on Need Fulfillment in Academics

Student-athletes described the cross-contextual influence their sport participation had on their basic psychological need satisfaction in academics. More specifically, participants discussed: (a) sport season and perceived competence in academics, and (b) friendships with teammates and perceived relatedness in academics.

Sport Season and Perceived Competence in Academics. Participants acknowledged that it was more challenging to navigate the demands of their academic classes when their sport was in the competition part of the season. As Jane (A-2, S-2)

put it “it’s definitely a grind, you’ve got to put in the work that you’re going to get out and if I want the grades that I have I’m going to have to manage myself and manage my time.” Maggie (S-3, A-2) described that her coursework was demanding to begin with, but “then to add the pressure of skating onto it was just a lot. And, to manage your free time, time to do homework and all that was just a lot to handle.” Similarly, Elizabeth (S-4, A-4) stated that it was sometimes difficult to maintain a high level of competence in academics because of all the competition-related travel “when we are in season... We are missing weeks on weeks of classes... we’re missing part of our academic career for skating,” which made it more difficult to keep up with her course work and, in turn, affected her perceived competence. Thus, many participants shared Andrew’s (S-1, A-4) sentiment in that it was a challenge:

Trying to balance the school work with the 30-some hours of soccer I had a week. It was really hard and I wasn’t motivated to do the school work I needed to, I was really only motivated to go to soccer practice.

Overall, participants felt that it was easier to perform well and, thus, experience competence in academics during their athletic off-season.

Friendships with Teammates and Perceived Relatedness in Academics.

Most participants described that the majority of their friends were the teammates with whom they participated in their sport. Since these friendships seemed to satisfy their need for relatedness, many student-athletes in this study did not seek out friendships with their classmates. Laurel (S-4, A-1) mentioned that “last year I really didn’t talk to anyone in any of my classes. I just went and I didn’t have any friends in my classes. I mean all my friends played volleyball.” Similarly, Loraine (S-4, A-3) explained that seeking relatedness “was much more important to me in skating than it ever was in academics.” Many participants acknowledged that they did not develop close relationships with classmates simply because it was logistically difficult to maintain friendships with non-athletes. Grace (S-3, A-4) described that:

I have other friends outside of rowing... But it’s just very hard with all the time that we spend in practice. Sometimes I’m just exhausted after and the only time I really hang out with them is over the weekend, and over the weekend we have practice too, so it’s hard.

Whether it was due to time constraints or differing interest, participants often did not actively seek out opportunities to experience relatedness in academics because this need already appeared to be satisfied through their friendships in sport.

Discussion

The current research was designed to simultaneously explore student-athletes’ perceived autonomy, competence, and relatedness in sport and academics. The mixed-methods design helped to not only identify clusters of basic psychological need satisfaction among participants (quantitative), but also gain a more in-depth understanding of how individuals experienced these patterns in their dual roles as students and athletes (qualitative).

The quantitative results suggest that student-athletes' basic psychological need satisfaction is characterized by both level and shape effects (Morin & Marsh, 2015). While some participants reported comparable levels of fulfillment across all three needs (level effects; e.g., Cluster S-1 or A-4), others indicated more varying magnitudes in their perceptions of autonomy, competence, or relatedness (shape effects; e.g., Cluster S-3 or A-2). What seems noteworthy is that regardless of setting (i.e., sport or academics), level effects were revealed for individuals with particularly high or low need fulfillment compared to others in the sample. For those student-athletes, the current findings support the conclusions of previous researchers who have suggested a synergy in the satisfaction of the three needs (e.g., Mageau & Vallerand, 2003; Raabe et al., 2020). The contextual factors that influenced those participants' sense of autonomy, competence, and relatedness likely had a comparable effect on all three needs (e.g., their coaches, teammates, instructors, classmates either positively or negatively impacted their experience). This synergy is valuable to emphasize for coach educators, sport psychology professionals, and others who work with stakeholders in sport and academics (e.g., coaches, academic counselors) to increase their use of need-supportive behaviors; specifically, they can mutually develop "high impact" strategies that maximize need fulfillment without overwhelming the stakeholder or athlete due to their complexity (e.g., developing and implementing optimal goals, providing a rationale for tasks and limits; Mageau & Vallerand, 2003; Raabe et al., 2020). As such, need support is a *philosophy* rather than a *recipe* in that there are many different means to achieve the intended outcome (Gilchrist & Mallett, 2017), but such means should be thoughtfully designed to prioritize the optimization of multiple (if not all) needs concurrently.

In contrast, there were also student-athletes in the current sample whose fulfillment of the individual needs appeared to have been impacted differently by contextual factors which led them to experience more relatedness than autonomy and competence in sport (Cluster S-3), and either more relatedness than autonomy and competence (Cluster A-2) or more autonomy and competence than relatedness (Cluster A-3) in academics. Since several previous studies have indicated high levels of overall need fulfillment in both sport (e.g., Cheval et al., 2017; Mack et al., 2011) and academics (e.g., Campbell et al., 2018; Schenkenfelder et al., 2020) before, these shape effects offer the most novel insight into student-athletes' experiences. Specifically, in the few person-oriented investigations of perceived autonomy, competence, and relatedness that have been conducted, researchers explored an average score combining all three basic psychological needs (e.g., Warburton et al., 2020). Therefore, there was no consideration of possible distinct combinations that may exist in individuals' perceptions. Instead, the present findings indicate that this cumulative approach seems viable for individuals with particularly high or low levels of need fulfillment compared to other participants in the sample but fails to recognize the unique experiences of those with more distinct magnitudes in the satisfaction of autonomy, competence, and relatedness (21.1% of the participants in sport and 51.7% of participants in academics in this study). Thus, future researchers should be encouraged to further explore the distinct experiences of the three individual basic psychological needs separately.

The results also highlight the value of the mixed-methods approach of this study which can provide insight into the reasons for the emerging shape effects. In the qualitative interviews, participants, for example, expressed that class structure and pedagogy influenced their perceived relatedness in academics. Student-athletes who were enrolled in courses in which instructors tailored their classes in a more relatedness-supportive manner likely experienced more relatedness but, based on the qualitative findings, this contextual factor did not seem to have an impact on their perceived autonomy or competence (potentially resulting in Cluster A-2). Similarly, it is possible that participants in Cluster A-3 had a stronger personal connection to their major and coursework (enhancing perceived autonomy) and had more experience managing the dual demands of academics and sport (enhancing perceived competence); yet, the qualitative findings did not indicate that either factor influenced their sense of relatedness.

While the qualitative findings revealed such global and contextual factors that shaped individuals' perceptions, it is particularly the suggested interaction (within-context) and cross-contextual effects that have meaningful conceptual and practical implications. The proposed cross-contextual effect in participants' satisfaction of autonomy, competence, and relatedness indicates that need fulfillment is not only context-specific, but also seems to support Vallerand's (2000) assumption that individuals' perceptions in one life domain can influence their perceptions in another domain. In the qualitative interviews in this study, it became apparent that it was especially individuals' sport participation that had a meaningful impact on their need fulfillment in academics, which aligned with the findings of Raabe and Readdy (2016) who explored the perceived basic psychological needs of collegiate cheerleaders and concluded that:

These young adults were at a stage in their life that brought about fundamental changes in personal and societal expectations... having recently graduated high school, the study participants were faced with an increasing prominence and pressure of schoolwork to position themselves for success after college. Thus, the value individuals placed on academics potentially seemed to create a palpable tension in their motivation for sport engagement. (pp. 86-87)

In this context, it is also noteworthy that the overall mean scores for the satisfaction of all three needs (i.e., regardless of cluster affiliation) were significantly higher in sport than academics ($p < .001$). The most noticeable discrepancy was in participants' perceptions of relatedness, which can likely be explained by student-athletes reporting in the qualitative interviews that it was more difficult for them to develop friendships in academics. This conclusion aligns with the qualitative results of Raabe et al. (2016) who explored the influence of teammates on intercollegiate swimmers' need fulfillment and found that participants almost exclusively spent their free time with other athletes. Hassell et al. (2010) previously highlighted that elite youth athletes often struggle to develop close relationships outside their immediate sport context because they feel that non-athletes cannot relate with their training, commitment,

and competition, making it more difficult to meaningfully connect with those individuals. The present findings indicate that these challenges were further magnified by more tangible issues related to a lack of available time.

Conceptually, although beyond the scope of this study, it is possible that participants engaged in compensation to maintain their overall sense of relatedness (as well as autonomy and competence). That is, Vallerand (2000) proposed that:

Losses in self-determined motivation in one context (e.g., education) can lead a person to compensate in another context (e.g., leisure) by becoming more intrinsically motivated there. It is hypothesized that such a phenomenon allows individuals to restore (or keep) their global motivation at a certain (self-determined) level. (p. 315)

With motivation being a product of basic psychological need satisfaction (Ryan & Deci, 2017), it is possible that participants, for example, compensated for lower levels of relatedness in academics by seeking out closer relationships with teammates in sport. However, it is important to note that Deci and Ryan (2000) suggested that such “compensatory processes are expected to result not only in the defensiveness that protects them from the pain associated with need deficits but also in goal processes and contents that are associated with less than optimal performance and well-being” (p. 249). Thus, whether it is due to changing priorities and interests (Raabe & Ready, 2016) or in an attempt to compensate losses in need fulfillment in a particular life domain, stakeholders need to understand that it is important to cultivate high need satisfaction in *both* sport and academics, and not rely on compensation effects to facilitate student-athletes' overall experiences. In line with the conclusions by Nichols et al. (2019), this recommended dual focus “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” (p. 330).

Due to the important practical implications, future researchers should specifically explore this cross-contextual influence of need fulfillment using a variable-centered approach, which allows for the examination of individual variables in each context as well as causal relationships between these variables across settings (Bergman et al., 2003). To the authors' knowledge, limited research has been conducted to investigate this interplay between motivational tenets in different settings (Vallerand, 2000), especially as it pertains to athletes. For example, Martin (2008) demonstrated the domain-specificity of motivational tenets using confirmatory factor analysis. Similarly, Milyavskaya and Koestner (2011) found that need fulfillment significantly influenced individuals' motivation across over 800 different domains. However, in neither study did the researchers consider the potential cross-contextual effect between the various domains. Furthermore, none of these endeavors were conducted in the sport setting in general or intercollegiate athletics specifically. This appears to be a worthy gap to address because a balance in need fulfillment has been shown to, for example, enhance overall adjustment (Milyavskaya et al., 2009) and prevent burnout (Perreault et al., 2007).

Limitations

Despite the current study's contribution to the literature, there are limitations that should be addressed in future research. First, while the sample included both male and female participants from a range of sports, recruiting individuals from other (especially revenue-producing) sports, those who do not self-identify as White/Caucasian, and more men for the qualitative investigation would likely offer a more comprehensive perspective about student-athletes' experiences of need fulfillment in sport and academics. Second, this study only explored one single time point in student-athletes' participation and it would be valuable to use a longitudinal approach to investigate potential changes in their experiences, especially as they mature from freshmen to seniors. Third, given the low internal consistency for the academic autonomy subscale, it would be valuable to either examine the applicability of other instruments or, ideally, develop a specific measure for the assessment of student-athletes' need fulfillment in academics. Fourth, the current research solely focused on the satisfaction of student-athletes' basic psychological needs and it would be beneficial to also explore their perceptions of need thwarting (see Costa et al., 2015 for conceptual differences) in their dual roles.

Conclusion

In sum, the current findings indicate that while student-athletes may have *two roles*, they are still only *one person* as their participation—including the respective demands, challenges, and experiences—in one setting cannot be separated from their participation in another (in this case sport and academics). Thus, it appears that efforts to foster need-supportive climates in one of the two settings alone (e.g., only in sport)—while valuable—likely fail to comprehensively support student-athletes' need fulfillment. Granted, it seems unreasonable to suggest that stakeholders (e.g., coaches, sport psychology professionals, instructors, academic counselor) can limit the performance demands in either domain. Instead, to facilitate student-athletes' ability to think, feel, and act optimally as they engage in their dual roles as performers in sport and academics, it is essential for those stakeholders to be mindful of not only the expectations and challenges in their respective setting but also the other context. While most of these stakeholders are inherently concerned with just one of student-athletes' roles (e.g., coaches with sport, academic counselors with academics), open communication and mutual consideration between everyone involved in student-athletes' participation would likely provide them with a foundation to successfully manage their time and priorities across both settings.

References

- Alesi, M., Gómez-López, M., Chicau Borrego, C., Monteiro, D., & Granero-Gallegos, A. (2019). Effects of a motivational climate on psychological needs satisfaction, motivation and commitment in teen handball players. *International Journal of Environmental Research and Public Health*, *16*, 2702-2712.
- American College Health Association (2018). *National college health assessment, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017*. American College Health Association.
- Backhaus, K., Erichson, B., Plinke, W., & Weber, R. (2018). *Multivariate Analysemethoden. Eine anwendungsorientierte Einführung*. Springer.
- Banack, H. R., Sabiston, C. M., & Bloom, G. A. (2011). Coach autonomy support, basic need satisfaction, and intrinsic motivation of Paralympic athletes. *Research Quarterly for Exercise and Sport*, *82*, 722-730.
- Bergman, L. R., Magnusson, D., & El-Khoury, B. M. (2003). *Studying individual development in an interindividual context: A person-oriented approach*. Psychology Press.
- Braun, V., & Clarke, V. (2017). Using thematic analysis in sport and exercise research. In B. Smith & A. C. Sparkes (Eds.), *Routledge handbook of qualitative research in sport and exercise* (pp. 213-227). Routledge.
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise, and Health*, *11*, 589-597.
- Campbell, R., Soenens, B., Beyers, W., & Vansteenkiste, M. (2018). University students' sleep during an exam period: the role of basic psychological needs and stress. *Motivation and Emotion*, *42*, 671-681.
- Cheval, B., Chalabaev, A., Quested, E., Courvoisier, D. S., & Sarrazin, P. (2017). How perceived autonomy support and controlling coach behaviors are related to well- and ill-being in elite soccer players: A within-person changes and between-person differences analysis. *Psychology of Sport and Exercise*, *28*, 68-77.
- Costa, S., Ntoumanis, N., & Bartholomew, K. J. (2015). Predicting the brighter and darker sides of interpersonal relationships: Does psychological need thwarting matter? *Motivation and Emotion*, *39*, 11-24.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.
- Gilchrist, M., & Mallett, C. J. (2017). The theory (SDT) behind effective coaching. In R. Thelwell, C. Harwood, & I. Greenless (Eds.), *The psychology of sports coaching: Research and practice* (pp. 38-53). Routledge.
- Gillet, N., Berjot, S., & Gobance, L. (2009). A motivational model of performance in the sport domain. *European Journal of Sport Science*, *9*, 151-158.
- Gould, D., & Whitley, M. A. (2009). Sources and consequences of athletic burnout among college athletes. *Journal of Intercollegiate Sport*, *2*, 16-30.

- Goulimaris, D., Mavridis, G., Genti, M., & Rokka, S. (2014). Relationships between basic psychological needs and psychological well-being in recreational dance activities. *Journal of Physical Education and Sport, 14*, 277-284.
- Hassell, K., Sabiston, C.M., & Bloom, G.A. (2010). Exploring the multiple dimensions of social support among elite female adolescent swimmers. *International Journal of Sport Psychology, 41*, 340-359.
- Hill, C. E., Thompson, B. J., & Williams, E. N. (1997). A guide to conducting consensual qualitative research. *The Counseling Psychologist, 25*, 517-572.
- Hollembeak, J., & Amorose, A. J. (2005). Perceived coaching behaviors and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology, 17*, 20-36.
- Horn, T. S. (2011). Multiple pathways to knowledge generation: Qualitative and quantitative research approaches in sport and exercise psychology. *Qualitative Research in Sport, Exercise and Health, 3*, 291-304.
- Huml, M. R., Bergman, M. J., Newell, E. M., & Hancock, M. G. (2019). From the playing field to the classroom: The academic challenges for NCAA division I athletes. *Journal for the Study of Sports and Athletes in Education, 13*, 97-115
- Jayakumar, U. M., & Comeaux, E. (2016). The cultural cover-up of college athletics: How organizational culture perpetuates an unrealistic and idealized balancing act. *The Journal of Higher Education, 87*, 488-515.
- Kasser, T., Davey, J., & Ryan, R. M. (1992). Motivation, dependability, and employee-supervisor discrepancies in psychiatric vocational rehabilitation settings. *Rehabilitation Psychology, 37*, 175-187.
- Li, C., Wang, J. C. K., Pyun, D. Y., & Kee, Y. H. (2013). Burnout and its relations with basic psychological needs and motivation among athletes: A systematic review and meta-analysis. *Psychology of Sport and Exercise, 14*, 692-700.
- Mack, D. E., Wilson, P. M., Oster, K. G., Kowalski, K. C., Crocker, P. R., & Sylvester, B. D. (2011). Well-being in volleyball players: Examining the contributions of independent and balanced psychological need satisfaction. *Psychology of Sport and Exercise, 12*, 533-539.
- Mageau, G. A., & Vallerand, R. J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Science, 21*, 883-904.
- Martela, F., & Ryan, R. M. (2016). The benefits of benevolence: Basic psychological needs, beneficence, and the enhancement of well-being. *Journal of Personality, 84*, 750-764.
- Martin, A. J. (2008). How domain specific is motivation and engagement across school, sport, and music? A substantive-methodological synergy assessing young sportspeople and musicians. *Contemporary Educational Psychology, 33*, 785-813.
- Moran, A. P., Matthews, J. J., & Kirby, K. (2011). Whatever happened to the third paradigm? Exploring mixed methods research design in sport and exercise psychology. *Qualitative Research in Sport, Exercise and Health, 3*, 362-369.
- Morin, A. J., & Marsh, H. W. (2015). Disentangling shape from level effects in person-centered analyses: An illustration based on university teachers' multidimen-

- sional profiles of effectiveness. *Structural Equation Modeling: A Multidisciplinary Journal*, 22, 39-59.
- Milyavskaya, M., Gingras, I., Mageau, G. A., Koestner, R., Gagnon, H., Fang, J., & Boiché, J. (2009). Balance across contexts: Importance of balanced need satisfaction across various life domains. *Personality and Social Psychology Bulletin*, 35, 1031-1045.
- Milyavskaya, M., & Koestner, R. (2011). Psychological needs, motivation, and well-being: A test of self-determination theory across multiple domains. *Personality and Individual Differences*, 50, 387-391.
- National Collegiate Athletic Association. (n.d.). What is the NCAA? <http://www.ncaa.org/about/resources/media-center/ncaa-101/what-ncaa>
- National Collegiate Athletic Association. (2020). *NCAA research examining student-athlete mental well-being*. [Unpublished presentation]. February 2020. NCAA.
- Ng, J. Y. Y., Londsdales, C., & Hodge, K. (2011). The basic needs satisfaction in sport scale (BNSSS): Instrument development and initial validity evidence. *Psychology of Sport and Exercise*, 12, 257-264.
- Nichols, M. K., Lough, N. L., & Corkill, A. J. (2019). Exploring success: Variations in Division I student-athlete academic and athletic performance. *Journal of Issues in Intercollegiate Athletics*, 12, 314-342.
- Paule, A. L., & Gilson, T. A. (2010). Current collegiate experiences of big-time, non-revenue, NCAA athletes. *Journal of Intercollegiate Sport*, 3, 333-347.
- Perreault, S., Gaudreau, P., Lapointe, M-C., & Lacroix, C. (2007). Does it take three to tango? Psychological need satisfaction and athlete burnout. *International Journal of Sport Psychology*, 38, 437-450.
- Raabe, J., & Readdy, T. (2016). A qualitative investigation of need fulfillment and motivational profiles in collegiate cheerleading. *Research Quarterly for Exercise and Sport*, 87, 78-88.
- Raabe, J., Readdy, T., & Höner, O. (2020). Fulfillment of basic psychological needs: A qualitative investigation of strategies used by elite youth soccer coaches. *German Journal of Exercise and Sport Research*, 50, 229-240.
- Raabe, J., & Zakrajsek, R. A. (2017). Coaches and teammates as agents for collegiate athletes' basic psychological need satisfaction. *Journal of Intercollegiate Sport*, 10, 67-82.
- Raabe, J., Zakrajsek, R. A., & Readdy, T. (2016). Teammate influence on collegiate swimmers' basic psychological need satisfaction: A qualitative perspective. *Journal of Intercollegiate Sport*, 9, 27-49.
- Readdy, T., Raabe, J., & Harding, J. S. (2014). Student-athletes' perceptions of an extrinsic reward program: A mixed-methods exploration of self-determination theory in the context of college football. *Journal of Applied Sport Psychology*, 26, 157-171.
- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

- Schenkenfelder, M., Frickey, E. A., & Larson, L. M. (2020). College environment and basic psychological needs: Predicting academic major satisfaction. *Journal of Counseling Psychology, 67*, 265-273.
- Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of Mixed Methods Research, 10*, 319-334.
- Smith, B., Sparkes, A. C., Phoenix, C., & Kirkby, J. (2012). Qualitative research in physical therapy: a critical discussion on mixed-method research. *The Physical Therapy Review, 17*, 374-381.
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry, 16*, 837-851.
- Vallerand, R. J. (2000). Deci and Ryan’s self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*, 312-318.
- Warburton, V. E., Wang, J. C., Bartholomew, K. J., Tuff, R. L., & Bishop, K. C. (2020). Need satisfaction and need frustration as distinct and potentially co-occurring constructs: Need profiles examined in physical education and sport. *Motivation and Emotion, 44*, 54-66.
- Watt, S. K., & Moore, J. L. (2001). Who are student athletes? *New Directions for Student Services, 2001*(93), 7-18.

Note

¹ The person-oriented approach (Bergman et al., 2003) is grounded in developmental psychology recognizing that people, their characteristics, and the development of both are unique. Accordingly, instead of isolating variables as the main analytical units, this conceptual approach considers the interaction among the constructs of interest in collectively shaping individual participants’ cognition, affect, and behavior.