The Impact of Student-Athlete Social Identity on Psychosocial Adjustment during a Challenging Educational Transition

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Educational Transition

Background

For many students entering postsecondary education, the ability to adjust to both academic and non-academic challenges can be critical for success. The first-year experience can be taxing—often accompanied by a variety of psychological and academic stressors such as critical career choices, heightened expectations, heavier course loads, and even social pressures (Perry, 2003; Perry et al., 2001; Kantanis, 2000; Vallianatos et al., 2019). It can also be impacted by other factors such as financial issues, academic and social readiness for college, physical health (e.g., negative health behaviours), and personality factors (e.g., self-esteem, optimism; Al-Qaisy, 2010; Boulter, 2002; Hamm et al., 2019; Pritchard et al., 2007; Sharma, 2012; Secuban, 2012). This experience can be particularly demanding for *student-athletes* who balance multiple commitments (Chyi et al., 2018; Gomez et al., 2018; Melendez, 2010).

More than other students, athletes face stressors such as physical and mental fatigue, overlapping schedules, new training environments, elevated competition, risk of injury, and student-sport identity issues (Akgun & Ciarrochi, 2003; Comeaux & Harrison; 2011, De Knop et al., 1999; Gomez et al., 2018; McKay et al., 2008; Papanikolaou et al., 2003; Simons et al., 1999; Veena & Shastri, 2016). Research in sport suggests that social identities condition how individuals cope with and manage some of these stressors (Rees et al., 2015), and research in education provides evidence that social identities determine how international students adjust to university life (Cruwys et al., 2020). The present study sought to examine whether student-athlete social identity has an impact on psychosocial adjustment during this difficult transition to postsecondary, and whether it acts by reducing stress to foster such adjustment.

Social Identity Approach

The social identity approach (comprised of social identity theory, Tajfel & Turner, 1979, and self-categorization theory, Turner et al., 1987, 1994) posits that a person can define oneself not only as an individual, such as "I" and "me", but also as a member of a social group, such as "we" and "us". When a person defines oneself, or self-categorizes, with a social identity, they embrace the various attributes and qualities that define that group and the other members of the group (Rees et al., 2015; Turner et al., 1987). In turn, these internalized group memberships form a lens through which postsecondary student-athletes may interpret and make sense of the world and new experiences (e.g., the transition to university). Notably, life course transitions, such as the transition to university, are important to consider since they take place throughout the lifespan and are full of obstacles and unpredictability (Hamm et al., 2019, 2020; Heckhausen, Wrosh, & Schulz, 2010).

Group memberships and associated social identities can be advantageous in various contexts and transitions. They enable people to feel a sense of belonging, provide purpose, and allow for social support (Haslam et al., 2019; Jetten et al., 2009). Shared identities are associated with greater life satisfaction and lowering stress when one feels socially supported (Haslam et al., 2005; Hopkins & Reicher, 2016). On the contrary, losing a sense of shared identity has been linked to depressive symptoms (e.g., Depressive Anxiety Stress Scale; Cruwys et al., 2014, 2015) and lower cognitive performance in older adults (Haslam et al., 2014).

The Social Identity Model of Identity Change (SIMIC; Haslam et al., 2008) proposes that multiple group memberships can facilitate better life transitions. Membership of multiple groups affords greater access to psychological resources and support, which are of particular value when adjusting to life changes (Jetten et al., 2009; Sani, 2010). Pointing to the importance of

negotiating identity change during life transitions, SIMIC posits two pathways for positive adjustment: (1) *a social identity continuity pathway*, and (2) *a social identity gain pathway*. The first pathway proposes that a life transition, such as transitioning to university, is supported through maintaining existing social identities (memberships of existing groups; e.g., friendships, family). Within a life transition, such as transitioning to university, it is inevitable that individuals will lose old identities through loss of old group memberships such as high school clubs and committees (e.g., high school football team).

Here then, the second pathway proposes that gaining new social identities through membership of new groups (e.g., student union groups/clubs; university football team) facilitates life transitions (e.g., transition to university) through providing access to new psychological resources and support. The model asserts that for these new groups to be of positive value, they must be compatible with existing groups in a person's life (Iyer et al., 2009; O'Halloran & Haslam, 2020). A significant body of literature exists to support the tenets of SIMIC for life transitions (see, e.g., Haslam et al., 2018) including transitioning to university (Iyer et al., 2009; Ng et al., 2018).

Social Identity Theory & Student-Athletes

In sport settings, evidence shows that there are positive gains associated with a shared sense of identity. Athletes who perceive their social identity in terms of a group, such as being a member of a team, align their goals, values, and behaviour to act in accordance with the team (Turner, 1991). Evidence suggests that athletes with strong social identities have better psychological and performance outcomes. For example, athletes who shared a strong team identity reported a greater sense of self-worth, commitment, and effort (De Cuyper et al., 2016;

Martin et al., 2018). Furthermore, Fransen and colleagues (2016) found that when leaders of a team cultivated a shared identity among team members, it resulted in better team performance.

Research by Sung and colleagues (2017) found that students with a strong sense of social identity with their university athletic teams reported better adaptation to university. This finding suggests, along with other research, that multiple social identities may be beneficial and linked to academic adjustment (Jetten et al., 2009). Iyer and colleagues (2009) found that belonging to various groups helped shield individuals from the negative affective impact of important life changes. For example, in one study, students' transition to university had a negative impact on depressive emotions (e.g., experience of unhappiness, sadness, etc.); however, students who identified as a university student showed enhanced positive affect (e.g., happy, excited) and fewer depressive emotions.

While we know that social identities are important for mental health and performance in sport settings (see Rees et al., 2015), as well as for work teams in organizational and exercise settings (see Haslam, 2004; Stevens et al., 2019), our study sought to extend this research by examining the shared identity of individuals as student-athletes (i.e. a student, an athlete, a student-athlete) in an educational context. It is relevant to look at how having a strong connection to student-athletes is adaptive, particularly entering the first year of postsecondary education and navigating through this challenging transition. Thus, student-athletes in the first-year of university who have a stronger student-athlete identity, compared to those who have a weaker student-athlete identity, may be in a better position to manage their transition to university. In other words, through both the social identity continuity pathway and the social identity gain pathway (as represented through the SIMIC model), student-athletes with a high

'student-athlete' social identity may benefit from greater access to psychological resources and support from multiple groups when adjusting to university life.

Furthermore, our study adds to the social identity literature since little attention is paid to the role of a shared social identity as *student-athletes* in achievement settings. The majority of research on student-athlete identities has examined the "athlete identity" role and its impact in academic settings, or the "student identity" role. For example, Yopyk & Prentice (2005) found when student-athletes were primed with either their athlete or student identity, such priming yielded different results consistent with stereotype threat research. Student-athletes primed with their athlete identity attained lower test performance on a math test compared to their counterparts primed with their student identity. Other studies indicate having a strong athlete identity is positively correlated with athlete burnout (Black & Smith, 2007) and identity foreclosure (Brewer et al., 1993). However, our study is unique because it considers the identity of 'student-athletes', such as identifying as part of a group of students, athletes, and student-athletes.

The Student-Athlete: Academic and Psychosocial Factors

While there are numerous possible indicators of adjustment, the psychosocial factors of perceived control, stress, and anxiety are particularly under researched in athletes and yet well-established as influential in the university transition. Perceived control is defined as a person's belief about their capacity to influence or predict important outcomes in their lives (Chipperfield et al., 2017; Perry, 1991, 2003; Perry et al., 2001). Feeling personal control over one's learning environment (i.e., perceived control; Perry, 2003) is linked to better achievement (grades, GPAs), lower dropout, and emotions in achievement contexts (Perry, 2003; Perry et al., 2005a; Respondek et al., 2020). Domain-specific perceived control is a strong predictor of college

students' academic development in terms of cognitive, affective, and achievement outcomes (Dryden et al., 2021; Perry et al., 2001; Perry et al., 2005a, 2005b; Schneider & Preckel, 2017). Perceived control has also been found to be a stronger predictor of achievement outcomes than other cognitive factors (e.g., self-esteem, critical thinking; Stupnisky et al., 2007, 2008).

In addition to perceived control, perceived stress is an important affective factor reported in competitive learning environments, particularly among student-athletes (Kimball & Freysinger, 2003; Papanikolaou et al., 2003; Parker, Perry, Hamm et al., 2018). The unique milieu of competition and class schedule conflicts, novel training environments, physical and mental exhaustion, and pressures to excel at elite levels (Papanikolaou et al., 2003; Scott et al., 2008) can impact student-athletes' academic environments (Comeaux & Harrison, 2011, Gomez et al., 2018; McKay et al., 2008; Simons et al., 1999; Veena & Shastri, 2016). Given that having multiple social identities is related to reductions in stress and the ability to better manage stress (Haslam et al., 2006, 2008), our study explores whether having a social identity as a student-athlete has an impact on students' psychosocial adjustment during their transition to postsecondary, and whether it acts by *reducing* stress to foster psychosocial adjustment. In this study, psychosocial adjustment considers measures of perceived control, perceived stress, and learning-related anxiety that contribute to student-athletes' academic experiences.

Objectives

The present study explores the role of social identity on critical academic variables for students participating in competitive sport. We posited that having a strong sense of identity as a student-athlete would foster psychosocial adjustment, by lowering perceived stress. Social identity and stress have been considered in several settings (Cruwys et al., 2015; Haslam et al.,

2005; Rees et al., 2015), but little research has examined this among student-athletes in achievement settings.

Our study had two objectives: first, to assess if there is a relationship between student-athlete social identity at the beginning of an introductory course and key academic indicators of psychosocial adjustment (perceived control, perceived stress, learning-related anxiety); and second, to assess whether ratings of perceived stress early in Semester 1 mediate the relationship between student-athlete social identity and the same key academic indicators in Semester 2 (e.g., social identity → perceived stress → perceived control, stress, anxiety). This mediating relationship was also explored with student-athletes' final grades as a dependent variable (e.g., social identity → perceived stress → achievement).

Method

In the present study, we conducted a secondary analysis of data drawn from the Motivation and Academic Achievement (MAACH) archival database (Hamm et al., 2020; Perry, 2003; Perry et al., 2008). The MAACH database includes students' demographic, psychosocial, and achievement data for multiple cohorts of university students at a Canadian university (1992-2018). Each year, students were recruited from an introductory psychology course and were invited by their instructor to participate in exchange for partial course credit.

From this MAACH database, the current study was based on the 2017-2018 cohort because it contained all key variables relevant to the present study. This cohort contained longitudinal data from students that was collected over a large, two-semester blended learning course ($N = 1,821$), enabling the extraction of a large sample of competitive student-athletes. The original 2017-18 data was collected as part of a broader data collection, and thus the present

study is a secondary analysis of that study.[1] In the present study, our focus was on testing

relationships between key study variables (student-athlete social identity, psychosocial

adjustment variables) for a specific subset of the sample (student-athletes). We extracted 331

student-athletes who had consented to participate in the 2017-2018 study assessing psychosocial

and achievement data, completed information on all of our variables of interest, and were in their

first year of university. All student-athletes included in our sample self-identified that they were

competing in a sport at a competitive level (i.e., above recreational or intramural level) in the

current year. The sample was mostly English speaking (84%), aged between 17-20 (96%), and

female (55%). The current study using secondary data analysis was approved by the institution's

standing ethics review board.

Procedure

The study design involved a three-phase procedure with participants completing two

online surveys from which we extracted the measures relevant to the present study objectives. In

Semester 1 (early October), participants completed an online survey at the beginning of the

school-university transition. This survey was conducted using a secure survey website and

included demographic (e.g., age, sex) and psychosocial measures (e.g., student-athlete social

identity, perceived control, stress, anxiety). In Semester 2 (March), participants completed a

second online survey that was identical to the first. Finally, in May, the participants' final course

grades were obtained from the course instructor at the conclusion of the course (see Table 1 for

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[1]As part of the 2017-2018 data collection, students were randomly assigned to motivation treatment or control conditions. Of the 1,821 introductory psychology students in the original study, there were 105 student-athletes in the first treatment group, 120 in the second treatment group, and 106 in the control group; however, because we found no differences between the conditions on the key study variables for the present study, we collapsed the sample across the three groups (e.g., Stieger et al., 2020).

descriptive information of the study sample and Table 2 for the zero-order correlations). Only survey responses and grades were examined for participants who consented.

Measures

Student-Athlete Social Identity (Semester 1). A single item of social identification was adapted from Postmes et al. (2013) Single Item Social Identification (SISI) scale. The measure assessed student-athletes' agreement with the statement "I identify with student-athletes" (1 = *fully disagree*, 7 = *fully agree*; *M* = 4.58, *SD* = 1.93, range = 1-7). Postmes et al. (2012) found the SISI measure is valid based on convergence, divergence, and test-retest reliability (across three studies) and note good estimated reliability (*r*s = .64-.76).

Perceived Control (Semesters 1 and 2). Student's perceived control was assessed using an adapted (3-item) version of Chipperfield et al.'s (2012) domain-general Sense of Control scale. This adapted version was used to examine students' perceived influence over general life events, which is relevant for student-athletes who are managing multiple commitments across domains (i.e., sport and school). The scale had students rate statements pertaining to their experience in university more generally, such as "All things considered, I am generally able to keep things in control" (1 = *strongly disagree*; 7 = *strongly agree*; Semester 1: Cronbach α = .85; *M* = 10.06, *SD* = 2.66, range = 3-15; Semester 2: Cronbach α = .86; *M* = 10.47, *SD* = 2.70, range = 3-15). Items were summed so higher scores reflect greater perceived control.

Perceived Stress (Semesters 1 and 2). Seven items from Cohen et al.'s (1983) Perceived Stress Scale assessed students' domain-general perceived stress, e.g., "During the last month, how often have you felt overwhelmed" (1 = *never*, 5 = *very often*; Semester 1: Cronbach α = .86; *M* = 24.11, *SD* = 5.32, range = 7-35; Semester 2: Cronbach α =.87; *M* = 23.75, *SD* = 5.41, range = 8-35). Items were summed so higher scores reflect greater perceived stress.

Learning-Related Anxiety (Semesters 1 and 2). Students' domain-specific anxiety was assessed using Pekrun et al.'s (2011) Achievement Emotions Questionnaire. The measure comprised 8-items, e.g., "I worry whether my assignments will be too difficult" (1 = *strongly disagree*, 5 = *strongly agree*; Semester 1: Cronbach α = .88; *M* = 23.88, *SD* = 7.38, range = 8-40; Semester 2: Cronbach α = .91; *M* = 22.98, *SD* = 7.87, range = 8-40). Ratings were summed so that high scores indicated high levels of anxiety. Past studies reveal similar scale properties of the AEQ anxiety measure (Pekrun et al., 2002, 2010, 2011; Ruthig et al., 2008).

Rationale for Analyses

To assess Objective 1, ordinary least squares (OLS) regressions assessed the influence of the predictor variable on the continuous psychosocial outcomes (using SPSS). This allowed us to test whether student-athlete social identity in Semester 1 was associated with perceived control, perceived stress, and learning-related anxiety in Semester 2. Table 3 provides a summary of the predictors of these outcomes, including the covariates (age, sex, and high school grade) using standardized regression coefficients. For Objective 2, mediation models and indirect effects were tested with regression analyses using Hayes' PROCESS Macro (Model 4; Hayes 2013) to assess the mediation of perceived stress in the relationship between the predictor and psychosocial outcomes. We examined whether the effect of student-athlete social identity on Semester 2 perceived control, perceived stress, and learning-related anxiety was mediated by Semester 1 perceived stress. Mediation was confirmed if the value zero was outside of the confidence interval (*CI*) based on 1,000 samples of the standardized weights. The results are reported using standardized (*β*) regression coefficients (see Table 4).[2]

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[2]We conducted a secondary analysis on student-athletes only and collapsed across treatment conditions that did not concern treatment effects (e.g., Stieger et al., 2020). Of note, all effects found in the main analyses were consistent when treatment condition was controlled (with dummy-coded variables).

Results

Main Analyses

Objective 1 Analyses. OLS regressions that tested whether student-athlete social identity was associated with psychosocial adjustment (perceived control, stress, anxiety) revealed expected relationships. Model summaries including student-athlete social identity and the covariates in the model were significant for each outcome: perceived control [$F(4, 250) = 4.29$; $R^2 = .06$, $p = .002$], perceived stress [$F(4, 250) = 8.75$; $R^2 = .12$, $p < .001$], and anxiety [$F(4, 250) = 8.77$; $R^2 = .12$, $p < .001$]. Student-athlete social identity was associated with higher perceived control ($\beta = .15$, $p = .020$], lower perceived stress ($\beta = -.16$, $p = .008$), and lower anxiety ($\beta = -.24$, $p < .001$) in Semester 2.

Objective 2 Analyses. The social identity → perceived stress → outcome mediation paths were tested for significance using 95% bias corrected confidence intervals (Hayes, 2013; Preacher & Hayes, 2008). Results showed student-athlete social identity was negatively related to perceived stress ($\beta = -.19$, $p = .002$, CIs = -0.309 to -0.073) and the relationship between the mediator (perceived stress) and outcome (perceived control) was significant ($\beta = -.37$, $p < .001$, CIs = -0.485 to -0.245). Results indicated perceived stress mediated the relationship between student-athlete social identity and Semester 2 perceived control (indirect effect: $\beta = .07$, CIs = 0.024 to 0.141). The direct effect of student-athlete social identity on Semester 2 perceived control was not significant ($\beta = .07$).

When examining Semester 2 perceived stress as an outcome, student-athlete social identity was negatively related to perceived stress ($\beta = -.20$, $p = .001$, CIs = -0.322 to -0.083). Not surprisingly, the mediator (perceived stress) predicted Semester 2 perceived stress ($\beta = .53$, $p < .001$, CIs = 0.425 to 0.633). Furthermore, perceived stress mediated the relationship between

student-athlete social identity and Semester 2 perceived stress (indirect effect: β = -.11, *CI*s = -0.183 to -0.042). Again, the direct effect of student-athlete social identity on the outcome was not significant (β = -.06).

When considering Semester 2 learning-related anxiety as an outcome, student-athlete social identity was negatively related to perceived stress (β = -.20, *p* = .001, *CI*s = -0.318 to -0.080). In addition, the mediator (perceived stress) predicted Semester 2 learning-related anxiety (β = .42, *p* < .001, *CI*s = 0.304 to 0.531). Student-athlete social identity was also found to reduce learning-related anxiety in Semester 2 via perceived stress (indirect effect: β = -.08, *CI*s = -0.151 to -0.030); however, the direct effect of student-athlete social identity on Semester 2 anxiety did remain significant (β = -.13, *p* = .031, *CI*s = -0.239 to -0.012). Thus, student-athlete social identity was associated with indirectly enhancing student-athletes' academic control and lowering negative emotions by reducing perceived stress. Refer to Figure 1 for a visual representation.

Supplemental analyses were conducted to assess whether student-athlete social identity had an indirect effect on final grades via perceived stress. Results revealed student-athlete social identity was negatively related to the mediator (β = -.18, *p* = .002, *CI*s = -0.292 to -0.067); and the relationship between the mediator (perceived stress) and outcome (final grades) was significant (β = -.16, *p* = .003, *CI*s = -0.258 to -0.053). Furthermore, having a higher student-athlete social identity was indirectly associated with higher final grades by a reduction in perceived stress (indirect effect: β = .03, *CI*s = 0.007 to 0.060). Here, the direct effect of student-athlete social identity on final grades was negligible (β = -.03). It is worth noting that although perceived stress did mediate the relationship between student-athlete social identity and final

grades, the beta value was quite small (.03) which represents a small but potentially meaningful effect.

Discussion

Having multiple group memberships is particularly important during challenging life transitions, helping individuals to regain control and minimize stress (Cruwys et al., 2020; Haslam et al., 2018). While group memberships have received attention in sport and social settings, our study investigated the impact of student-athlete social identity during a challenging academic transition (the first-year university experience). Specifically, the present study assessed the influence of student-athlete social identity on psychosocial adjustment (perceived control, perceived stress, and anxiety) during a first-year university course.

Supporting our hypotheses, we found student-athlete social identity was associated with higher perceived control, and lower levels of perceived stress and learning-related anxiety in the second semester. This aligns with past research in non-academic settings where shared group identification buffered the deleterious effects of stress (Haslam et al., 2006; 2008). Zero-order correlations revealed an expected pattern of results. In both semesters, perceived control was negatively associated with the negative emotions—perceived stress and learning-related anxiety (Perry et al., 2001; 2005a). Final course grades were positively related to Semester 1 and 2 perceived control and negatively related to Semester 1 and 2 learning-related anxiety, in keeping with past achievement findings (Daniels et al., 2008; Parker, Perry, Chipperfield et al., 2018; Perry et al., 2005b).

Student-athlete social identity related positively to Semester 1 and 2 perceived control and negatively to Semester 1 and 2 perceived stress and learning-related anxiety. We did not find that identifying as a student-athlete was directly correlated with final course grades. A possible

explanation is that the student-athlete social identity involves having multiple achievement goals in differing domains (sport and education). Thus, identifying with similar others, and knowing you are not "in this alone", is likely to boost psychosocial adjustment; however, there is no empirical evidence suggesting this extends to academic performance. In educational settings, other studies have found that "school identity" was associated with academic achievement in that it mediates the relationship between school climate and achievement (Maxwell et al., 2017; Reynolds et al., 2017). These findings differ from the present study since we found social identity was not associated with achievement, however; we assessed "student-athlete" social identity, which involves identifying with multiple groups and not just with school.

Research by Iyer and colleagues (2009) found that being involved in several groups prior to starting school was one of the best predictors of heathy adjustment for first-year university students. Additionally, in organizational settings, individuals' social identity with a team was negatively correlated with stress (Haslam et al., 2005) and protected individuals from burnout (Haslam et al., 2009). These studies support our findings that identifying with multiple groups (i.e., student-athletes) helps to reduce stress and contribute to psychosocial adjustment in university.

Regarding mediation, we found that perceived stress reported in Semester 1 mediated the effects of having a student-athlete identity on psychosocial adjustment five months later. Students indicating a stronger student-athlete social identity experienced less perceived stress in Semester 1, which subsequently increased perceived control, and decreased perceived stress and anxiety in Semester 2. Notably, student-athlete social identity increased Semester 2 perceived control by 7% of a standard deviation by decreasing perceived stress. Social identity also decreased Semester 2 perceived stress and anxiety, by 11% and 8% of a standard deviation,

respectively, by decreasing student-athletes' perceived stress. Lastly, student-athlete social identity was found to reduce stress, which subsequently improved grades by a small but significant amount (3% of a standard deviation).

Although these mediation effects are not large, they provide some support for the propositions in the SIMIC model (Cruwys et al., 2020), that highlight the benefit of group memberships when facing life transitions. The results of this study suggest that a student-athlete social identity may provide some protective qualities against psychological stress when in transition. These findings also imply a need to further explore the adaptive utility of fostering multiple group memberships when adjusting to a challenging educational transition. Specifically, for academically vulnerable athletes, intentional interventions focused on strengthening or developing new identities with multiple groups could be tested to determine whether they reduce negative affect, and benefit psychosocial adjustment and academic attainment. For example, in clinical settings several studies have tested a social-identity intervention and found positive effects for improving positive affect and lowering depressive symptoms (Cruwys et al., 2014; Haslam et al., 2016). Of note, the participants in these studies were diagnosed with depression or were at-risk of depression. Thus, further research on the effects of social-identity interventions beyond clinical settings, such as in sport settings, is warranted.

Strengths, Limitations, and Future Directions

Several strengths characterize our study. First, the longitudinal design allowed for testing our mediation analyses over two semesters of an introductory psychology course, which methodologically supports causal inference (Shadish et al., 2002). Second, our study considered a more general sample of student-athletes, defined as those who self-identified as a competitive athlete, compared to studies where only university athletes are examined. This criterion allowed

for the analysis of a wider range of individuals involved in competitive sport (e.g., club, adult league) who are simultaneously dealing with the challenges inherent in the first-year transition. Third, our study provides a novel perspective of social identity and psychosocial adjustment for student-athletes, which appears as an omission in the sport and education literature.

We do, however, acknowledge that the generalizability of our findings is a limitation since our sample comprised only student-athletes from one institution enrolled in an introductory psychology course. It is possible student-athletes from our sample will differ from those who are not enrolled in introductory psychology. However, the course is one of the largest first-year courses at the present institution and is commonly taken by a wide range of students across many programs (i.e., faculties of Arts, Science) to fulfill their program requirements, and is not only for students specializing in psychology. Another generalizability issue concerns the fact demographic and sport-related information about the participants' ethnicity, gender identity, and sport career length, for example, were not gathered. This is a limitation since such factors would provide a more contextual and descriptive understanding of the sample and could influence their psychosocial adjustment process.

For instance, Anshel and colleagues (2010) examined approach and avoidance coping styles of competitive athletes when facing an event that was perceived as stressful. They found the athletes differed in their coping style depending on their race and gender. Dyer et al. (2017) show the importance of considering sport and SES factors in achievement settings; and in a systematic review, Castaldelli-Maia et al. (2019) note the importance of gender, race, ethnicity, and SES as influencers of mental health in sport settings. These background antecedents that shape who the athletes are and how they manage their environments likely influence who they identify with. This suggests the need for future research to test demographic variables as

potential moderating variables when considering how student athlete identities impact psychosocial adjustment.

Researchers might consider our use of a single-item measure for student-athlete social identity a limitation, as the psychometric validity of single-item measures is often viewed with skepticism. However, Postmes et al. (2013) reported three studies that provided evidence for the validity and good reliability of the single-item social identification measure, used in the present study, across a broad range of social groups. Thus, the measurement of the construct appears to be supported as a single item.

Given the specificity of the student-athlete sample in an introductory psychology course, future research is necessary to replicate these findings across multiple universities and student-athlete contexts. Efforts should be made to establish if student-athlete social identity is consistently associated with improved psychosocial adjustment in the first-year transition to college or university. Furthermore, identifying the type of sport (e.g., team vs. individual) and the sporting competition organization (e.g., Canadian USports vs. NCAA) the athletes are competing in may further contextualize our understanding of the environments that student-athletes are experiencing. Further research is needed to consider these nuances.

Implications

Our findings have several practical implications. First, the findings provide researchers with information that could be used to develop interventions to target student-athletes' cognitions and emotions. For example, intervention studies designed to promote perceived control, curtail stress, or reduce harmful achievement emotions (e.g., attributional retraining; Dryden et al., 2021; Hamm et al., 2020; Perry & Hamm, 2017; Perry et al., 2014) may be utilized to help students who are having trouble adjusting to the challenges inherent in educational transitions

(Parker et al., 2016, Parker, Perry, Hamm et al., 2018). Thus, these interventions may be especially strategic for individuals who do not have multiple group memberships.

Second, our findings can be used to inform student health centres or psychological services on campuses about ways they can help students who are adjusting to college or university. Unfortunately, in the athlete community (i.e., elite athletes), Castaldelli-Maia and colleagues (2019) note that there is a stigma associated with seeking help or treatment. Reardon et al. (2019) provide some recommendations on how to reduce the impact of stressors in elite athletes' environments that negatively affect their mental health. For example, they suggest athletes may seek help if they feel supported and perceive benefits to seeking help. In educational settings, health programs on campus could provide workshops, counselling, or tutoring sessions, targeting student-athletes and other student groups, to help them cope and manage with more than just "student" roles. Such approaches could provide opportunities to enhance campus health programs.

In addition, our study findings could be used to provide coaches and instructors with knowledge to improve upon their strategies to foster psychosocial adjustment for student-athletes. Student-athletes' peers and university faculty report greater negative perceptions toward them than non-athletes (Comeaux, 2011; Tucker et al., 2016), which may impact how student-athletes identify with specific groups (e.g., feel negatively about identifying as an athlete). Resources could be made available to help inform specific mentors of student-athletes, such as instructors in their specialty areas of study, or their coaches, about the importance of fostering social identities with group memberships.

Conclusion

Our study found student-athlete social identity was linked to psychosocial adjustment in an introductory university course. These findings offer insights on how shared group identities may act to promote adjustment for student-athletes in university by means of reducing perceived stress. For sport-related staff, coaches, and instructors interested in facilitating adjustment for their athletes during the school-to-university transition, our findings can be leveraged as an initial step towards understanding the association between student-athlete identity and their psychosocial adjustment in university.

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Table 1. *Descriptive Information for Student-Athlete Sample (n = 331)*

Variable	Mean	*SD*	Range
Age	1.27	.85	1-8
English	1.16	.37	1-2
Sex	1.45	.50	1-2
High school grade	8.17	1.43	4-10
Frequency of sport	3.95	2.10	1-8

Note. Age = student-athletes rated their age (1 = *17-18*, 2 = *19-20*, 3 = *21-22*, 4 = *23-24*, 5 = *25-26*, 6 = *27-30*, 7 = *31-35*, 8 = *36-40*, 9 = *41-45*, 10 = *older than 45*). English = English as first language. Sex = dummy-coded variable (1 = *female*; 2 = *male*). Frequency of sport = the amount of days per week student-athletes trained or played their most competitive sport. Of note, 100% of the student-athletes self-reported they were in their first year of university and were competing in a sport at the competitive level (above recreational or intramural level) since these were inclusion criteria for the study. Pertaining to the faculty the student-athletes were enrolled in: 74.9% were enrolled in "University 1" (a comprehensive introductory program designed for students unsure of which program they will pursue), 9.7% in Science, 6.3% in Business, 4.5% in Arts, 2.1% in Kinesiology, 1.2% in Health Sciences and less than 1% each in the faculties of Agricultural and Food Sciences, Engineering, and Other.

Table 2. *Zero-Order Correlation Matrix for Competitive Student Athletes*

	1	2	3	4	5	6	7	8	9	10	11
1. Age	–										
2. Sex	.09	–									
3. HSG	-.14*	-.27*	–								
4. Student-athlete SI	-.09	.24*	.01	–							
5. Perceived stress (S1)	-.16*	-.28*	.05	-.22*	–						
6. Perceived control (S1)	.03	.12	.04	.21*	-.43*	–					
7. Academic anxiety (S1)	<.01	-.17*	-.04	-.21*	.58*	-.30*	–				
8. Perceived stress (S2)	-.14	-.29*	-.02	-.23*	.59*	-.36*	.40*	–			
9. Perceived control (S2)	.12	.10	.10	.16*	-.39*	.53*	-.26*	-.44*	–		
10. Academic anxiety (S2)	-.03	-.21*	-.10	-.27*	.43*	-.28*	.60*	.56*	-.37*	–	
11. Final grades	-.08	-.21*	.48*	-.02	-.10	.17*	-.18*	-.13	.30*	-.31*	–

Note. HSG = high school grade. SI = social identity. S1 and S2 = Semester 1 and Semester 2, respectively. Sex was dummy-coded

where 1 = *female* and 2 = *male*. *$p \leq .01$ (two-tailed tests).

Table 3. *Regression Analyses: Student-Athlete Social Identity Relationship with Psychosocial Variables*

	Outcomes		
Predictor	Perceived control (S2)	Perceived stress (S2)	Anxiety (S2)
Student-Athlete Social Identity	.15* (.21)	-.16** (-.45)	-.24** (-.98)
Age	.13* (.44)	.11 (-.74)	-.06 (-.56)
Sex	.08 (.43)	-.24** (-2.67)	-.17** (-2.77)
HSG	.14* (.27)	-.09 (-.34)	-.13* (-.73)
R^2	.06	.12	.12

Note. Standardized regression coefficients (β) are provided. Unstandardized regression coefficients (*b*) are reported in brackets. HSG = high school grade. S2 = Semester 2. *$p < .05$;

** $p < .01$.

Table 4. *Indirect effects of Student-Athlete Social Identity on Outcomes Via Perceived Stress*

Outcome	Indirect effect	95% CI
Perceived control (S2)	$\beta = .07$	0.024 to 0.141
Perceived stress (S2)	$\beta = -.11$	-0.183 to -0.042
Anxiety (S2)	$\beta = -.08$	-0.151 to -0.030
Final course grades	$\beta = .03$	0.007 to 0.060

Note. Standardized regression coefficients (β) are provided. S2 = Semester 2.
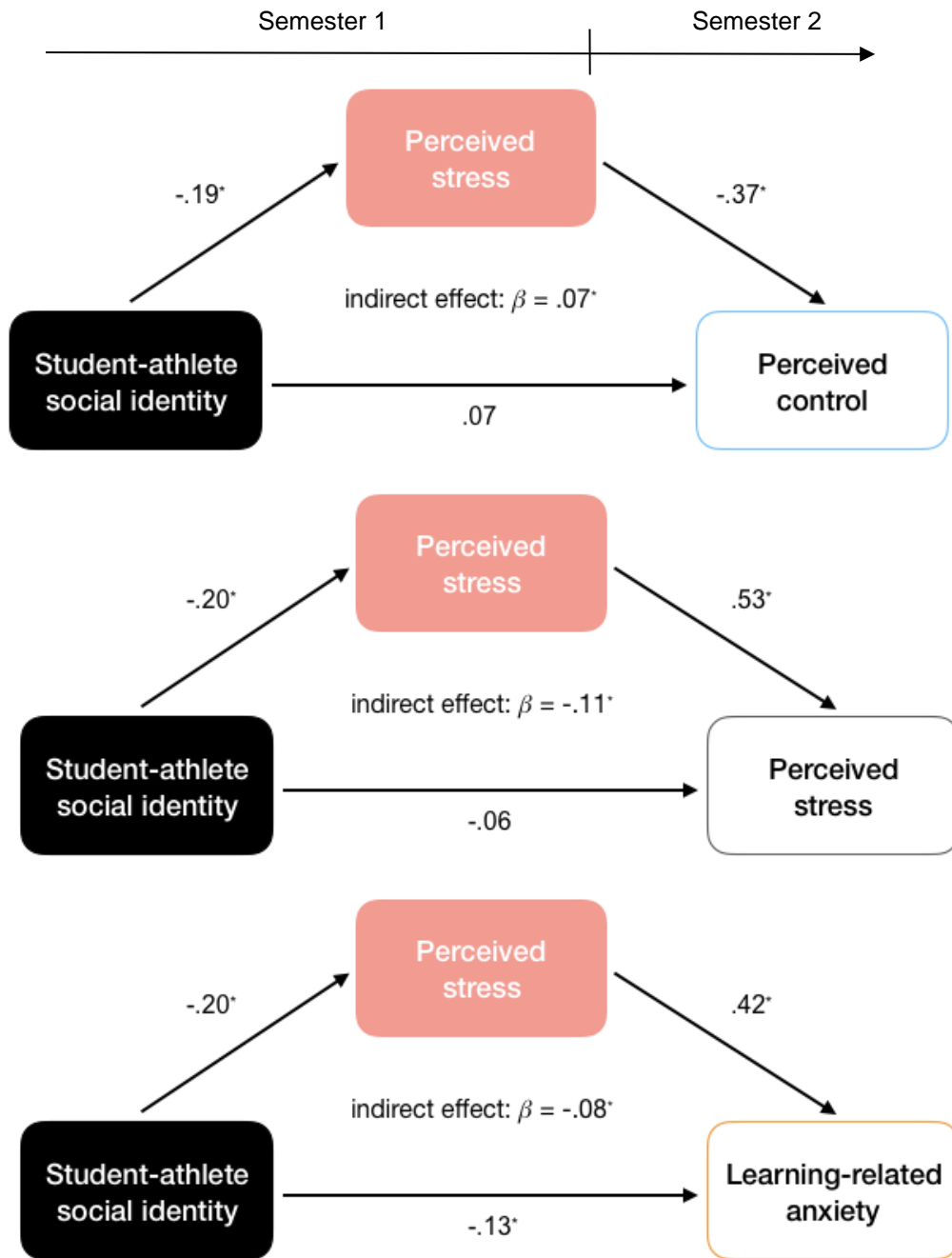
Figure 1. Mediation model. All regression coefficients were standardized (*β*); and results control for age, sex, and high school grade.