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Domain-Specific Grit, Identity, and Self-Compassion in Intercollegiate Athletes

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Researchers and practitioners are often interested in determining whether domain-specific measures provide insight into how personality characteristics operate in achievement and performance contexts beyond the information provided by domain-general measures. This study investigated the benefits of adopting domain-specific approaches to measuring grit, self-compassion, and identity in sport and academic settings. Intercollegiate (varsity) student-athletes (N = 167) completed self-report domain-specific measures of grit and self-compassion in sport and school, domain-general measures of grit and self-compassion, and a measure of athletic and academic identity. Student-athletes demonstrated significantly higher grit in sport than on the school- and domain-general measures, and significantly higher athletic identity than academic identity. Self-compassion levels did not differ significantly across contexts. Regression results indicated that measures of academic grit and academic identity were stronger predictors of academic attainment than the domain-general measure of grit. Regression results also indicated that (a) larger differences in academic grit over sport grit, and larger differences in academic identity over athletic identity were associated with higher academic attainment and (b) larger differences in sport grit over academic grit, and larger differences in athletic identity over academic identity were associated with lower academic attainment. Results support the benefits of adopting domain-specific (over domain-general) approaches to studying grit and identity in sport and academic contexts; results did not support this position for the domain-specific measurement of self-compassion. We argue that practitioners will benefit from adopting domain-specific approaches to measuring grit and identity when attempting to understand how student-athletes think, feel, act, and perform in sport and academic settings.

Keywords: varsity sport, personality, context-specificity, motivation

Within the fields of general psychology and sport psychology, researchers and theorists have had a longstanding interest in determining whether it is more useful to conceptualize and measure personality characteristics as global (i.e., domain-general) constructs or as domain-specific constructs (e.g., Lievens & Conway, 2001; Martens, 1977; Sarason, 1961). At the heart of the domain-specificity versus domain-generality question lies the issue of whether domain-specific measures provide insight into how personality characteristics operate in specific achievement contexts beyond the information that domain-general measures can provide. This issue is particularly relevant to practitioners who work in applied settings where efforts will typically focus upon obtaining the greatest understanding of how people think, feel, and behave in the achievement domain of interest. As such, coaches,

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talent identification scouts, and/or sport psychologists who work with athletes in sport will likely be most interested in approaches that provide the greatest understanding of how athletes think, feel, act, and perform in the sport domain.

The importance of determining whether domain-specific or domain-general measures provide practitioners/researchers with a better understanding of the psychological, emotional, and behavioral functioning of individuals becomes magnified when people operate in more than one achievement domain, as is the case with student-athletes who must successfully navigate the performance demands of school and sport. The general purpose of this study was to investigate the benefits and/or limitations that a domain-specific approach versus domain-general approach would provide in the study of two personality characteristics—grit and self-compassion. Both characteristics play a role in the achievement-striving processes in sport and academic settings, and have previously been the focus of applied interventions in various performance domains.

Grit

Grit is a personality disposition that captures the degree to which people (a) maintain interest and commitment on a specific goal (or goals) for prolonged periods of time—labeled, *consistency of interest*—and (b) sustain their effort in pursuit of such goals despite failure, setbacks, and adversity—labeled, *perseverance of effort* (Duckworth et al., 2007). Grit has received, and continues to receive, considerable research attention in both educational (e.g., Lam & Zhou, 2019) and sport settings (e.g., Tedesqui & Young, 2018); with few exceptions (e.g., Lucas et al., 2015) grit is primarily viewed as an adaptive personality characteristic that corresponds with higher levels of motivation, psychological well-being, and achievement (Duckworth, 2017).

Duckworth et al. (2007) originally conceptualized grit as a domain-general construct. However, shortly thereafter, Duckworth and Quinn (2009) speculated that people could have different levels of grit in different areas of their lives. This "domain-specificity" issue remained largely unexplored until Cormier et al. (2019) compared levels of domain-general grit and domain-specific grit in sport and school in a sample of intercollegiate (varsity) (Neff et al., 2018) student-athletes. Cormier et al. found that student-athletes had significantly higher mean consistency of interest and perseverance of effort in sport compared to school and "life in general" (i.e., domain-general grit). Cormier et al. also reported that a domain-specific measure of grit in school explained a significant amount of variance in academic attainment (i.e., Grade Point Average [GPA]) beyond the variance explained by a domain-general measure of grit (i.e., the Grit Scale; Duckworth et al., 2007). These findings led Cormier et al. to conclude that there is merit to utilizing a domain-specific approach (over a domain-general approach) when studying grit and called for more research investigating the role that grit plays in achievement-striving processes across different domains.

It is worth noting that Cormier et al. (2019) did not examine any variables or conditions that could potentially explain how or why the student-athletes in their study had developed (or employed) higher levels of grit in sport than in school and "life in general". However, referring to previous research in the field of sport psychology (i.e., Dunn et al., 2012), Cormier et al. did speculate that student-athletes who compete at the intercollegiate level may place more value upon success in sport than in the classroom, and this discrepancy in domain-specific attainment values may create motivational conditions that encourage the development and/or utilization of grit in sport to a greater degree than school. This position is consistent with the theoretical tenets of the Expectancy-Value Theory of motivation (Wigfield & Eccles, 2000) where the attainment value that people attach to success in specific tasks or achievement contexts is expected to influence their achievement-related choices and behaviors in those contexts. We aimed to begin to address this speculation in the present study.

Self-Compassion

Self-compassion, an emotionally positive self-attitude that involves an approach to relating to oneself that is kind, supportive, and accepting (Neff, 2003b), may, on first encounter, seem unrelated to, or perhaps even in opposition to, grit. However, the two constructs may have important complementary roles in achievement domains such as school and sport. Self-compassion has garnered much attention in various achievement domains including sport (e.g., Ferguson et al., 2015) and school (e.g., Neff et al., 2005); this attention is likely due to the implications that self-compassion has for individuals' cognitions, emotions, and behaviors in

these settings. Self-compassion has been connected to the avoidance or attenuation of negative cognitions, emotions, and/or behaviors, as well as the facilitation of adaptive responses and outcomes in a variety of populations and contexts (see Neff, 2009 for a review). People high in self-compassion tend to respond with self-kindness, common humanity (a recognition that others also experience difficulties), and mindfulness during achievement pursuits and the challenges that accompany them, as opposed to exhibiting self-judgment, feeling in isolation with their struggles, and over-identifying or ruminating on thoughts and emotions (Neff, 2003b).

Self-compassion and grit are positively related when considered at a global (i.e., domain-general) level, suggesting the two constructs may play important complementary roles in achievement, motivation, and well-being (Neff et al., 2018). Such a conclusion is consistent with research that suggests self-compassion can promote perseverance toward goals and adherence to goal achievement pursuits through accepting, learning, and growing from adversity (Ferguson et al., 2015; Neff & McGehee, 2010). Wilson et al. (2019) explored the compatibility of self-compassion and mental toughness, a construct similar to grit, in a group of elite women athletes. The compatibility and complementarity were described as a "zipper-effect" (p. 68), a balance between the importance of mental toughness in focus and persistence, and the self-care afforded by self-compassion, which fostered adaptive reappraisals, motivation, and support moving forward after or during difficult times, and, importantly an ability to continue being "self-compassionate" and "mentally tough."

Like grit (Duckworth et al., 2007), self-compassion was introduced as a global (i.e., domain-general) construct (Neff, 2003a, 2003b) that has since been the focus of numerous studies in the contexts of sport and education. Although some researchers have adopted domain-specific approaches to measure self-compassion in sport (e.g., Killham et al., 2018) and educational settings (e.g., Martin et al., 2019), there is little evidence to support or refute the benefits of adopting such approaches (over a domain-general approach).

The Present Study

If student-athletes identify more with the "athlete role" than the "student role" (Lally & Kerr, 2005)—which would reflect stronger attainment value in sport than school (Eccles, 2009)—then individuals may develop/employ grit in sport to a greater degree (than school) in hopes of attaining success in the sport domain that subsequently reinforces or strengthens their athletic identity. In contrast, if student-athletes identify more with the "student role" than the "athlete role" we might expect them to develop/employ grit in school to a greater degree (than sport), which in turn could lead to greater academic success (Lam & Zhou, 2019) and reinforce or strengthen their academic identity. In alignment with this proposition, academic identity was found to be positively related to GPA among Australian student-athletes and appears to be a more important predictor of academic success than athletic identity (van Rens et al., 2019). We sought to further understand the construct of grit in student-athletes by (a) replicating all aspects of Cormier et al.'s study to obtain further evidence that either supported or refuted the domain-specificity of grit, and (b) extending Cormier et al.'s work by including a measure of athletic and academic identity (Yukhymenko-Lescroart, 2014). Thus, the primary purposes of this study were to replicate and extend Cormier et al.'s (2019) research by:

1. Comparing student-athlete domain-specific grit in sport and in school, and domain-general grit.
2. Comparing student-athlete levels of athletic identity and academic identity.
3. Examining the extent to which a domain-specific measure of grit in school and a domain-general measure of grit would account for variance in student-athlete GPA beyond the contributions of academic identity.
4. Examining the extent to which differences in sport-grit versus school-grit, and athletic identity versus academic identity, predict academic performance.

With respect to the first purpose, we hypothesized that intercollegiate student-athletes would report significantly higher levels of grit in sport than in school and "life in general" (i.e., domain-general grit; Cormier et al., 2019). With respect to the second purpose, we hypothesized that student-athletes would report significantly higher levels of athletic identity than academic identity (cf., Dunn et al., 2012). With respect to the third purpose, we

hypothesized that academic identity would positively predict academic attainment (Beron & Piquero, 2016; van Rens et al., 2019), and a domain-specific measure of grit in school would account for unique variance in GPA beyond a domain-general measure of grit (Cormier et al., 2019; Schmidt et al., 2019). With respect to the fourth purpose, based on research by Eccles (2009), Lally and Kerr (2005), Lam and Zhou (2019), and van Rens et al. (2019), we hypothesized that larger differences of grit in school over sport, and larger differences in academic identity over athletic identity, would be associated with higher academic attainment (GPA), whereas larger differences of grit in sport over school, and larger differences of athletic identity over athletic identity, would be associated with lower academic attainment.

No studies have directly investigated the domain-specificity versus domain-generality question surrounding self-compassion by comparing individuals' levels of self-compassion in different achievement contexts. To this end, the secondary purpose of this study was to compare student-athletes' levels of domain-general self-compassion and domain-specific self-compassion in sport and school. Given the absence of existing research in this area, no a priori hypotheses were developed.

Method

Participants

Intercollegiate (varsity) student-athletes (N = 169 [50 women]: M age = 20.33 years; SD = 2.03) from a large western Canadian university participated in the study. Participants had an average of 2.34 years competing at the intercollegiate level (SD = 1.38). Participants were recruited from nine teams. Sports represented were hockey, tennis, football, soccer, basketball, and rugby. At the time of data collection, the athletics (i.e., intercollegiate sport) program at the university was among the most successful in the country. The athletics program also had a strong academic reputation having received more Academic All Canadian awards (given to varsity athletes who achieve an academic standing $\geq$ 80%) than any other university in the country. Expectations of athletic and academic success for student-athletes at the university were high.

Measure

Participants completed a demographic questionnaire, three measures (global, sport, and school/academe versions) each for grit and self-compassion, and one measure of academic and athletic identity. The demographic questionnaire gathered information about participants' age, sex, varsity sport experience, and academic experience (including Grade Point Average [GPA][1]).

Grit

Grit was measured using three versions of the Grit Scale (Duckworth et al., 2007). One version measured grit as a global/generic (domain-general) construct, one measured grit in the context of sport, and one measured grit in the context of school/academe. Each version contained 11 items (see Cormier et al., 2019): five measured *Consistency of Interest* (CI: e.g., "I often set a goal but later choose to pursue a different one" [Reverse]) and six measured *Perseverance of Effort* (PE: e.g., "I have overcome setbacks to conquer an important challenge). All items within the domain-specific instruments were preceded by the phrase "*As an athlete in sport …*" or "*In my academic pursuits …*" Respondents rated items using a 7-point scale (1 = *Not at all like me*; 7 = *Very much like me*), with higher composite subscale scores (following reverse-scoring of CI items) reflecting higher CI and PE.

In this study, we present grit scores at the subscale level (i.e., CI and PE) rather than presenting scores using a unidimensional/composite grit score. We made this decision because there is a general absence of empirical evidence supporting the unidimensional (higher-order) model of grit, and numerous studies have demonstrated that the CI and PE subscales often provide stronger predictive power (and applied meaningfulness) than a composite (higher-order) grit score (for a related discussion see Credé, 2018; Credé et al., 2017). Our approach is also in keeping with the work of Cormier et al. (2019) who demonstrated that the latent structure of the three versions of the grit scale used in this study was best

[1] In a large-scale meta-analysis by Kuncel et al. (2005) self-reported grades were related to actual grades among college students (r = .90). Also, at the university attended by study participants, GPA is criteria and norm-referenced.

captured by two factors (i.e., CI and PE) in a similar sample of intercollegiate student-athletes.

In the present study, we further examined the latent structure of each version of the instrument by conducting a series of confirmatory and exploratory factor analyses.[2] For the sake of brevity, we only report the results of the Principal Axes factor analyses (followed by direct oblimin rotations) for each instrument. Scree plot and parallel analysis results clearly supported the retention of two factors (i.e., CI and PE), and following rotation, all 11 items contained within the pattern matrices for each instrument demonstrated excellent simple structure (i.e., each item had a pattern coefficient ≥.30 on only one factor) and all items loaded on the factor (i.e., CI or PE) they were intended to measure.

Self-Compassion

Self-compassion was measured using three versions of the Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011). One version measured self-compassion as a domain-general construct, one measured self-compassion in the context of sport, and one measured self-compassion in the context of school. When self-compassion was conceptualized as a domain-general construct, no situational frame of reference was provided (e.g., "When something upsets me I try to keep my emotions in balance"). In contrast, domain-specific versions included the word "sport" or "school" in each item (e.g., "When something upsets me in *sport/school* I try to keep my emotions in balance"). Each version contained 12 items, with respondents rating items on a 5-point scale (1 = *Almost never*; 5 = *Almost always*). Higher composite scores (after reverse-scoring relevant items) were indicative of higher self-compassion. Raes et al. (2011) provided validity evidence supporting the use of the original SCS-SF as a unidimensional measure of self-compassion. SCS-SF scores with student-athletes have also demonstrated acceptable levels of internal consistency (e.g., α = .83; Hilliard et al., 2019). Following the same factor analytic procedures we conducted with the three versions of the Grit Scale, examination of scree plot and parallel analysis results for all three versions of the SCS-SF supported the retention of unidimensional (i.e., single-factor) solutions. All 12 items had factor loadings ≥.30 on the retained factor in each solution.

Academic and Athletic Identity

Academic and athletic identity were measured using the Academic and Athletic Identity Scale (AAIS; Yukhymenko-Lescroart, 2014). The instrument contains five items that measure academic identity (e.g., "Being a capable student"; "Doing well in school") and six that measure athletic identity (e.g., "Being a capable athlete"; "Doing well during sport competition"). Respondents rate the degree to which each item is central to their sense of self on a 7-point scale (1 = *Not central*; 7 = *The central core*). Higher composite subscale scores indicate higher academic identity and/or athletic identity. Yukhymenko-Lescroart (2014, 2018) and van Rens et al. (2019) provided factorial validity and internal reliability evidence (omega coefficients ≥.91; α ≥.90) for AAIS scores, supporting the AAIS as a measure of academic/athletic identity in several samples of student-athletes. Following the same factor analytic procedures we conducted with the three versions of the Grit Scale and SCS-SF, examination of scree plot and parallel analysis results supported the retention of two factors. Following rotation, all 11 items contained within the pattern matrix demonstrated excellent simple structure (i.e., each item had a pattern coefficient ≥.30 on

[2] As part of our preliminary psychometric analyses, we examined the latent dimensionality/structure of each instrument (i.e., Grit Scale, Self-Compassion Scale-Short Form, and the Academic and Athletic Identity Scale) using a series of factor analytic procedures (see Dunn et al., 2006). Initially, we conducted Maximum Likelihood confirmatory factor analyses to examine the theorized latent structure of each instrument. We tested (a) a two-factor model for each version of the Grit Scale (see Cormier et al., 2019; Credé et al., 2017), (b) a one-factor model for each version of the Self-Compassion Scale-Short Form (see Lizmore et al., 2017; Raes et al., 2011) and (c) a two-factor model for the Academic and Athletic Identity Scale (see Yukhymenko-Lescroart, 2014, 2018). None of the fit indices associated with any of the models indicated that good fitting solutions had been obtained. Subsequently, we turned to exploratory procedures to examine the latent structure of each instrument. We conducted Principal Component analyses on each instrument and used a combination of scree-plot results and parallel analyses results to determine the number of factors to retain (Velicer et al., 2000). Having selected the number of factors, we then employed Principal Axes analyses (followed by direct oblimin rotations) to examine the latent structure of each instrument. We briefly report the results of the Principal Axes analyses for each instrument in the body of the text.

only one factor) and all items loaded on the factor (i.e., academic identity or athletic identity) that they were intended to measure.[3]

Procedure

Approval to conduct the study was provided by the university's research ethics board. All participants gave voluntary consent and anonymity was ensured. The demographic questionnaire was always administered first; remaining instruments were presented in randomized orders to minimize potential order effects. Coaching staff were not present during data collection.

Results

Preliminary Data Analyses

Twenty-six missing data points (out of 13,520 possible responses) were identified across the three grit scales, three self-compassion scales, and AAIS. Missing data were replaced by computing intra-individual mean item scores from the scores on the remaining items within the corresponding subscale (Graham et al., 2003).

Data for the six grit subscales (i.e., Global-CI, Global-PE, Sport-CI, Sport-PE, School-CI, School-PE), the three self-compassion scales (i.e., Global-SC, Sport-SC, and School-SC), and the two identity subscales (i.e., academic identity and athletic identity) were screened for the presence of univariate and multivariate outliers. No univariate outliers were detected (i.e., all standardized z-scores $< |3.29|$ [see Tabachnick & Fidell, 1996, p. 67]). However, two multivariate outliers were identified (i.e., two cases had Mahalanobis distances $> \chi^2[11]_{\text{critical}} = 31.26$, $p < .001$ [see Tabachnick & Fidell, 1996, pp. 67–68]) and removed from the data set.

After screening the data for outliers, we conducted a series of MANOVAs upon conceptually similar sets of dependent variables (DVs) using team/sport as the independent variable in each analysis. The multivariate test statistic (Wilks' Λ) for each analysis was not statistically significant (i.e., all ps $> .05$). These results indicate that mean levels of grit, self-compassion, and identity did not differ significantly across teams/sport. As such, we concluded that team/sport membership was not systematically influencing athlete responses on any of the grit, self-compassion, and identity variables.

Prior to combining responses from men's and women's teams into a single data set (to enhance statistical power), we also conducted a MANOVA to screen for gender differences. Had there been differences, it would not have been appropriate to combine the data. Gender (men vs. women) was entered as the independent variable and the 11 psychological variables (i.e., six grit subscales, three self-compassion scales, and two identity subscales) were entered as dependent variables. The multivariate test statistic was not significant: Wilks' $\Lambda = .923$, $F(11, 155) = 1.18$, $p = .31$. Results of a Box's M test to assess the homogeneity of the covariance matrices across gender was also not significant: Box's $M = 116.786$, $F(66, 29370.07) = 1.60$, $p > .001$ (see Tabachnick & Fidell, 1996, pp. 80–81). Responses were subsequently combined into a single data set ($N = 167$) for the remaining analyses.

Descriptive statistics (means, standard deviations, and bivariate correlations) for the 11 psychological variables are shown in Table 1. Acceptable levels of internal consistency were obtained for all scales/subscales (αs $\geq .77$: Table 1).

Domain-Specific Differences in Grit, Identity, and Self-Compassion

A key purpose of this study was to compare levels of grit, identity, and self-compassion across achievement contexts. To this end, we conducted (a) a repeated-measures MANOVA to examine domain-specific differences in grit (cf., Cormier et al., 2019), (b) a paired-sample (dependent) t-test to examine domain-specific differences in identity (i.e., athletic identity vs. academic identity), and (c) a repeated-measures ANOVA to examine domain-specific differences in self-compassion.

For grit, domain (i.e., global, sport, and school) was entered as the within-subjects (repeated-measures) factor, and consistency of interest (CI) and perseverance of effort (PE) were entered as the dependent variables. A significant within-subjects multivariate test statistic was obtained: Wilks' $\Lambda = .563$, $F(4, 163) = 31.612$, $p < .001$, partial $\eta^2 = .437$. Follow up univariate F-tests for both dependent variables were significant: CI,

[3] Detailed summaries of the factor analytic results for the three grit scales, the three self-compassion scales, and the AAIS are available upon request from the authors.

Table 1

Means, Standard Deviations, Internal Consistencies, and Bivariate Correlations for All Psychological Variables

	Global grit[a]		Sport grit[a]		School grit[a]		Self-compassion[b]			Identity[a]		
Variable	CI	PE	CI	PE	CI	PE	Global	Sport	School	Athletic	Academic	GPA
Global CI	α = .79	.11	.55***	−.01	.63***	.18*	.09	.05	.05	.07	.16*	.07
Global PE		α = .80	.16*	.74***	.09	.63***	.46***	.39***	.41***	.17*	.28***	.21*
Sport CI			α = .80	.16*	.45***	.18*	.03	−.04	.00	.01	.11	.27**
Sport PE				α = .77	−.02	.48***	.39***	.36***	.33***	.26**	.20**	.11
School CI					α = .85	.22**	.05	−.02	.04	.07	.19*	.15
School PE						α = .79	.24**	.21**	.24**	−.01	.62***	.56***
Global SC							α = .89	.85***	.82***	.08	.01	.11
Sport SC								α = .87	.65***	.04	.04	−.01
School SC									α = .88	.12	.00	.09
Athletic ID										α = .89	.05	−.13
Academic ID											α = .93	.52***
GPA												
Mean	4.25	5.35	4.74	5.66	4.50	4.95	3.15	3.10	3.19	5.84	4.87	3.10
(*SD*)	(1.05)	(0.89)	(1.09)	(0.83)	(1.21)	(0.99)	(0.72)	(0.72)	(0.74)	(0.91)	(1.22)	(0.53)

Note. $N = 167$, except for GPA ($n = 96$ as first year students were not included due to their low number of completed courses). Bivariate correlations (r) contained in upper triangular matrix. Internal consistency coefficients (α) contained in main diagonal. CI = consistency of interest; PE = perseverance of effort; SC = self-compassion; ID = identity.

[a] Items measured on 7-point response scales. [b] Items measured on a 5-point response scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

$F(2, 332) = 17.212, p < .001$, partial $\eta^2 = .094$ and PE, $F(2, 332) = 66.059$, $p < .001$, partial $\eta^2 = .285$. Post-hoc mean contrasts using Bonferroni corrections were conducted (see Table 2) to determine where differences in domain-specific grit levels existed. Sport-CI was significantly higher than Global-CI and School-CI; School-CI was significantly higher than Global-CI. Corresponding effect sizes (partial η^2) ranged from small (.039) to large (.188). Sport-PE was significantly higher than Global-PE and School-PE; Global-PE was significantly higher than School-PE. Corresponding effect sizes (partial η^2) were generally large in magnitude (range: .196–.364).

The result of the dependent *t*-test comparing levels of athletic identity and academic identity was statistically significant (see Table 2). On average, student-athletes reported significantly higher mean levels of athletic identity than academic identity. The effect size (partial $\eta^2 = .30$) was large. It appears that athletic identity is the more dominant form of identity (when compared against academic identity) among the current sample of intercollegiate student-athletes.

For self-compassion, domain (i.e., global, sport, and school) was entered as the within-subjects (repeated-measures) factor, and self-compassion was entered as the dependent variable. The within-subjects multivariate test statistic was not significant: Wilks' $\Lambda = .972$, $F(2, 165) = 2.389$, $p = .095$, partial $\eta^2 = .028$. On average, self-compassion scores did not differ as a function of the contextual specificity of each self-compassion scale. As such, self-compassion was not a focus of any further analyses in this study.

Predicting GPA

Two hierarchical regression analyses were conducted to examine the degree to which the domain-specific measure of grit in school accounted for variance in GPA beyond the domain-general measure of grit. Extending Cormier et al.'s (2019) work, academic identity was added as a predictor variable in the analysis; this enabled us to determine the extent to which global grit and school grit accounted for variance in student-athlete GPA beyond academic identity. In the first analysis, gender was entered as the predictor variable in the first step, academic identity was entered in the second step, Global-CI and Global-PE were entered in the third step, and School-CI and School-PE were entered in the fourth step. In the second analysis the entry order of the school grit and global grit subscales was reversed (i.e., School-CI and School-PE were entered in Step 3, and Global-CI and Global-PE were entered in Step 4). This second analysis enabled us to determine if global grit accounted for variance in GPA beyond school grit.

First-year students ($n = 67$) were omitted from the analyses because 31 students reported their high-school GPA and 35 reported their university GPA.[4] A sample size of 31 was deemed too small to conduct the regression analysis, and we felt the university GPAs provided by the 35 first-year students was not a trustworthy indicator of academic achievement because these GPAs were based upon the completion of only 3, 4, or at most 5 university courses. Regression analyses were therefore conducted upon the responses of second, third, fourth, and fifth year students who reported their GPA ($n = 96$; $M_{GPA} = 3.10$, $SD = 0.53$). All Variance Inflation Factors (VIFs) were ≤ 2.75, indicating that there were no concerns with multicollinearity among the predictors. All Cook's distances were ≤ 0.17, indicating that the removal of any case from the analysis would have had a negligible impact upon the results.

Table 3 contains the results of the first regression analysis. Gender was a significant predictor of GPA (with women reporting higher GPAs than men). Academic identity was a significant positive predictor of GPA (Step 2) and explained an additional 22% of the variance in GPA beyond gender. After controlling for gender and academic identity, global grit (i.e., Global-PE and Global-CI) did not explain a significant amount of variance in GPA (Step 3). However, the inclusion of the two school-grit subscales in Step 4 accounted for an additional 10% of the variance in GPA ($p < .001$) beyond gender, athletic identity, and global grit. School-PE primarily contributed to the effect ($\beta = .47$, $p < .001$).

When the entry order of the grit scales was reversed (i.e., school grit was entered in Step 3 and global grit was entered in Step 4), the two school-grit subscales accounted for an additional

[4] One first-year student did not provide a GPA. An a priori power analysis using G*Power 3.1.9 indicated that a minimum sample size of 41 participants was required to conduct the analyses. This calculation was based upon a regression analysis that included six predictors, an anticipated effect size that corresponded with a model R^2 value of .29 [taken from Cormier et al. (2019, p. 352)], a power value of .80, and an alpha level of .05.

Table 2
Within-Subjects Pairwise Mean-Comparisons for Domain-Specific Grit and Identity Variables

Subscale comparisons	M_1–M_2 = $M_{difference}$	p[a]	95% Confidence interval		Partial η^2
			Lower	Upper	
Consistency of interests (CI)					
Global CI—sport CI	4.25–4.74 = −0.49	<.001	−0.68	−0.30	.188
Global CI—school CI	4.25–4.50 = −0.25	<.01	−0.43	−0.06	.059
Sport CI—school CI	4.74–4.50 = 0.24	<.05	0.02	0.47	.039
Perseverance of effort (PE)					
Global PE—sport PE	5.35–5.66 = −0.31	<.001	−0.43	−0.20	.204
Global PE—school PE	5.35–4.95 = 0.40	<.001	0.25	0.55	.196
Sport PE—school PE	5.66–4.95 = 0.71	<.001	0.53	0.89	.364
Identity					
Athletic identity—academic identity	5.84–4.87 = 0.97	<.001	0.74	1.20	.300

Note. $N = 167$.
[a] All p values and confidence intervals are adjusted with Bonferroni corrections.

8.1% of the variance in GPA ($p < .01$) beyond gender and academic identity. However, the two global-grit subscales failed to account for a significant amount of variance in GPA ($\Delta R^2 = .019$, $p = .25$) beyond gender, academic identity, and school grit.

The results of the two regression analyses provide evidence that there are benefits to measuring grit as a domain-specific construct (as opposed to a global construct) in the context of predicting academic achievement. However, the analyses fail to consider the potential impact that *athletic* identity and *sport* grit might have for the academic performance of student-athletes. To explore this issue, we computed difference-scores for identity (i.e., athletic identity–academic identity; $\alpha = .91$), Grit-CI (i.e., Sport CI—School CI; $\alpha = .73$), and Grit-PE (i.e., Sport PE—School PE;

Table 3
Summary of Contributions of Independent Variables Entered at Each Step in a Hierarchical Regression Analysis Predicting University Grade Point Average (GPA)

Predictor	R^2	ΔR^2	ΔF	β	t	r[a]
Step 1	.09	.09	9.777**			
Gender				−.31	−3.13**	−.31**
Step 2	.31	.22	29.666***			
Gender				−.21	−2.40*	
Academic identity				.48	5.45***	.52***
Step 3	.31	.00	0.223			
Gender				−.21	−2.39*	
Academic identity				.46	4.83***	
Global CI				−.03	−0.33	.07
Global PE				.06	0.62	.21*
Step 4	.41	.10	7.280***			
Gender				−.20	−2.41*	
Academic identity				.22	1.97*	
Global CI				−.07	−0.63	
Global PE				−.15	−1.43	
School CI				.06	0.52	.15
School PE				.47	3.52***	.56***

Note. Sample contains 2nd—5th year student-athletes ($n = 96$). Gender coded as 1 = women, 2 = men. Subscale abbreviations: CI = consistency of interests; PE = perseverance of effort.
[a] Column contains bivariate correlations between each predictor variable and GPA.
* $p < .05$. ** $p < .01$. *** $p < .001$.

$\alpha = .66$).[5] Positive difference-scores for identity indicate that student-athletes had higher athletic identity than academic identity, whereas negative difference-scores indicate that individuals had higher academic identity than athletic identity. Positive difference-scores for CI and PE indicate that student-athletes had higher Sport CI/PE than School CI/PE, whereas negative difference-scores indicate that individuals had higher School CI/PE grit than Sport CI/PE grit. Larger absolute difference-scores for all variables indicated larger differences between domains.

A hierarchical regression analysis was conducted to examine the degree to which the set of difference-score variables predicted student-athlete GPA. Gender was entered in the first step of the analysis, identity difference-scores ($M = 1.06$, $SD = 1.52$) were entered in the second step, and grit difference-scores for CI ($M = 0.17$, $SD = 1.28$) and PE ($M = 0.69$, $SD = 0.99$) were entered in the third step. As seen in Table 4, identity difference was a significant negative predictor of GPA and accounted for 19.7% of the variance in GPA beyond gender ($p < .001$). The negative standardized regression coefficient ($\beta = -.46$, $p < .001$) indicates that, on average, student-athletes whose academic identity is stronger than their athletic identity tend to have higher GPAs than student-athletes whose athletic identity is stronger than their academic identity. The inclusion of Grit-CI and Grit-PE difference-scores in the third step of the analysis accounted for an additional 7.2% of the variance in GPA beyond gender and identity difference-scores ($p < .01$). Grit-PE difference-scores primarily contributed to the effect ($\beta = -.33$, $p < .01$). The negative standardized regression coefficient for Grit-PE indicates that, on average, student-athletes whose Grit-PE scores in school are stronger than their Grit-PE scores in sport tend to have higher GPAs than student-athletes whose Grit-PE scores in sport are stronger than their Grit-PE scores in school.

Discussion

The primary purpose of this research was to replicate and extend the work of Cormier et al. (2019) by examining the domain-specificity of grit in a sample of student-athletes. Results indicated that grit levels differed across sport-, school-, and global- (i.e., domain-general) contexts and that the domain-specific measure of grit in school accounted for variance in student-athlete GPA beyond domain-general grit. These findings replicate those of Cormier et al. and add to a growing body of literature that points to the potential benefits of adopting a domain-specific approach (over a domain-general approach) when studying grit in different contexts (see Mondak, 2020; Schmidt et al., 2019).

In contrast to the results that supported a domain-specific conceptualization of grit, we found no evidence supporting the benefits of conceptualizing self-compassion as a domain-specific construct (i.e., student-athletes reported similar levels of domain-general self-compassion, self-compassion in sport, and self-compassion in school). Thus, self-compassion did not appear to be domain-specific (at least in terms of absolute levels of self-compassion, assessed as a composite score). Such a finding aligns with Neff's (2003a, 2003b) original conceptualization of self-compassion as a general manner of responding to life's circumstances, whereby self-compassionate people apply an approach that encompasses self-kindness, common humanity, and mindfulness in all domains of their lives. However, a recent study by Martin et al. (2019) with undergraduate students found stronger relationships between a measure of academic self-compassion and academic resourcefulness than a domain-general measure of self-compassion, and therefore supported the use of a domain-specific

[5] Although we acknowledge that psychometricians have challenged the appropriateness of using difference-scores (e.g., Edwards 2002), a number of researchers advocate for their use in some research contexts (e.g., Trafimow, 2015; Zumbo, 1999). Indeed, Zumbo (1999) points to a key strength of difference-scores being their ease of interpretability and intuitive appeal for stakeholders. Our research questions and applied implications center on discrepancies in different contexts. This makes difference-scores an interpretable, applicable, and practically relevant option when considering our sport demographic target of coaches, mental skills consultants, and student-athlete support staff. Moreover, to address concerns about the reliability of difference scores, we calculated the reliability of our difference-scores using a procedure recommended by Trafimow (2015) and obtained reliability estimates for all three sets of difference-scores: Athletic and Academic Identity ($\alpha = .91$), Grit PE Sport-School ($\alpha = .66$), and Grit CI Sport-School ($\alpha = .73$). While no established cut-off score exists, given the Cronbach's alpha values and the size of the correlations between variables, we feel we have adequate support for our reliability coefficients (albeit marginal for Grit PE Sport-School). We refer interested readers to Trafimow (2015) for more details on difference score reliability and the discussion that led to our conclusions.

Table 4

Hierarchical Regression Analysis Predicting University Grade Point Average (GPA) From Identity Difference-Scores and Grit Difference-Scores

Predictor	R^2	ΔR^2	ΔF	β	t	r[a]
Step 1	.09	.09	9.777**			
Gender				−.31	−3.13**	−.31**
Step 2	.29	.20	25.886***			
Gender				−.19	−2.07*	
Identity difference[b]				−.46	−5.09***	−.51***
Step 3	.36	.07	5.143**			
Gender				−.15	−1.65	
Identity difference				−.28	−2.58*	
Grit CI difference[c]				.16	1.84	.09
Grit PE difference[d]				−.33	−3.03**	−.49***

Note. Sample contains 2nd–5th year student-athletes ($n = 96$). Gender coded as 1 = women, 2 = men. Subscale abbreviations: CI = consistency of interests; PE = perseverance of effort.
[a] Identity difference-scores calculated by subtracting academic identity from athletic identity. [b] Grit CI difference-scores calculated by subtracting School CI from Sport CI. [c] Grit PE difference-scores calculated by subtracting School PE from Sport PE. [d] Bivariate correlations between predictor variable and GPA.
* $p < .05$. ** $p < .01$. *** $p < .001$.

approach. We advocate that researchers continue to examine the domain-specificity versus domain-generality of self-compassion in achievement contexts.

Although we found little evidence supporting the domain-specificity of self-compassion, it is worth noting that self-compassion had consistent positive relationships with PE across sport-, school-, and global-contexts, but was unrelated to CI in each context. This finding aligns with previous research in sport and education indicating that self-compassion is associated with perseverance (e.g., Ferguson et al., 2015; Neff & McGehee, 2010). Given the emphasis on self-care, support, and personal development that comes with self-compassion (Neff, 2003b), perhaps self-compassionate individuals are better equipped to persist in the face of personal adversity and setbacks as they pursue their long-term goals. It is conceivable that individuals require self-compassion in times of recovery (particularly from setbacks and failure) in order to prepare to be "mentally tough" and to re-engage with the achievement striving process following periods of adversity (Wilson et al., 2019). Future research that explores the moderating effect of self-compassion on grit in the achievement-striving process in different achievement contexts would seem to be a particularly worthwhile line of inquiry.

In support of Cormier et al.'s (2019) findings, student-athletes reported higher mean CI and PE scores in sport than in school and life in general (i.e., domain-general). Building upon Cormier et al.'s work, and in accordance with our hypothesis, student-athletes also had a tendency to report higher levels of athletic identity than academic identity. This latter finding is important because it provides support for Cormier et al.'s position that intercollegiate student-athletes may develop/utilize grit to a greater degree in sport than school because they place more value upon success in sport. As identity (or attainment value) becomes stronger in a domain, individuals often direct more effort towards achieving desired performance standards in that domain as they endeavor to protect, maintain, or enhance their identity (Eccles, 2009) or self-worth (Dunn et al., 2012). Thus, having higher athletic identity (over academic identity) may partially explain why varsity-level student-athletes had higher CI and PE in sport than in school.

Similar to Cormier et al.'s (2019) findings, the domain-specific measure of grit in school explained a significant amount of unique variance in GPA beyond the domain-general measure—with School-PE, rather than School-CI, primarily contributing to the effect. However, unlike Cormier et al.'s study (where domain-general grit accounted for a significant amount of variance in GPA prior to the entry of domain-specific grit in the analysis), domain-general grit did not account for a significant amount of variance in GPA in the current study. Given that Cormier et al. did not

measure academic identity, it seems likely that the inclusion of academic identity as a predictor variable in the regression analyses accounted for variance in student-athlete GPA previously explained by domain-general grit in Cormier et al.'s research.

Results of the regression analysis that examined the degree to which grit difference-scores predicted student-athlete GPA provided additional support for a domain-specific approach to measuring grit in sport and academic settings. After controlling for gender and identity difference-scores, results indicated that student-athletes whose Grit-PE in school was stronger than their Grit-PE in sport tended to have higher GPAs than student-athletes whose Grit-PE in sport was stronger than their Grit-PE in school. These findings are of particular interest to grit researchers and practitioners because they point to the potential role that "imbalances" in domain-specific grit might have for attainment levels in achievement settings. The degree to which student-athletes differ in terms of their perseverance of effort in one domain (e.g., sport) over another domain (e.g., school) may create conditions that lead to differences in the achievement-striving processes across domains.

Higher levels of grit have been linked to stronger engagement in deliberate practice in achievement settings (Duckworth et al., 2011, Tedesqui & Young, 2018), and stronger engagement in deliberate practice is generally associated with higher levels of achievement (Ericsson, 2006). When individuals invest time and energy mastering skills in different achievement settings—as is the case for student-athletes in school and sport—an imbalance in grit levels between two domains might create conditions that lead to the unequal distribution of time and effort towards deliberate practice in each domain. In extreme circumstances—ability levels notwithstanding—this imbalance in sport grit over school grit could create conditions whereby student-athletes fail to attain the minimum academic standings (GPA) that are required to participate in varsity sport. It is also conceivable that student-athletes who develop/utilize high levels of perseverance of effort in *school* at the expense of perseverance of effort in *sport* may put their varsity-sport careers at risk if such conditions result in the failure of student-athletes to achieve minimum performance standards in sport. Future research is required to assess the validity of these hypotheses.

Practical Implications

The results of this study have implications for practitioners who are looking to implement grit-training programs with the intention of enhancing student-athlete grit in sport and/or academic settings. There have been numerous calls in the education psychology literature for researchers and practitioners to develop interventions that enhance student grit in hopes of improving student well-being, resilience, and academic performance (see Almeida, 2016). Similarly, sport psychologists have developed interventions to improve athlete grit that may subsequently lead to enhanced performance in sport (e.g., Rhodes et al., 2018). To the best of our knowledge, however, researchers and practitioners have not considered the possibility that enhancing grit in one domain could affect the achievement-striving process in another domain (by creating imbalances in grit-difference scores across domains). It is conceivable that heightened grit may enhance the achievement-striving process in the domain where grit is targeted (e.g., through heightened engagement in deliberate practice: Duckworth et al., 2011; Tedesqui & Young, 2018), but could unintentionally create larger grit difference-scores across domains whereby the achievement-striving process is undermined in the domain where grit was not targeted. The logic of this argument could also apply to identity. It is conceivable that enhancing elements of a person's identity in one domain (in hopes of enhancing motivation) may inadvertently create a larger imbalance with identity elements in another domain, and these heightened discrepancies may reduce an individual's motivation and effort to pursue mastery-oriented activities within the domain where identity-enhancement did not take place (cf., Lally & Kerr, 2005).

It is important to emphasize that we are not implying that increasing grit (or identity) in one domain "causes" a reduction of grit (or identity) in another domain. In fact, the size and direction of the positive bivariate correlations between grit subscales in sport and school indicate that higher CI and PE in sport are typically associated with higher CI and PE in school. Rather, we are suggesting that researchers and practitioners consider the possibility that increasing grit in one domain (e.g., sport) might increase the *difference* in the level of grit compared to another domain (e.g., school), and this difference may create

conditions that undermine the achievement-striving process in the domain where grit was not targeted. Identifying personality and/or motivational characteristics that might predispose certain individuals to experience larger imbalances in domain-specific grit and the resulting impact that these imbalances may have upon achievement-striving processes across domains would seem to be a valuable line of inquiry for future research. Ultimately, an important goal for practitioners who work with student-athletes (e.g., student-guidance counselors, professors/instructors, sport psychologists, and coaches) is to help individuals successfully balance the demands of school and sport (Yukhymenko-Lescroart, 2014). This goal may be facilitated by efforts to ensure that student-athletes have sufficient levels of grit—particularly perseverance of effort—to successfully overcome the challenges, setbacks, and adversity that are commonplace in academic and sport settings throughout the course of their post-secondary education. Supporting the development of both academic and athletic identity in a complementary manner may also foster increased success in the classroom and in sport (van Rens et al., 2019). Future research should explore such causal possibilities.

Limitations

A number of limitations are inherent within the current study. First, because no measures of sport performance were included, we cannot determine the extent to which domain-specific grit in sport is associated with performance levels in sport, nor whether a domain-specific measure of grit in sport would explain variance in sport performance beyond a domain-general measure. Second, the cross-sectional design limits our ability to make causal inferences about the extent to which domain-specific grit in school may cause student-athletes to achieve different levels of academic attainment, or whether heightened domain-specific identity causes people to have higher grit in the same domain. Third, even within cross-sectional designs, there are additional research questions and analysis options that could be considered. Modeling techniques with larger sample sizes would enable increased exploration of interrelationships among variables, as well as account (through multi-level modeling) for any non-independency that may exist among athletes who are grouped within teams. Fourth, there was variability in the reliability estimates for the difference scores presented in this study—and the reliability for Grit PE difference-scores was marginal ($\alpha = .66$)—which should be taken into account when interpreting the current results. Fifth, we worked with a relatively homogeneous sample of student-athletes who all attended a single university that had a strong tradition of academic and athletic success. It is possible that the strength of relationships between grit, self-compassion, identity, and academic achievement could change if student-athletes came from post-secondary institutions where expectations for academic and/or sport performance were different (cf., Lamont-Mills & Christensen, 2006). Finally, we acknowledge that grit (Duckworth et al., 2007), self-compassion (Bluth et al., 2017), and identity (Houle et al., 2010) can change with age; therefore we do not know if the current results are generalizable to younger student-athletes.

Conclusion

Approximately 20,000 student-athletes compete in the Canadian inter-university sport system (USports, 2018), and over 460,000 student-athletes compete annually in the National Collegiate Athletic Association (NCAA) in the USA (National Collegiate Athletic Association [NCAA], 2020). Thus, the task of balancing academic success with sporting success is a challenge faced by many post-secondary students throughout North America (and the world); understanding factors that contribute to success in both domains is therefore of particular interest to researchers and practitioners alike. Our results indicate that domain-specific perseverance of effort is one such factor that may contribute to student-athlete success in the classroom (also see Cormier et al., 2019). We call for more research that explores antecedents and outcomes of a balance (and imbalance) in athletic and academic value among student-athletes.

Given the growing body of evidence supporting the benefits of assessing grit as a domain-specific construct (Cormier et al., 2019; Mondak, 2020; Schmidt et al., 2019), we propose that a better understanding of the processes through which grit might operate within the achievement-striving process in sport may be attained if domain-specific measures of grit are employed. Furthermore, we recommend that researchers differentiate between CI and PE in future studies because our results indicate that the two dimensions of grit do not

contribute equally to the achievement-striving process in the same achievement domain (see Cormier et al., 2019; Mondak, 2020).

Although grit is largely portrayed as an adaptive personality characteristic in the extant literature, researchers and theorists have acknowledged that "too much grit" (Duckworth, 2017, p. 271) may lock people into activities or behaviors where the decision to stop or change course might have been a wiser choice (see Crust et al., 2016; Duckworth, 2017; Lucas et al., 2015). Results of the current study indicate that another way to explore the idea that people can have "too much grit" is to examine differences in grit levels across achievement domains. If people are required to meet prerequisite levels of attainment/performance in different achievement domains simultaneously (as is the case for student-athletes in school and sport), research that investigates the potential mechanisms by which imbalances in grit may influence attainment-striving processes across domains would seem particularly worthwhile. We propose that practitioners and researchers will be best able to identity and explore such imbalances (and corresponding processes) if they employ a domain-specific approach to measuring grit across achievement settings. Additionally, consideration of self-compassion as a variable that may attenuate 'too much grit' should be explored.

References

Almeida, D. J. (2016). Understanding grit in the context of higher education. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research* (Vol. 31, pp. 559–609). Springer; https://doi.org/10.1007/978-3-319-26829-3_11

Beron, K. J., & Piquero, A. R. (2016). Studying determinants of student-athlete grade point average: The roles of identity, context, and academic interests. *Social Science Quarterly*, *97*(2), 142–160. https://doi.org/10.1111/ssqu.12235

Bluth, K., Campo, R. A., Futch, W. S., & Gaylord, S. A. (2017). Age and gender differences in the associations of self-compassion and emotional well-being in a large adolescent sample. *Journal of Youth and Adolescence*, *46*(4), 840–853. https://doi.org/10.1007/s10964-016-0567-2

Cormier, D. L., Dunn, J. G. H., & Causgrove Dunn, J. (2019). Examining the domain-specificity of grit. *Personality and Individual Differences*, *139*(1), 349–354. https://doi.org/10.1016/j.paid.2018.11.026

Credé, M. (2018). What shall we do about grit? A critical review of what we know and what we don't know. *Educational Researcher*, *47*(9), 606–611. https://doi.org/10.3102/0013189X18801322

Credé, M., Tynan, M. C., & Harms, P. D. (2017). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*, *113*(3), 492–511. https://doi.org/10.1037/pspp0000102

Crust, L., Swann, C., & Allen-Collinson, J. (2016). The thin line: A phenomenological study of mental toughness and decision-making in elite, high-altitude mountaineers. *Journal of Sport & Exercise Psychology*, *38*(6), 598–611. https://doi.org/10.1123/jsep.2016-0109

Duckworth, A. (2017). *Grit: Why passion and resilience are the secrets to success*. Collins.

Duckworth, A. L., Kirby, T. A., Tsukayama, E., Berstein, H., & Ericsson, K. A. (2011). Deliberate practice spells success: Why grittier competitors triumph at the national Spelling Bee. *Social Psychological & Personality Science*, *2*(2), 174–181. https://doi.org/10.1177/1948550610385872

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, *92*(6), 1087–1101. https://doi.org/10.1037/0022-3514.92.6.1087

Duckworth, A. L., & Quinn, P. D. (2009). Development and validation of the short grit scale (grit-s). *Journal of Personality Assessment*, *91*(2), 166–174. https://doi.org/10.1080/00223890802634290

Dunn, J. G. H., Causgrove Dunn, J., Gotwals, J. K., Vallance, J. K. H., Craft, J. M., & Syrotuik, D. G. (2006). Establishing construct validity evidence for the Sport Multidimensional Perfectionism Scale. *Psychology of Sport and Exercise*, *7*(1), 57–79. https://doi.org/10.1016/j.psychsport.2005.04.003

Dunn, J. G. H., Causgrove Dunn, J., & McDonald, K. (2012). Domain-specific perfectionism in intercollegiate athletes: Relationships with perceived competence and perceived importance in sport and school. *Psychology of Sport and Exercise*, *13*(6), 747–755. https://doi.org/10.1016/j.psychsport.2012.05.002

Eccles, J. (2009). Who am I and what am I going to do with my life? Personal and collective identities as motivators of action. *Educational Psychologist*, *44*(2), 78–89. https://doi.org/10.1080/00461520902832368

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression analysis and response surface methodology. In F. Drasgow & N. Schmitt (Eds.), *The Jossey-Bass business & management series. Measuring and analyzing behavior in organizations: Advances in measurement and data analysis* (pp. 350–400). Jossey-Bass.

Ericsson, K. A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. In K. A. Ericsson, N. Charness, P. Feltovich, & R. R. Hoffman (Eds.), *Cambridge handbook of expertise and expert performance*

(pp. 683–704). Cambridge University Press. https://doi.org/10.1017/CBO9780511816796.038

Ferguson, L. J., Kowalski, K. C., Mack, D. E., & Sabiston, C. M. (2015). Self-compassion and eudaimonic well-being during emotionally difficult times in sport. *Journal of Happiness Studies*, *16*(5), 1263–1280. https://doi.org/10.1007/s10902-014-9558-8

Graham, J. W., Cumsille, P. E., & Elek-Fisk, E. (2003). Methods for handling missing data. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Vol. 2. Research methods in psychology* (pp. 87–114). Wiley.

Hilliard, R. C., Redmond, L. A., & Watson, J. C. (2019). The relationships among self-compassion, stigma, and attitudes toward counseling in student-athletes. *Journal of Clinical Sport Psychology*, *13*(3), 374–389. https://doi.org/10.1123/jcsp.2018-0027

Houle, J. L. W., Brewer, B. W., & Kluck, A. S. (2010). Developmental trends in athletic identity: A two-part retrospective study. *Journal of Sport Behavior*, *33*(2), 146–159.

Killham, M. E., Mosewich, A. D., Mack, D. E., Gunnell, K. E., & Ferguson, L. J. (2018). Women athletes' self-compassion, self-criticism, and perceived sport performance. *Sport, Exercise, and Performance Psychology*, *7*(3), 297–307. https://doi.org/10.1037/spy0000127

Kuncel, N. R., Credé, M., & Thomas, L. L. (2005). The validity of self-reported Grade Point Averages, class ranks, and test scores: A meta-analysis and review of the literature. *Review of Educational Research*, *75*(1), 63–82. https://doi.org/10.3102/00346543075001063

Lally, P. S., & Kerr, G. A. (2005). The career planning, athletic identity, and student role identity of intercollegiate student athletes. *Research Quarterly for Exercise and Sport*, *76*(3), 275–285. https://doi.org/10.1080/02701367.2005.10599299

Lam, K. K. L., & Zhou, M. (2019). Examining the relationship between grit and academic achievement within K-12 and higher education: A systematic review. *Psychology in the Schools*, *56*(10), 1654–1686. https://doi.org/10.1002/pits.22302

Lamont-Mills, A., & Christensen, S. A. (2006). Athletic identity and its relationship to sport participation levels. *Journal of Science and Medicine in Sport*, *9*(6), 472–478. https://doi.org/10.1016/j.jsams.2006.04.004

Lievens, F., & Conway, J. M. (2001). Dimension and exercise variance in assessment center scores: A large-scale evaluation of multitrait-multimethod studies. *Journal of Applied Psychology*, *86*(6), 1202–1222. https://doi.org/10.1037/0021-9010.86.6.1202

Lizmore, M. R., Dunn, J. G. H., & Causgrove Dunn, J. (2017). Perfectionistic strivings, perfectionistic concerns, and reactions to poor personal performances among intercollegiate athletes. *Psychology of Sport and Exercise*, *33*, 75–84. https://doi.org/10.1016/j.psychsport.2017.07.010

Lucas, G. M., Gratch, J., Cheng, L., & Marsella, S. (2015). When the going gets tough: Grit predicts costly perseverance. *Journal of Research in Personality*, *59*, 15–22. https://doi.org/10.1016/j.jrp.2015.08.004

Martens, R. (1977). *Sport Competition Anxiety Test*. Human Kinetics.

Martin, R. D., Kennett, D. J., & Hopewell, N. M. (2019). Examining the importance of academic-specific self-compassion in the academic self-control model. *The Journal of Social Psychology*, *159*(6), 676–691. https://doi.org/10.1080/00224545.2018.1555128

Mondak, J. J. (2020). Citizen grit: Effects of domain-specificity, perseverance, and consistency on political judgement. *Personality and Individual Differences*, *163*, Article 110059. https://doi.org/10.1016/j.paid.2020.110059

National Collegiate Athletic Association (NCAA). (2020). *Student-athletes*. http://www.ncaa.org/student-athletes

Neff, K. D. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*(3), 223–250. https://doi.org/10.1080/15298860309027

Neff, K. D. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*(2), 85–101. https://doi.org/10.1080/15298860309032

Neff, K. D. (2009). Self-compassion. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 561–573). Guilford Press.

Neff, K. D., Hseih, Y., & Dejitterat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, *4*(3), 263–287. https://doi.org/10.1080/13576500444000317

Neff, K. D., Long, P., Knox, M. C., Davidson, O., Kuchar, A., Costigan, A., Williamson, Z., Rohleder, N., Tóth-Király, I., & Breines, J. G. (2018). The forest and the trees: Examining the association of self-compassion and its positive and negative components with psychological functioning. *Self and Identity*, *17*(6), 627–645. https://doi.org/10.1080/15298868.2018.1436587

Neff, K. D., & McGehee, P. (2010). Self-compassion and psychological resilience among adolescents and young adults. *Self and Identity*, *9*(3), 225–240. https://doi.org/10.1080/15298860902979307

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy*, *18*(3), 250–255. https://doi.org/10.1002/cpp.702

Rhodes, J., May, J., Andrade, J., & Kavanagh, D. J. (2018). Enhancing grit through functional imagery

training in professional soccer. *The Sport Psychologist*, *32*(3), 220–225. https://doi.org/10.1123/tsp.2017-0093

Sarason, I. G. (1961). The effects of anxiety and threat on the solution of a difficult task. *Journal of Abnormal and Social Psychology*, *62*(1), 165–168. https://doi.org/10.1037/h0043924

Schmidt, F. T. C., Fleckenstein, J., Retelsdorf, J., Eskreis-Winkler, L., & Möller, J. (2019). Measuring grit: A German validation of the domain-specific approach to grit. *European Journal of Psychological Assessment*, *35*(3), 436–447. https://doi.org/10.1027/1015-5759/a000407

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). Harper Collins.

Tedesqui, R. A. B., & Young, B. W. (2018). Comparing the contribution of conscientiousness, self-control, and grit to key criteria of sport expertise development. *Psychology of Sport and Exercise*, *34*, 110–118. https://doi.org/10.1016/j.psychsport.2017.10.002

Trafimow, D. (2015). A defense against the alleged unreliability of difference scores. *Cogent Mathematics*, *2*(1), Article 1064626. https://doi.org/10.1080/23311835.2015.1064626

USports. (2018). *USports 2018/19 annual report*. https://usports.ca/uploads/cis/special_events/AGM/2018-19/Annual_Report_2018-19_USports_vmpQFix--vGTG-Remastered-96dpi.pdf

van Rens, F. E., Ashley, R. A., & Steele, A. R. (2019). Well-being and performance in dual careers: The role of academic and athletic identities. *The Sport Psychologist*, *33*(1), 42–51. https://doi.org/10.1123/tsp.2018-0026

Velicer, W. F., Eaton, C. A., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. Goffin & E. Helmes (Eds.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 41–71). Kluwer. https://doi.org/10.1007/978-1-4615-4397-8_3

Wigfield, A., & Eccles, J. S. (2000). Expectancy–Value Theory of achievement motivation. *Contemporary Educational Psychology*, *25*(1), 68–81. https://doi.org/10.1006/ceps.1999.1015

Wilson, D., Bennett, E. V., Mosewich, A. D., Faulkner, G. E., & Crocker, P. R. E. (2019). "The zipper effect": Exploring the interrelationship of mental toughness and self-compassion among Canadian elite women athletes. *Psychology of Sport and Exercise*, *40*, 61–70. https://doi.org/10.1016/j.psychsport.2018.09.006

Yukhymenko-Lescroart, M. A. (2014). Students and athletes? Development of the Academic and Athletic Identity Scale (AAIS). *Sport, Exercise, and Performance Psychology*, *3*(2), 89–101. https://doi.org/10.1037/spy0000009

Yukhymenko-Lescroart, M. A. (2018). On identity and sport conduct of student-athletes: Considering athletic and academic contexts. *Psychology of Sport and Exercise*, *34*, 10–19. https://doi.org/10.1016/j.psychsport.2017.09.006

Zumbo, B. D. (1999). The simple difference score as an inherently poor measure of change: Some reality, much mythology. In B. Thompson (Ed.), *Advances in social science methodology* (Vol. 5, pp. 269–304). JAI Press.

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