PREDICTORS OF PERFECTIONISTIC TENDENCIES IN SPORT AMONG
UNDERGRADUATE KINESIOLOGY STUDENTS

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The purpose of this study was to examine current kinesiology students' athletic identity, identity foreclosure, perceived task value in sport, and perfectionism. An online survey was distributed via email to current kinesiology students. The survey contained questions regarding demographic information and items from the Athletic Identity Measurement Scale, Extended Objective Measure of Ego Identity Status, Perceived Task Value in Sport, Sport Multidimensional Perfectionism Scale-2, and Multidimensional Inventory of Perfectionism in Sport. Results of the Pearson moment correlations indicated that the higher the athletic identity, the higher the subjective task value, identity foreclosure, perfectionistic strivings, and perfectionistic concerns. Multiple regression analyses were performed to further examine the predictive power of athletic identity, subjective task value, and identity foreclosure for perfectionistic strivings and perfectionistic concerns. Results indicated that athletic identity and subjective task value were significant predictors of perfectionistic strivings. Results also showed that athletic identity and identity foreclosure were significant predictors of perfectionistic concerns. Future research should replicate the study using participants from different geographical regions. Furthermore, future research should consider a longitudinal and qualitative study to investigate the development of subjective task value in sport.

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PREDICTORS OF PERFECTIONISTIC TENDENCIES IN SPORT AMONG UNDERGRADUATE KINESIOLOGY STUDENTS

Perfectionism is a personality disposition characterized by individuals setting extremely high personal standards of performance and striving for flawlessness (Hewitt & Flett, 1991), which is related to their self-image, self-esteem, and individuality (Khatibi & Khormaei, 2016). Individuals with perfectionistic tendencies may view themselves primarily based on their achievement in domains that they value which plays a critical role in their perceived self-image and feelings of self-worth (Khatibi & Khormaei, 2016). Individuals whose sense of self-worth is validated by achievement in a given domain (e.g., sport performance, academic success, and career advancement) are more likely to have heightened levels of perfectionistic tendencies (Damian, Stoeber, Negru-Subtirica, & Baban, 2017; Hewitt & Flett, 1991; McArdle, 2010). Being overly committed to achievement in a valued domain may cause individuals to effectively rule out (i.e., foreclose on) other alternatives or actions. As such, individuals who are extremely committed to their role and associated goals may have heightened levels of perfectionistic tendencies (Mestvirshvili, Mestvirishvili, Martskvisili, & Arutinov, 2014). Although trying to achieve perfection has driven many people to achieve greatness (e.g., in sports, science, and performing arts), it has also resulted in distraction, causing problems performing tasks and being productive (Cruce, Pashak, Handal, Munz, & Gfeller, 2012; Mestvirshvili, Mestvirishvili, Martskvisili, & Arutinov, 2014). Consequently, perfectionistic tendencies has also been associated with personal and emotional aspects of self-evaluation (e.g., concern over mistakes, need for approval, rumination, and perceived pressure), which may result in unhealthy consequences (Brewer, Van Raalte, & Linder, 1993; Gapin & Petruzzello, 2011). Therefore,

examining identity salience, identity foreclosure, and perceptions of task value may help predict perfectionistic tendencies.

Although early research investigating perfectionism regarded it as a unidimensional trait indicative of psychopathology (Hamachek, 1978), research during the past three decades indicate that it is a complex personality disposition that must be studied as a multidimensional trait (Frost, Marten, Lahart, & Rosenbate, 1990; Stoeber & Rambow, 2007). Frost et al. (1990) proposed that perfectionism consists of six facets: (a) concern over mistakes, (b) doubts over actions, (c) personal standards, (d) parental expectations, (e) parental criticism, and (f) organization. Around the same time, Hewitt and Flett (1991) emphasized that perfectionism involves a social component comprised of three main facets: (a) self-oriented perfectionism, (b) other-oriented perfectionism, and (c) socially prescribed perfectionism. Acknowledging the multidimensionality of perfectionism, Stoeber and Otto (2006) categorized perfectionism into two dimensions, perfectionistic strivings and perfectionistic concerns. They indicated that the primary facets of perfectionistic strivings include high personal standards and self-oriented perfectionism, whereas the primary facets of perfectionistic concerns consist of concerns over mistakes, negative reactions to imperfection, and socially prescribed perfectionism (Stoeber & Otto, 2006). Perfectionistic concerns were associated with the negative characteristics of perfectionism (Stoeber, Stoll, Salmi, & Tikkaja, 2009), whereas perfectionistic strivings were positively associated with positive characteristics of perfectionism and negatively associated with negative characteristics associated with perfectionism (Gotwals, Stoeber, Dunn, & Stoll, 2012; Stoeber & Otto, 2006). In addition, perfectionistic strivings were positively related to mastery-approach and performance-approach goals (Stoeber & Rennert, 2008). However, negative reactions to imperfection, which is a facet of perfectionistic concerns, were positively related to mastery-

avoidance, performance-approach, and performance-avoidance goals. Furthermore, perfectionistic strivings were positively associated with adaptive characteristics, whereas perfectionistic concerns were predominantly maladaptive (Gotwals, Stoeber, & Stoll, 2012; Stoeber & Otto, 2006; Stoll, Lau, & Stoeber, 2008). Given the fact that commitment to achievement is a component of perfectionism, researchers have studied the relationship between perfectionistic strivings and achievement striving. For example, Flett and Hewitt (2005) suggested that while both achievement striving and perfectionistic strivings consist of having high personal standards, perfectionistic strivings is associated with elements of self-criticism and conditional self-acceptance based on one's performance, whereas achievement striving is not.

As it relates to sport and exercise settings, perfectionistic strivings, specifically perfectionistic personal standards, positively predicted triathletes' race performance (Stoeber, Uphill, & Hotham, 2009). In a related study, athletes who were considered successful exhibited a self-oriented perfectionism that was negatively correlated to maladaptive behaviors (Wieczorek, Flett, & Hewitt, 2003). Likewise, individuals with a need for perfectionistic self-promotion may try to highlight their success by creating a public image of flawlessness through excessive, compulsive exercise (Flett & Hewitt, 2005). Thus, it appears that both perfectionistic strivings and perfectionistic concerns should be considered when examining adaptive and maladaptive perfectionism in sport and exercise related settings.

Perfectionistic tendencies develop in specific domains as individuals age and mature (Dunn, Dunn, & McDonald, 2012; Dunn, Dunn, & Syrotuik, 2002; McArdle, 2010). Subsequently, it is suggested that perfectionism should be investigated and measured as a domain-specific construct in academically gifted students and student-athletes. That is, academically gifted students had higher perfectionistic tendencies in school than in sport

(McArdle, 2010). Similarly, athletes had significantly higher perfectionistic tendencies in sport than in school (Dunn, Dunn, & McDonald, 2012). As for the development of perfectionistic tendencies in athletes, parents and coaches are believed to play significant roles (Madigan et al., 2019). For instance, pressure from coaches to be flawless when performing sport skills significantly predicted perfectionistic strivings and perfectionistic concerns in athletes.

Achievement is also a potential factor in the development of perfectionism (Damian, Stoeber, Negru-Subtirica, & Baban, 2017). For example, Damian et al. (2017) found that academic achievement was related to increases in perfectionistic strivings and perfectionistic concerns.

Perfectionism has multiple potential consequences for perfectionistic individuals, depending on whether it is adaptive or maladaptive. For example, athletes with relatively high levels of personal standards, which is a facet of healthy perfectionism, performed better than athletes with relatively low levels of personal standards (Stoeber, Stoll, Salmi, & Tikkaja, 2009). Research has also indicated that healthy and adaptive perfectionistic behaviors resulted in higher athletic performance while unhealthy and maladaptive perfectionistic behaviors resulted in lower performance (Stoeber, Uphill, & Hotham, 2009; Stoll, Lau, & Stoeber, 2008). In coping with poor performance, healthy perfectionists cope by using positive reframing and acceptance (Gotwals & Spencer-Cavaliere, 2014). In contrast, unhealthy perfectionists coped with poor performance by engaging in self-blaming and becoming self-critical.

Previous research has primarily focused on the relationship between perfectionism and psychopathology, personality traits, and performance (Flett & Hewitt, 2002; Stoeber et al., 2007; Stoeber, Stoll, Salmi, & Tikkaja, 2009). However, there is limited research available on the relationship between personal factors and perfectionistic strivings and concerns, particularly in the achievement domain of sport. For example, according to Eccles et al. (1983), and supported

by Stuart (2003), the level of achievement that a person experiences in a domain has a positive effect on the value that is placed in that domain. Considering the evidence of a positive correlation between achievement and perfectionism, there is a need to investigate the relationship between subjective task value and perfectionism. Another area which, due to limited research, requires further investigation is the relationship between identity and perfectionism (Brewer & Petitpas, 2017; Gapin & Petruzzello, 2011). Thus, further research is needed to determine the relationship between identity salience, identity foreclosure, subjective task value, and perfectionism.

Purpose

The purpose of this study was to expand on previous research (e.g., Brewer & Petitpas, 2017; Gapin & Petruzzello, 2011; McArdle, 2010) by examining the relations among athletic identity, identity foreclosure, subjective task value, and perfectionistic tendencies (i.e., adaptive and maladaptive) in undergraduate kinesiology students. Past research has indicated that perfectionism was positively correlated with athletic identity (Gapin & Petruzzello, 2011) and subjective task value (McArdle, 2010). Previous research has also demonstrated that perfectionism is positively correlated with personality traits that are commonly found in individuals with identity foreclosure (Marcia, 1966; Stoeber et al., 2007). Therefore, it was hypothesized that increases in athletic identity, identity foreclosure, and subjective task value would be predictive of increased adaptive (i.e., perfectionistic strivings) and maladaptive (i.e., perfectionistic concerns) perfectionistic tendencies in undergraduate kinesiology students. Specifically, based on the results from previous research (Gapin & Petruzzello, 2011; McArdle, 2010) along with data collected from pilot testing completed by the researcher, it was anticipated that subjective task value would account for the majority of the observed variance for

perfectionistic strivings and athletic identity would account for the majority of the observed variance for perfectionistic concerns.

Method

Participants

Students enrolled in kinesiology-related courses were recruited to complete a survey related to their personalities and athletic experience. To participate in the study, individuals had to have organized sport experience as recently as their senior year of high school. In order to account for this, only respondents ranging from 18 to 25 years of age were included in analysis.

Procedure

The researcher sent an email to kinesiology faculty members and physical education instructors requesting their assistance in recruiting college students for the study. After receiving permission from faculty members and instructors, the researcher emailed them a copy of an email that would be forwarded to students in their classes. The email included a description of the study, a copy of a slideshow presentation describing the purpose of the study and defining the variables involved in the study, and a hyperlink to access the survey. The consent information and survey, which takes approximately 10 minutes to complete, was administered through Qualtrics. Consent information preceded the survey, which provided the purpose, benefits, and risks of participation in the study. After reading the information about consenting to participate in the study, participants were prompted to click yes if they would like to proceed. Clicking yes demonstrated their consent to participate in the study. After completing the survey, participants were presented with the option to enter their email address for a chance to win a \$25 gift card. Kinesiology faculty members and instructors of physical education courses were sent follow-up emails to be forwarded to their students reminding them about the survey. Individuals who

completed the survey were allowed to take the survey a second time two-weeks after their initial response. The second attempt at completing the survey presented the scales in a random order. These cases were used to examine test-retest reliability of the survey.

Measures

Demographics

Demographic information collected at the beginning of the survey included age, gender (male, female, or other), ethnicity (White, Hispanic/Latinx, Black or African American, Native American/ American Indian, Asian or Pacific Islander, Biracial, or other), major (kinesiology vs. non-kinesiology), and current athletic participation status (student-athlete vs. non-student-athlete). Previous sport experience at the high school level along with current activity level was also collected.

Athletic Identity Measurement Scale

Athletic identity was measured using the Athletic Identity Measurement Scale (AIMS; Brewer et al., 1993). More specifically, AIMS measures three different facets of athletic identity: social identity, exclusivity, and negative effect. The AIMS consists of 10 items. Each item is self-reported using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores range from 10 to 70, with higher scores being indicative of higher levels of athletic identity. The AIMS has been used in numerous studies to measure athletic identity (e.g., (Brewer et al., 1993; Johnson, 2018; Rasquinha, 2013). It has been validated in undergraduate students and is considered a reliable ($\alpha = 0.89$) measure of athletic identity (Brewer et al., 1993). Previous research supports the use of AIMS as a measure of athlete identity in undergraduate students (Brewer et al., 1993; Johnson, 2018).

Extended Objective Measure of Ego Identity Status

Identity foreclosure was assessed using the foreclosure subscale of the Extended Objective Measure of Ego Identity Status (EOM-EIS-2; Bennion & Adams, 1986). The EOM-EIS-2 consists of 16 items that measure identity foreclosure in the areas of occupation, politics, and religion. An example of items on the EOM-EIS-2 is “My ideas about men's and women's roles come right from my parents and family. I haven't seen any need to look further.” EOM-EIS-2 is measured using a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Bennion and Adams (1986) found EOM-EIS-2 to be a reliable ($\alpha = 0.94$) and valid measure for identity foreclosure. Further, support exists for using EOM-EIS-2 to measure identity foreclosure in undergraduate students (Adams, 2011; Johnson, 2018).

Subjective Task Value Inventory

The Subjective Task Value Inventory (STVI; Stuart, 2003) was used to measure subjective task value in sport and consists of three subscales (intrinsic value, attainment value, and utility value). Each subscale consists of two items that use a 7-point Likert scale ranging from 1 (*extremely unimportant/ uninteresting/ not useful*) to 7 (*extremely important/ interesting/ useful*). Scores range from 6 to 42 with higher scores indicating more high value placed on sports. The measure was found to be valid and reliable for measuring subjective task value in students in the fifth grade and older (Eccles et al., 1993; Stuart, 2003). The three subscales were considered reliable, with Cronbach's alpha reliability coefficients ranging from 0.90 to 0.94 (Stuart, 2003). In addition, support exists for the use of the STVI to measure task value in sport in undergraduate students (Rasquinha, 2013).

Multidimensional Inventory of Perfectionism in Sport

Two subscales from the Multidimensional Inventory of Perfectionism in Sport (MIPS;

Stoeber, Otto, & Stoll, 2006) were used to help assess perfectionistic tendencies in sport, Striving for Perfection (SP) and Negative Reactions to Imperfection (NRI). The SP subscale contains 8 items used to help assess perfectionistic strivings. An example of the items in the SP subscale is “In sport, I strive to be as perfect as possible.” The SP subscale has been found to be a reliable measure ($\alpha = 0.95$) The NRI subscale contains 8 items used to help assess perfectionistic concerns. An example of the items in the NRI subscale is “in sport, I become furious if I make mistakes.” The NRI subscale has been found to be a reliable ($\alpha = 0.91$) measure. The items in both subscales have a 6-point response scale ranging from 1 (*rarely*) to 6 (*always*). SP and NRI were used because research indicates that those two subscales are the most significant facets of perfectionistic strivings and perfectionistic concerns, respectfully (Gotwals et al., 2012; Stoeber & Otto, 2006). Furthermore, research supports the use of SP and NRI subscales in measuring perfectionistic strivings and perfectionistic concerns (Rasquinha, 2013).

Sport Dimensional Perfectionism Scale

Similar to MIPS, two subscales were used from the Sport Multidimensional Perfectionism Scale (Sport-MPS-2; Dunn et al., 2002) to help assess perfectionistic tendencies in sport. Those two subscales were Personal Standards (PS) and Concern over Mistakes (COM). The PS subscale contains 7 items used to help assess perfectionistic strivings. An example of the items in the PS subscale is “I have extremely high goals for myself in sport.” The COM subscale contains 8 items used to help assess perfectionistic concerns. An example of the items in the COM subscale is “People will probably think less of me if I make mistakes in competition.” The items from both subscales have a 5-point Likert scale with scores ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The Sport-MPS-2 has been proven to be a reliable and valid measure of perfectionism in athletes (Gotwals et al., 2010). Specifically, PS and COM were used

because they represent core facets of perfectionistic strivings and perfectionistic concerns, respectfully (Gotwals et al., 2010; Gotwals et al., 2012; Stoeber & Otto, 2006). Evidence supports the reliability of PS ($\alpha = 0.76$) and COM ($\alpha = 0.78$) as measures of perfectionism in sports (Gotwals et al., 2010). Finally, previous research exists for the use of PS and COM subscales in measuring perfectionistic strivings and perfectionistic concerns (Crocker & Gaudreau, 2014; Damian, Stoeber, Negru-Subturuca, & Baban, 2017; Stoeber, Uphill, & Hotham, 2009).

Data Analysis

Data was analyzed using the IBM SPSS Statistics v26.0 (IBM Corporation, Armonk, N.Y., USA). Means, standard deviations, and internal consistencies were examined to determine the distribution of each measure. Pearson product-moment correlation coefficient was used to determine the relationships among the variables. Separate multiple regression analyses were used to determine if athlete identity, identity foreclosure, and subjective task value are predictors of perfectionistic strivings and perfectionistic concerns in undergraduate kinesiology students. Perfectionistic strivings was measured using the subscales *Striving for Perfection* (SP) and *Personal Standards* (PS) from the Multidimensional Inventory of Perfectionism in Sport and the Sport Dimensional Perfectionism Scale, respectively. Perfectionistic concerns was measured using the subscales *Negative Reactions to Imperfection* (NRI) and *Concern over Mistakes* (COM) from the Multidimensional Inventory of Perfectionism in Sport and the Sport Dimensional Perfectionism Scale, respectively.

Results

The survey was offered to 622 students through their kinesiology and physical education courses. Of the 622 students offered the survey, 36% ($n = 224$) accessed the survey. Of those 224

students who opened the survey, 90.63% ($n = 203$) completed the survey. Of this total, 63 cases were removed because the individuals stated they did not have organized sport experience as recently as their senior year of high school. In addition, eight cases were removed because the individuals were outside of the age range of 18 to 25, leaving a total of 132 cases. Of these 132 cases, the mean age was 21.3 ($SD = 1.9$). In the sample, 52.3% ($n = 69$) identified as male and 47.7% ($n = 63$) identified as female. Of these 132 cases, 25% ($n = 33$) stated that they were either currently or previously an athlete on a National Collegiate Athletic Association (NCAA) sanctioned sports team. Finally, 48.5% ($n = 64$) of the participants stated that they either currently or previously participated in at least one collegiate intramural sport.

Athlete Identity, Subjective Task Value, Identity Foreclosure, and Perfectionism

Cronbach's alpha was calculated using the overall sample ($N = 132$) for each measure used to determine internal consistency (see Table 1). Alpha coefficients above .70 represent an acceptable degree of internal consistency (Nunnally & Bernstein, 1994). For the AIMS, Cronbach's alpha was found to be .88. For the STVI and EOM-EIS-2, Cronbach's alpha was found to be .89 and .93, respectively. Alpha coefficients for MIPS and Sport-MPS-2 were .95 and .93, respectively.

In addition, 23 individuals completed the survey twice over a two-week period to examine test-retest reliability for the consistency of the scales over time. The test-retest reliability for the AIMS was $r = .80$, STVI was $r = .94$, and EOM-EIS-2 was $r = .79$. The correlation values for the MIPS and Sport-MPS-2 were $r = .94$ and $r = .83$, respectively.

Mean response scores and standard deviations were calculated for each variable (see Table 2). For the overall sample size ($N = 132$), the mean athletic identity score was 46.92 ($SD = 11.31$) (i.e., individual response scores can range from 10 to 70). The mean response score for

subjective task value was 34.17 ($SD = 5.86$) (i.e., individual response scores can range from 6 to 42). For the identity foreclosure, the mean response score was 47.36 ($SD = 14.42$) (i.e., individual response scores can range from 16 to 96). Mean response scores for perfectionistic strivings and perfectionistic concerns were 4.17 ($SD = .87$) and 3.68 ($SD = .91$), respectively. Mean scores and standard deviations were also calculated for each variable based on each individual's reported sport participation and perceived source of pressure to be successful (see Table 2).

Sport Experience and Source of Perfectionistic Tendencies Analysis of Variance

Three separate analyses of variance (ANOVA) were used to investigate the differences in sport experience and perceived source of perfectionistic tendencies (see Tables 2 and 3). The first ANOVA was used to determine the differences between individuals with experience as an athlete on an NCAA sanctioned sports team ($n = 33$) and those without experience as an athlete on an NCAA sanctioned sports team ($n = 99$) in athletic identity, subjective task value, identity foreclosure, perfectionistic strivings, and perfectionistic concerns. Individuals with experience as an athlete on an NCAA sanctioned sports team had an athletic identity mean response score of 51.80 ($SD = 10.14$) while individuals without that experience had an athletic identity mean response score of 45.30 ($SD = 11.27$). Additionally, individuals with NCAA athletic experience had significantly higher ($p < .01$) subjective task value scores ($M = 36.52$, $SD = 4.30$) than those without NCAA athletic experience ($M = 33.39$, $SD = 6.11$). Finally, individuals with NCAA athletic experience had significantly higher ($p < .01$) perfectionistic strivings scores ($M = 4.57$, $SD = .66$) than those without NCAA athletic experience ($M = 4.04$, $SD = .89$). Although these differences were statistically significant, the small effect size values for athletic identity ($d =$

.06), subjective task value ($d = .05$), and perfectionistic strivings ($d = .07$) indicated that experience as an NCAA athlete did not lead to meaningful differences.

The next ANOVA was used to determine differences between individuals with experience participating in collegiate intramural sports ($n = 64$) and those who did not ($n = 35$). The results of the ANOVA showed that individuals with experience participating in collegiate intramural sports had significantly higher levels ($p < .01$) of subjective task value ($M = 34.72$, $SD = 5.03$) than those who did not ($M = 30.94$, $SD = 7.17$). Although this difference was statistically significant, the small effect size ($d = .09$) indicated there was no meaningful difference in subjective task value between the two groups.

The final ANOVA was used to investigate the differences between individuals who perceived they received more pressure to succeed from their parent(s) or significant other ($n = 44$) and those who perceived they received more pressure to succeed from their coaches ($n = 88$). The ANOVA indicated a significant difference ($p < .01$) in levels of subjective task value, with individuals who stated they received more pressure to succeed in sport from their parents having higher levels of subjective task value in sport ($M = 35.64$, $SD = 5.01$) than individuals who stated they received more pressure to succeed in sport from their coaches ($M = 33.43$, $SD = 6.13$). However, the small effect size ($d = .03$) suggested there was no meaningful difference between the two groups.

Athlete Identity, Subjective Task Value, Identity Foreclosure, and Perfectionism Correlations

Correlation coefficients were calculated to examine the relationships between athletic identity, subjective task value, identity foreclosure, and perfectionistic tendencies (see Table 3). The results indicated a positive moderate correlation between athletic identity and subjective task value ($r = .61$; $p < .01$), athletic identity and perfectionistic strivings ($r = .56$; $p < .01$), athletic

identity and perfectionistic concerns ($r = .51; p < .01$), and perfectionistic strivings and perfectionistic concerns ($r = .76; p < .01$). The results also indicated a weak positive correlation between athletic identity and identity foreclosure ($r = .35; p < .01$), subjective task value and perfectionistic strivings ($r = .47; p < .01$), subjective task value and perfectionistic concerns ($r = .34; p < .01$), identity foreclosure and perfectionistic strivings ($r = .32; p < .01$), and identity foreclosure and perfectionistic concerns ($r = .46; p < .01$). However, a very weak but significant correlation existed between subjective task value and identity foreclosure ($r = .25; p < .01$). A follow-up post hoc power analysis was conducted using G*Power3 (Faul, Erdfelder, Lang, & Buchner, 2007) to determine achieved power for the bivariate correlation analysis using a two-tailed test, the lowest significant r value ($r = .25$), an alpha level of .05, and a total sample size of 132. Results showed that the achieved power was .83. According to Suresh and Chandrashekara (2012), an acceptable power for any quantitative study is .80 or higher.

Predictors of Perfectionism Regression Analyses

Separate multiple regression analyses were used to determine if athlete identity, identity foreclosure, and subjective task value were predictors of perfectionistic strivings and perfectionistic concerns. The outcome variable of the first multiple regression was perfectionistic strivings (see Table 4). The overall multiple regression was statistically significant ($R^2 = .358; p < .01$). This means the predictor variables accounted for 35.8% of the variance for perfectionistic strivings. Both athletic identity ($b = .31, \beta = .40; p < .01$) and subjective task value ($b = .17, \beta = .20; p < .05$) had a statistically significant effect on levels of perfectionistic strivings. Based on the standardized beta weights, athletic identity was a stronger predictor of perfectionistic strivings than subjective task value. A post hoc power analysis was conducted using G*Power3 to determine power for the multiple regression analysis using a two-tailed test, an effect size of

.558, an alpha level of .05, and a total sample size of 132. Results showed that the achieved power was 1.

The outcome variable of the second multiple regression was perfectionistic concerns (see Table 5). The overall multiple regression was statistically significant ($R^2 = .360$; $p < .01$). This means the predictor variables accounted for 36% of the variance for perfectionistic concerns. Athletic identity was found to be a statistically significant predictor of perfectionistic concerns ($b = .32$, $\beta = .40$; $p < .01$). Identity foreclosure was also found to be a statistically significant predictor of perfectionistic concerns ($b = .32$; $\beta = .32$; $p < .01$). Based on the standardized beta weights, athletic identity was a stronger predictor of perfectionistic concerns than identity foreclosure. Similar to the previous analysis, a follow-up post hoc power analysis was conducted using G*Power3 to determine power for the multiple regression analysis using a two-tailed test, an effect size of .563, an alpha level of .05, and a total sample size of 132. Results showed that the achieved power was 1.

Discussion

The purpose of this study was to examine the relations among athletic identity, identity foreclosure, subjective task value, and perfectionistic tendencies (i.e., adaptive and maladaptive) in undergraduate kinesiology students. The results of the first regression analysis supported the hypothesis that athletic identity and subjective task value were both significant independent predictors of adaptive perfectionistic tendencies. The finding that athletic identity is correlated to perfectionism supports previous research (Gapin & Petruzello, 2011). It also extends previous research by supporting the idea that levels of athletic identity can predict adaptive perfectionism in sport (Rasquinha, 2013). These findings indicate that individuals who place high importance

on sport are more likely to display signs of adaptive perfectionism than those who do not place high importance on sport.

The results of the second regression analysis indicated that athletic identity and identity foreclosure are positive predictors of maladaptive perfectionistic tendencies in undergraduate kinesiology students. The finding that athletic identity is a positive predictor of perfectionistic concerns supports previous research indicating that individuals who have high levels of athletic identity are more likely to display characteristics of unhealthy perfectionists than individuals who have lower levels of athletic identity (Brewer et al., 1993; Gapin & Petruzzello, 2011). Similar to adaptive perfectionism, individuals who place high importance on sports are more likely to show signs of maladaptive perfectionism than individuals who do not place high importance on sports. Individuals who do not explore different interests and domains are also more likely show higher levels of maladaptive perfectionism than those who do.

The finding that both forms of perfectionistic tendencies were significantly and positively correlated with athletic identity, identity foreclosure, and subjective task value supports previous research (Gapin & Petruzzello, 2011; Rasquinha, 2013). This means students who displayed relatively high levels of one variable were more likely to display relatively high levels of the other variables in the study. This finding, along with the finding that athletic identity is a positive predictor of perfectionistic strivings and both athletic identity and identity foreclosure are positive predictors of perfectionistic concerns, provides additional insight into the variables that are associated with perfectionism in individuals involved in the sport domain.

Limitations and Strengths

The first limitation to note is the potential that recent global events may have had on the study. COVID-19 is a global pandemic which resulted in universities nationwide moving to

online-only classes. The closing of campus facilities created a barrier for some students to access resources necessary to participate in the survey. Another known limitation caused by COVID-19 was the researcher not having the opportunity to speak to students about the significance of the research study and address any questions the students may have. Vygotsky's Social Learning Theory maintains that learning should have an interactive component to promote academic engagement (Williams, 1989). The inability for the researcher to discuss the survey with students limited the interaction between the researcher and the potential study participants. Additionally, the social and emotional stress associated with the racial unrest in the United States during the time of this study may have also impacted participation. The researcher understands that these events held the potential to be a distraction and made participation in the study difficult for students who were personally affected by these events. This is supported by the research of Gershenson and Hayes (2016) on the impact of civil unrest in Ferguson, Missouri in 2014. The results of their study showed that civic unrest had a negative impact on student achievement and engagement. Another potential limitation is that data was collected using a self-report survey. The use of a self-report survey has the potential for bias (Rosenman, Tennekoon, & Hill, 2011). Consequently, participants may have been more likely to provide socially desirable responses instead of responses that were truthful. The next limitation would be a design flaw in the survey. Individuals who stated they had experience as an NCAA athlete were not able to indicate whether or not they were intramural athletes. This potentially influenced the ability to compare means between students who stated they had experience playing intramural sports and those without experience playing intramural sports. Another limitation is that all participants were from one university. Responses may have been different if a university in a different geographical region was used. Additionally, the survey was only offered to courses in one

department in the university. Hence, the results may not be generalizable to a population outside of a sport and exercise major. The final limitation of the study is there was no specific measure for athlete identity foreclosure. This limitation makes it difficult to measure identity foreclosure in sport as there were no sport-related items.

Although the study had several limitations, there are strengths to this study. The first strength is this study was the first known attempt to measure the relationship between identity foreclosure and perfectionism. Also, it was the first known attempt to measure the relationship between athlete identity, subjective task value, and identity foreclosure and both dimensions of perfectionism (perfectionistic strivings and perfectionistic concerns). As a result of these measures, the study yielded information about personal factors associated with perfectionistic tendencies in those who participate in sport and exercise environments. Understanding personal factors such as perfectionistic tendencies in current and former athletes may influence coaches' and parents' interactions with young athletes. Considering identity foreclosure was found to be a positive predictor of perfectionistic concerns, parents and coaches may encourage young athletes to explore different domains to become well rounded. Considering these factors may help decrease the likelihood of committing to an identity too early, which can lead to perfectionistic concerns. Finally, this knowledge will also influence how practitioners enhance individual perfectionistic strivings while controlling for perfectionistic concerns.

Future Directions

As previously mentioned, the current study was conducted at one college located in one geographical region. Therefore, to make the results of the study more generalizable, future research should use a larger sample size that includes participant sites from different geographical regions. The larger sample size should include not only athletes at the NCAA level,

but also athletes with varying levels of intercollegiate experience (i.e. NJCAA, NAIA). The increase in sample size could potentially result in more meaningful differences between groups and make up for the small effect sizes. Including athletes at varying intercollegiate levels will also allow for researchers to determine if there are any significant differences based on level of competition. Additionally, while there were individuals who stated they have NCAA athletic experience, investigating the perfectionistic tendencies of NCAA athletes may provide different results than the perfectionistic tendencies in individuals currently enrolled in sport and exercise related majors. Unfortunately, an existing scale that directly measures athletic identity foreclosure was not available. Future researchers should create a scale that is specifically designed to measure identity foreclosure in athletes. Finally, future researchers should consider conducting a longitudinal study that investigates the development of domain specific subjective task value. Results of the current study indicates there is a significant relationship between the source of an individual's pressure to succeed in sport and subjective task value in sports. A longitudinal and qualitative study could potentially provide insight into why this relationship exists.

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Table 1

Cronbach's Alpha and Test-Retest Reliability Coefficients for Measures

Measure	Cronbach's Alpha	Reliability Coefficient
AIMS	.88	.80
STVI	.89	.94
EOM-EIS-2	.93	.79
MIPS	.95	.94
Sport-MPS-2	.93	.83

Table 2

Means and Standard Deviations of Athletic Identity, Subjective Task Value, Identity Foreclosure, Perfectionistic Strivings, and Perfectionistic Concerns

Variable	Overall (<i>N</i> = 132)		NCAA (<i>n</i> = 33)		Non-NCAA (<i>n</i> = 99)		Intramural (<i>n</i> = 64)		Non-Intramural (<i>n</i> = 35)		Coach Pressure (<i>n</i> = 88)		Parent Pressure (<i>n</i> = 44)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Athletic Identity	46.92	11.31	51.76	10.14	45.31	11.27	46.11	10.45	43.86	12.66	46.35	11.03	48.07	11.89
Subjective Task Value	34.17	5.86	36.52	4.30	33.38	6.11	34.72	5.03	30.94	7.17	33.43	6.13	35.64	5.01
Identity Foreclosure	47.36	14.42	49.64	13.76	46.60	14.62	46.27	14.28	47.2	15.42	45.84	14.36	50.71	14.21
Perfectionistic Strivings	4.17	.87	4.57	.66	4.04	.89	4.11	.92	3.92	.82	4.12	.87	4.28	.86
Perfectionistic Concerns	3.68	.91	3.88	.89	3.61	.90	3.63	.94	3.56	.90	3.61	.83	3.82	1.03

Table 3

Significance of Athletic Identity, Subjective Task Value, Identity Foreclosure, Perfectionistic Strivings, and Perfectionistic Concerns

Scale	NCAA Differences (<i>N</i> = 132)			Intramural Differences (<i>n</i> = 99)			Pressure Differences (<i>N</i> = 132)		
	<i>F</i>	<i>p</i> -value	Effect Size	<i>F</i>	<i>p</i> -value	Effect Size	<i>F</i>	<i>p</i> -value	Effect Size
Athletic Identity	8.50	.001**	.06	.90	.344	.01	.67	.41	.01
Subjective Task Value	7.42	.01**	.05	9.38	.001**	.09	4.26	.04*	.03
Identity Foreclosure	1.10	.30	.01	.09	.76	.00	2.96	.09	.02
Perfectionistic Strivings	10.04	.001**	.07	.96	.33	.01	1.03	.31	.01
Perfectionistic Concerns	2.38	.13	.02	.17	.69	.00	1.59	1.59	.01

Note. ** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).

Table 4

Bivariate Correlations between Athletic Identity, Subjective Task Value, Identity Foreclosure, Perfectionistic Strivings, and Perfectionistic Concerns

Scale	Athletic Identity	Subjective Task Value	Identity Foreclosure	Perfectionistic Strivings	Perfectionistic Concerns
Athletic Identity	-				
Subjective Task Value	.61**	-			
Identity Foreclosure	.35**	.25**	-		
Perfectionistic Strivings	.56**	.47**	.32**	-	
Perfectionistic Concerns	.52**	.34**	.46**	.76**	-

Note. ** Correlation is significant at the .01 level (2-tailed).

Table 5

Multiple Regression Analysis with Athletic Identity, Subjective Task Value, Identity Foreclosure as Predictors of Perfectionistic Strivings

Predictors	<i>b</i>	β	<i>p</i> -value
Athletic Identity	.31	.40	.001**
Subjective Task Value	.17	.20	.03*
Identity Foreclosure	.12	.13	.89

Note. ** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).

Table 6

Multiple Regression Analysis with Athletic Identity, Subjective Task Value, Identity Foreclosure as Predictors of Perfectionistic Concerns

Predictors	<i>b</i>	β	<i>p</i> -value
Athletic Identity	.32	.40	.001**
Subjective Task Value	.02	.02	.85
Identity Foreclosure	.32	.32	.001**

Note. ** Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).