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Perfectionism and Athlete Burnout in Junior Elite Athletes: The Mediating Role of Motivation Regulations

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This study investigated whether motivation regulations mediate the relationship between socially prescribed and self-oriented dimensions of perfectionism and athlete burnout. Two-hundred and thirty-one ($N = 231$) elite junior athletes completed the Child and Adolescent Perfectionism Scale (Flett, Hewitt, Boucher, Davidson, & Munro, 2000), the Sport Motivation Scale (Pelletier, Fortier, Valleur, Tuson, & Blais, 1995), and the Athlete Burnout Questionnaire (Raedeke & Smith, 2009). Multiple mediator regression analyses revealed that amotivation mediated the relationship between socially prescribed perfectionism and burnout symptoms. Amotivation and intrinsic motivation emerged as significant mediators of the relationship between self-oriented perfectionism and burnout symptoms. The findings suggest that patterns of motivation regulations are important factors in the perfectionism-athlete burnout relationship.

Keywords: perfectionism, athlete burnout, intrinsic motivation, sport, extrinsic motivation

Athlete burnout is a maladaptive outcome that is hypothesized to negatively affect performance, underpin psychological and physical ill-being, and contribute to dropout from sport (Cresswell & Eklund, 2007; Goodger, Gorely, Harwood, & Lavalley, 2007). For example, in a qualitative study by Cresswell and Eklund (2006), elite athletes who reported high burnout scores derived little enjoyment from sports participation, described themselves as feeling physically sick and looked forward to no longer participating in their sport. Because the costs of burnout are substantial in terms of athletes' welfare and sporting potential (Feigley, 1984) sport psychologists (e.g., Appleton, Hall, & Hill, 2009; Hill & Appleton, 2011; Lonsdale,

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Hodge, & Rose, 2009; Lemyre, Hall, & Roberts, 2008) have begun to identify the psychological antecedents of athlete burnout. The purpose of the current study was to build upon this emerging research by examining the role of perfectionism dimensions and motivation regulations in athlete burnout.

Perfectionism and Athlete Burnout

Athlete burnout is a multifaceted construct represented by three core symptoms (Raedeke, 1997). The first is a depletion of emotional and physical resources beyond that associated with regular participation in sport. The second is a self-perceived sense of reduced accomplishment in terms of goals and achievement in sport. The final symptom involves the devaluation of one's achievement and overall involvement in sport (Raedeke & Smith, 2001). Using Raedeke's definition and instrument (i.e., Athlete Burnout Questionnaire), researchers have begun to examine those personality characteristics that might predict athlete burnout. One personality characteristic that has recently emerged as elevating the risk of athlete burnout is perfectionism.

Perfectionism reflects a commitment to exceedingly high standards combined with a tendency to critically appraise performance accomplishments (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). There is little dispute that perfectionism has an energizing effect on achievement striving, as individuals scoring high on this personality characteristic pursue high standards (Hall, 2006; Stoeber & Otto, 2006). However, an obsessive preoccupation with flawlessness encapsulated by perfectionism appears to provide the foundations for burnout. This is because perfectionism is characterized by a rigid adherence to unrealistic performance goals that are the basis for self-worth (Greenspon, 2008; Hill, Hall, & Appleton, 2011). Performance outcomes can therefore carry an irrational sense of importance that evokes higher levels of dysfunctional cognitions and affect in achievement contexts (Flett & Hewitt, 2006; Mor, Day, Flett, & Hewitt, 1995). In addition, because perfectionism is associated with harsh and excessive criticism, the sporting domain is regularly appraised as highly threatening (Flett & Hewitt, 2006), and thus the opportunity for debilitating outcomes such as burnout are increasingly likely (Appleton et al., 2009).

Hall (2006) proposed that athletes may be especially susceptible to burnout when they exhibit higher levels of socially prescribed or self-oriented perfectionism. *Socially prescribed perfectionism* captures the belief that one's approval is conditional upon meeting the unrealistic demands of significant others (Hewitt & Flett, 1991). This interpersonal perfectionism dimension can render athletes vulnerable to burnout because achievement standards are externally determined, often unattainable, and commonly tied to feelings of self-worth (Appleton et al., 2009; Hill, Hall, Appleton, & Kozub, 2008). The second dimension, *self-oriented perfectionism*, is characterized by stringent self-evaluations and the belief that self-worth is contingent upon exceedingly high personal standards (Hewitt & Flett). An intrapersonal perfectionism dimension, self-oriented perfectionism also has the potential to be associated with athlete burnout. This is because self-oriented perfectionism entails unrealistic standards that are closely tied to self-worth as well as a tendency to be highly critical of the self (Hall, 2006).

A number of studies have examined the relationship between socially prescribed and self-oriented perfectionism and athlete burnout. This research has provided support for the hypothesized positive relationship between socially prescribed perfectionism and athlete burnout (Appleton et al., 2009; Hill & Appleton, 2011; Hill et al., 2008; Hill, Hall, Appleton, & Murray, 2010). A positive relationship between self-oriented perfectionism and athlete burnout has also emerged, albeit indirectly via third-order variables (Hill et al., 2008). This latter finding is consistent with research (O'Connor, O'Connor, & Marshall, 2007; Molnar, Reker, Culp, Sadava, & DeCourville, 2006; Seo, 2008) outside of sport that highlights the positive relationship between self-oriented perfectionism and debilitating outcomes via mediating variables. As sport psychologists attempt to better understand the contribution of self-oriented and socially prescribed perfectionism to athlete burnout, examining indirect and mediating processes is likely to be increasingly important.

The Relationship Between Socially Prescribed and Self-Oriented Perfectionism and Motivation Regulations

One mediating variable that may explain the effects of self-oriented and socially prescribed perfectionism in sport is the degree to which an athlete's motivation is self-determined (Hall, 2006; Hewitt & Flett, 1991). Self-determination theory (Deci & Ryan, 1985, 2000) proposes three broad types of motivation: (a) intrinsic motivation, (b) extrinsic motivation, and (c) amotivation, which are situated along a continuum ranging from high to low self-determination. The highest degree of self-determination is represented by intrinsic motivation, which exists when an individual participates in sport because of the interest or enjoyment inherent in the activity. Extrinsic motivation, on the other hand, characterizes behavior that is regulated by expected outcomes or contingencies that are not inherent in the activity itself (Ryan & Deci, 2006). Self-determination theory also considers that extrinsic motivation is multidimensional, with some forms of extrinsic motivation being self-determined and other forms representing motivation that is external to the self and non-self-determined. The most self-determined form of extrinsic motivation is *integrated regulation*, which is present when an activity is completely congruent with one's values and goals. *Identified regulation* is a second self-determined form of extrinsic motivation and exists when an activity is deemed personally important, although not inherently enjoyable. Moving along the continuum, *introjected regulation* is a non-self-determined extrinsic motivation regulation and characterizes behavior that is performed to escape feelings of guilt or shame or to reinforce one's self-worth. *External regulation* is the least self-determined form of extrinsic motivation and represents behavior that is regulated by rewards, fear of punishment, or coercion. Finally, *amotivation* refers to a relative absence of motivation and the lack of intentionality to act (Vallerand, 2001).

Socially prescribed and self-oriented perfectionism are associated with distinct patterns of motivation regulations. Hewitt and Flett (1991) proposed that self-oriented perfectionism should be associated with a range of motivation regulations that include intrinsic motivation and non-self-determined extrinsic motivation. While

the intrinsic motivation stems from the pursuit of internally-set performance goals and efforts toward self-improvement, the non-self-determined extrinsic motivation emerges from the contingent self-worth and fragile self-esteem that characterizes this perfectionism dimension. Recent research examining the relationship between perfectionism and motivation in sport supports the hypothesized relationships between self-oriented perfectionism, intrinsic motivation, and non-self-determined extrinsic motivation regulations (Gaudreau & Antl, 2008; McArdle & Duda, 2004; Mouratidis & Michou, 2011).

In contrast to self-oriented perfectionism, socially prescribed perfectionism is expected to be associated with non-self-determined extrinsic motivation and amotivation (Hewitt & Flett, 1991). This is because socially prescribed perfectionism entails externally-imposed goals that focus upon gaining social recognition and validating feelings of self-worth (Hewitt & Flett). Socially prescribed perfectionism may also predict amotivation because this perfectionism dimension encapsulates a sense of helplessness when striving for externally-imposed standards (Miquelon, Vallerand, Grouzet, & Cardinal, 2005). A study by Van Yperen (2006) confirmed the proposed relationships between socially prescribed perfectionism and non-self-determined motivation regulations in a sample of university students, and research in sport confirms that socially prescribed perfectionism is associated with a maladaptive pattern of motivation regulations in athletes (Gaudreau & Antl, 2008; McArdle & Duda, 2004).

The Relationship Between Socially Prescribed and Self-Oriented Perfectionism and Athlete Burnout: The Mediating Role of Motivation Regulations

The motivational processes associated with self-oriented and socially prescribed perfectionism may have important implications for understanding their relationships with athlete burnout. Several studies have found that intrinsic motivation (e.g., Cresswell & Eklund, 2005a, 2005b, 2005c; Lonsdale, Hodge, & Rose, 2008, 2009; Raedeke & Smith, 2001) is associated with low levels of athlete burnout, while non-self-determined extrinsic motivation (e.g., Lonsdale & Hodge, 2011; Lonsdale et al., 2008, 2009) and amotivation (e.g., Cresswell & Eklund, 2005a, 2005b, 2005c; Gould, Udry, Tuffey, & Loehr, 1996; Lonsdale et al., 2008, 2009; Raedeke & Smith, 2001) appear to predict elevated levels of burnout in athletes. In light of these findings, and the available literature regarding perfectionism dimensions and motivation regulations, it is hypothesized herein that the positive relationship between socially prescribed perfectionism and symptoms of athlete burnout will be mediated by non-self-determined extrinsic motivation and amotivation. A second hypothesis of the current study is that the previously reported (Appleton et al., 2009; Hill et al., 2008) inverse correlation between self-oriented perfectionism and athlete burnout may be explained by intrinsic motivation. That is, self-oriented perfectionism is expected to positively predict intrinsic motivation, and intrinsic motivation is hypothesized to negatively predict athlete burnout. Finally, in line with the suggestion that self-oriented perfectionism may be positively associated with athlete burnout via third-order variables (Hill et al., 2008), it is further hypothesized that self-oriented perfectionism will have a positive indirect relationship with burnout symptoms via introjected and external regulations.

Method

Participants

Participants numbered 231 (males $n = 204$, females $n = 27$) elite junior athletes (M age = 16.92, $SD = 2.63$) recruited from football ($n = 164$) and athletics ($n = 67$) academies in England. Athletes had participated in the sport for an average of 8.48 years ($SD = 3.10$) and had represented their club for an average of 4.36 years ($SD = 3.23$). Athletes were considered elite because they demonstrated performance excellence in their age group and were exposed to specialist coaching and high performance developmental training in their chosen sport.

Measures

Child and Adolescent Perfectionism Scale (CAPS). Self-oriented and socially prescribed perfectionism were measured using the 22-item CAPS (Flett, Hewitt, Boucher, Davidson, & Munro, 2001). The CAPS is the only measure of self-oriented and socially prescribed perfectionism developed specifically for children and adolescents. The self-oriented perfectionism subscale contains 12 items (e.g., “When I do something, it has to be perfect” “I get upset if there is even one mistake in my performance”) and the socially prescribed perfectionism subscale contains 10 items (e.g., “My family expects me to be perfect”). Responses were measured on a 5-point Likert scale ranging from 1 (*false—not at all true of me*) to 5 (*very true of me*). To make the CAPS more contextually relevant to sport, the instructions were adapted (“Listed below are a number of statements concerning how you view your experiences in your sport”) and four of the original items were reworded (e.g., “My teachers expect my work to be perfect” became “My coach expects my performance to be perfect”). Flett et al. (2001) confirmed that the CAPS is a valid and reliable measure of socially prescribed and self-oriented perfectionism in children and adolescents. In the current study, the Cronbach’s alpha for the self-oriented (0.76) and socially prescribed (0.80) perfectionism scales were acceptable.

Sport Motivation Scale (SMS). Athletes’ motivation was measured using the 28-item SMS (Pelletier, Fortier, Vallerand, Tuson, & Blais, 1995). This instrument assesses intrinsic motivation (e.g., “I think sport is interesting”), identified regulation (e.g., “In my opinion, sport is one of the best ways to meet people”), introjected regulation (e.g., “I must do my sport to feel good about myself”), external regulation (e.g., “I participate in my sport to show others how good I am”), and amotivation (e.g., “It is not clear to me anymore why I participate in my sport”). Each subscale contains four items. The item stem was “I participate in my sport because. . .” and a 7-point Likert scale was employed, ranging from 1 (*corresponds not at all*) to 7 (*corresponds exactly*). Pelletier and Sarrazin (2006) summarize research examining the psychometric properties of the SMS and support this measure as a valid and reliable instrument of athletes’ motivation. In the current study, the Cronbach’s alpha for the intrinsic (0.87), identified (0.76), introjected (0.74), external (0.62), and amotivation subscales (0.84) were acceptable.

Athlete Burnout Questionnaire (ABQ). Athlete burnout was measured using the 15-item ABQ (Raedeke & Smith, 2009). This instrument measures three symptoms of athlete burnout: (a) a reduced sense of athletic accomplishment (e.g., “I am not

achieving much in my sport”), (b) perceived emotional and physical exhaustion (e.g., “I am exhausted by the mental and physical demands of my sport”), and (c) sport devaluation (e.g., “I have negative feelings towards my sport”). Each subscale contains five items and is scored on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Raedeker and Smith provide a summary of the acceptable psychometric properties associated with the ABQ, including internal consistency, test-retest reliability, and convergent and discriminant validity. The Cronbach’s alpha for the reduced accomplishment (0.76), exhaustion (0.87), and devaluation (0.85) subscales were acceptable in the current study.

Procedures

After receiving university ethical approval, sports clubs were contacted to request the involvement of their junior athletes in the project. Once permission was granted, parental consent was obtained for athletes under 18 years of age, and all athletes completed informed consent forms. The study was described as a project investigating the personality characteristics and motivation of junior athletes and how these factors influence their emotional and cognitive processes during sport participation. Questionnaires were distributed by trained research assistants toward the end of the competitive season. Athletes from each club completed the questionnaire at the start of a training session, either in an indoor facility or outside by the training pitch/track.

Results

Data Screening

A missing value analysis was conducted on the data before the main analyses. Six athletes were removed from the sample due to large (> 5%) amounts of missing data. For the remaining sample, the percentage of missing data due to item nonresponse was extremely small ($M = 0.27$, $SD = 0.41$, range = 0–1.78%). One-hundred and ninety-five (195) cases with complete data and 30 cases with incomplete data were evident. The average percentage of missing values due to item nonresponse for those athletes with incomplete data were 2.05% ($SD = 0.84$, range = 1.54–4.62%), which equates to less than two items ($M = 1.33$, $SD = 0.55$, range 1–3). Data were missing completely at random (Little’s MCAR test, $\chi^2 = 1501.069$, $df = 1526$, $p > 0.05$). Consequently, each missing item was replaced using the mean of each athlete’s available nonmissing items from the relevant subscale (Graham, Cumsille, & Elek-Fisk, 2003).

Data were assessed for outliers following the recommendations of Tabachnick and Fidell (2007). Standardized z -scores larger than 3.29 ($p < .001$, two-tailed) and variables with a Mahalanobis distance greater than $\chi^2(10) = 29.588$ were used as criteria for univariate and multivariate outliers. This procedure led to the removal of two athletes.

Internal Reliabilities, Descriptive Statistics, and Zero-Order Correlations

The internal reliability scores, descriptive statistics and correlations coefficients for the study variables are presented in Table 1. The measures employed in this study demonstrated acceptable levels of internal reliability. Athletes exhibited moderately

Table 1 Descriptive Statistics, Bivariate Correlations, and Internal Reliability Coefficients for Dimensions of Perfectionism, Motivation Regulations, and Symptoms of Athlete Burnout

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | <i>M</i> | <i>SD</i> |
|--------------------------------------|---------|---------|---------|---------|---------|--------|---------|---------|---------|------|----------|-----------|
| 1. Self-oriented perfectionism | 0.76 | | | | | | | | | | 3.79 | 0.48 |
| 2. Socially prescribed perfectionism | 0.23*** | 0.80 | | | | | | | | | 2.67 | 0.63 |
| 3. Intrinsic motivation | 0.35*** | 0.05 | 0.87 | | | | | | | | 5.10 | 0.85 |
| 4. Identified regulation | 0.07 | 0.14* | 0.53*** | 0.76 | | | | | | | 4.62 | 1.14 |
| 5. Introjected regulation | 0.22*** | 0.30*** | 0.39*** | 0.54*** | 0.74 | | | | | | 4.78 | 1.17 |
| 6. External regulation | 0.24*** | 0.24*** | 0.34*** | 0.60*** | 0.53*** | 0.62 | | | | | 4.57 | 1.04 |
| 7. Amotivation | -.12* | 0.25*** | -.23*** | 0.05 | 0.20** | 0.17** | 0.84 | | | | 2.31 | 1.35 |
| 8. Reduced accomplishment | -.24*** | 0.21** | -.36*** | -.17** | -.04 | -.11* | 0.53*** | 0.76 | | | 3.07 | 0.74 |
| 9. Exhaustion | -.03 | 0.31*** | -.18** | -.02 | 0.12* | 0.10 | 0.43*** | 0.46*** | 0.87 | | 2.40 | 0.84 |
| 10. Devaluation | -.29*** | 0.18** | -.40** | -.04 | 0.07 | -.03 | 0.60*** | 0.60*** | 0.49*** | 0.85 | 1.80 | 0.85 |

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. N.B. Internal reliability coefficients on the diagonal.

high levels of self-oriented perfectionism and moderate levels of socially prescribed perfectionism. With the exception of a low mean score for amotivation, mean scores for all forms of motivation regulations were above the midpoint. The mean scores for symptoms of athlete burnout were moderate to low.

Mediation Analyses

Multiple mediation analysis using Preacher and Hayes' (2008) recommendations was employed to test the study hypotheses. Using the SPSS macro provided by Preacher and Hayes, a bootstrap (5000) resample procedure calculated the indirect effects of self-oriented and socially prescribed perfectionism on symptoms of athlete burnout. Mediation occurs when 95% confidence intervals of the indirect effect estimated from the 5000 bootstrap procedure exclude zero (Preacher & Hayes, 2008). A relatively new approach to mediational analysis, Preacher and Hayes's procedure is superior to the product of coefficients approach or Sobel test and the commonly used Baron and Kenny (1986) causal step approach in terms of statistical power. The bootstrapping approach also maintains reasonable control over Type I error, does not impose the assumption of normality, and reduces parameter estimation bias normally present in simple mediation models due to omitted variables (Preacher & Hayes, 2008). Results of the mediation analysis are provided in Table 2.

Reduced Accomplishment

The relationships between socially prescribed and self-oriented dimensions of perfectionism with reduced accomplishment were partially mediated by motivation regulations. The total effects (path *c*) of self-oriented ($-.46; p < .001$) and socially prescribed ($0.32; p < .001$) perfectionism on reduced accomplishment were significant, as were the direct paths (path *c'*) adjusted for the mediators (SOP, $-.21; p < .05$; SPP, $0.20; p < .01$). Although the effects of the perfectionism dimensions on reduced accomplishment adjusted for the mediators were smaller than the total effects, the finding that the direct paths were still significant suggests motivation regulations are only partial mediators. The total indirect effects were significant ($p < .05$) and 95% bias corrected accelerated bootstrap confidence intervals (BCa CI) were different from zero. Amotivation (BCa 95% CI 0.07 to 0.25) emerged as the sole partial mediator of the relationship between socially prescribed perfectionism and reduced accomplishment. Intrinsic motivation (BCa 95% CI $-.18$ to $-.01$) and amotivation (BCa 95% CI $-.24$ to $-.04$) emerged as partial mediators of the self-oriented perfectionism and reduced accomplishment relationship. Pairwise contrasts showed the two indirect effects could not be distinguished in terms of magnitude (BCa 95% CI $-.07$ to 0.18).

Physical and Emotional Exhaustion

The relationship between socially prescribed perfectionism and exhaustion was partially mediated by motivation regulations. The total effect (path *c*) of socially prescribed perfectionism ($0.44; p < .001$) on exhaustion was significant, as was the direct path (path *c'*) adjusted for the mediators ($0.29; p < .01$). Although the effect of socially prescribed perfectionism on exhaustion adjusted for the mediators was smaller than the total effect, the finding that the direct path was still significant

Table 2 Mediation of the Effect of Perfectionism Dimensions on Burnout Symptoms Through Motivation Regulations

| Criterion Variable | Total Effect | Direct Effect | Total Indirect Effects | | Specific Indirect Effects | | | | | | | | | | | | | | | |
|--------------------|--------------|---------------|------------------------|------------|---------------------------|-------------------|------------|------------|-------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------|------|
| | | | | | Intrinsic | | Identified | | Introjected | | External | | Amotivation | | | | | | | |
| Predictor variable | | | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | Point est. | BCa 95% CI | | |
| | | | L | U | L | U | L | U | L | U | L | U | L | U | L | U | L | U | | |
| RA | | | | | | | | | | | | | | | | | | | | |
| SOP | -.46*** | -.21* | -.25*** | -.40 | -.11 | -.08 ^a | -.18 | -.01 | 0.00 | -.04 | 0.01 | 0.00 | -.05 | 0.03 | -.03 | -.10 | 0.01 | -.13*** | -.24 | -.04 |
| SPP | 0.32*** | 0.20** | 0.13* | 0.02 | 0.24 | 0.01 | -.02 | 0.04 | -.01 | -.05 | 0.01 | 0.00 | -.05 | 0.04 | -.02 | -.08 | 0.00 | 0.16*** | 0.07 | 0.25 |
| Ex | | | | | | | | | | | | | | | | | | | | |
| SOP | -.18 | -.03 | -.15* | -.31 | -.03 | -.07 | -.17 | 0.01 | 0.00 | -.06 | 0.01 | 0.01 | -.03 | 0.08 | 0.02 | -.03 | 0.10 | -.11*** | -.22 | -.04 |
| SPP | 0.44*** | 0.29** | 0.15*** | 0.05 | 0.27 | 0.01 | -.01 | 0.04 | -.01 | -.06 | 0.02 | 0.01 | -.04 | 0.07 | 0.01 | -.02 | 0.07 | 0.13*** | 0.05 | 0.23 |
| De | | | | | | | | | | | | | | | | | | | | |
| SOP | -.61*** | -.26* | -.35*** | -.53 | -.19 | -.19*** | -.32 | -.10 | 0.01 | -.02 | 0.06 | 0.03 | 0.00 | 0.10 | -.04 | -.12 | 0.01 | -.16*** | -.30 | -.05 |
| SPP | 0.35*** | 0.12 | 0.23*** | 0.09 | 0.39 | 0.01 | -.04 | 0.07 | 0.02 | 0.00 | 0.07 | 0.03 | 0.00 | 0.09 | -.03 | -.09 | 0.00 | 0.19*** | 0.08 | 0.33 |

Note. SOP = Self-oriented perfectionism; SPP = Socially prescribed perfectionism; RA = Reduced Accomplishment; Ex = Exhaustion; De = Devaluation.

*** $p < .001$, ** $p < .01$, * $p < .05$, ^a $p = 0.05$.

suggests that motivation regulations are only partial mediators in this relationship. The total indirect effect of motivation regulations was significant ($p < .001$; BCa 95% CI, 0.05 to 0.27). Amotivation emerged as the only significant mediator of this relationship (BCa 95% CI 0.05 to 0.24).

The relationship between self-oriented perfectionism and exhaustion was indirect via motivation regulations. The relationship was indirect because the direct relationship between self-oriented perfectionism and exhaustion was nonsignificant (see Table 2). However, the total indirect effect was significant ($p < .05$; BCa 95% CI, $-.31$ to $-.03$). Amotivation emerged as the sole mediator of this relationship (BCa 95% CI, $-.22$ to $-.04$).

Devaluation

The relationship between socially prescribed perfectionism and devaluation was fully mediated by motivation regulations. The total effects (path c) of socially prescribed (0.35; $p < .001$) on devaluation was significant; however, the direct path (path c') adjusted for the mediators was nonsignificant (0.12; $p > 0.05$), indicating full mediation. The total indirect effect of motivation regulations was significant ($p < .001$; BCa 95% CI, 0.09 to 0.39). Amotivation was the only significant mediator of this relationship (BCa 95% CI, 0.08 to 0.33).

The relationship between self-oriented perfectionism and devaluation was partially mediated by motivation regulations. The total effect (path c) of self-oriented ($-.61$; $p < .001$) on devaluation was significant, as was the direct paths (path c') adjusted for the mediators ($-.26$; $p < .05$). Although the effect of self-oriented perfectionism on devaluation adjusted for the mediators was smaller than the total effects, the finding that the direct path was still significant suggests that motivation regulations are only partial mediators. The total indirect effect of motivation regulations was significant ($p < .001$; BCa 95% CI, $-.53$ to $-.19$). Intrinsic motivation (BCa 95% CI $-.32$ to $-.10$) and amotivation (BCa 95% CI $-.30$ to $-.05$) emerged as significant partial mediators of the self-oriented perfectionism and devaluation relationship. Pairwise contrasts showed the two indirect effects could not be distinguished in terms of magnitude (BCa 95% CI $-.20$ to 0.14).

Discussion

Recent empirical research has demonstrated that the relationship between socially prescribed and self-oriented perfectionism and athlete burnout may be mediated by third-order variables (Hill et al., 2008, 2010). With this in mind, the purpose of the current study was to investigate the mediating role of motivation regulations in the relationship between self-oriented and socially prescribed perfectionism and athlete burnout. It was hypothesized that non-self-determined extrinsic motivation regulations and amotivation would mediate the association between socially prescribed perfectionism and athlete burnout. We also hypothesized that intrinsic motivation would mediate the inverse relationship between self-oriented perfectionism and athlete burnout symptoms. Finally, we hypothesized that self-oriented perfectionism would have a positive relationship with athlete burnout via non-self-determined extrinsic regulations.

The results provided partial support for the hypotheses. The association between socially prescribed perfectionism and athlete burnout symptoms was mediated by amotivation (all burnout symptoms) but not non-self-determined extrinsic regulations. The relationships between self-oriented perfectionism and symptoms of athlete burnout (reduced accomplishment and devaluation) were mediated by intrinsic motivation but not non-self-determined extrinsic regulations. A further finding that was not hypothesized was that amotivation mediated the relationship between self-oriented perfectionism and all symptoms of athlete burnout.

Socially Prescribed Perfectionism and Burnout: The Mediating Role of Non-Self-Determined Motivation and Amotivation

Based on the theorizing of Hewitt and Flett (1991), introjected and external regulations were expected to mediate the relationship between socially prescribed perfectionism and symptoms of athlete burnout. This hypothesis was forwarded because socially prescribed perfectionism is characterized by achievement striving that is fueled by a self-worth contingent upon gaining the approval of others, feelings of fear associated with failure, and a fragile self-esteem (Hewitt & Flett, 1991), all of which define non-self-determined extrinsic motivation. Previous research has also confirmed a relationship between socially prescribed perfectionism and non-self-determined extrinsic motivation (Gaudreau & Antl, 2008; McArdle & Duda, 2004; Miquelon et al., 2005; Mouratidis & Michou, 2011). One possibility regarding the nonsignificant findings in the current study is that introjected and external regulations may fail to capture the motivational signature of athlete burnout. Instead, athlete burnout may be best represented by regulations at the extreme ends of the motivation continuum according to self-determination theory, namely, intrinsic motivation and amotivation (Gustafsson, Hassmén, Kenttä, & Johansson, 2008). In support of this contention, previous research by Cresswell and Eklund (2005b) has demonstrated that intrinsic motivation and amotivation, but not extrinsic motivational regulations, are positively and significantly correlated with symptoms of athlete burnout.

The finding that amotivation mediated the relationship between socially prescribed perfectionism and symptoms of athlete burnout is consistent with previous research in sport that has reported an association between this perfectionism dimension and amotivation (e.g., Gaudreau & Antl, 2008; McArdle & Duda, 2004; Mouratidis & Michou, 2011) and amotivation and athlete burnout (Cresswell & Eklund, 2005a, 2005b, 2005c; Gould et al., 1996; Lonsdale et al., 2008, 2009; Raedeke & Smith, 2001). The finding also provides partial support for Hill et al.'s (2008) suggestion that the motivational processes elicited by socially prescribed perfectionism are central to understanding its relationship with burnout. Socially prescribed perfectionism is characterized by contingent self-worth, which is validated via the attainment of externally imposed standards (Campbell & Di Paula, 2002). This means that socially prescribed perfectionism is associated with little personal control over the attainment of important goals (Hill et al., 2008) and that apprehension over negative evaluation drives achievement striving (Appleton et al., 2009). The resulting cognitive and affective experience is highly debilitating

and may precipitate a sense of helplessness that is captured by amotivation and, in turn, results in symptoms of athlete burnout.

The association between socially prescribed perfectionism and amotivation can also be explained within the tenets of self-determination theory. According to this theory, self-determined motivation is experienced when the psychological needs of autonomy, competence, and relatedness are satisfied (Deci & Ryan, 2000). In contrast, thwarting of the psychological needs elicits non-self-determined motivation, amotivation, and ill-being (see Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). It is reasonable to expect that socially prescribed perfectionism can thwart the psychological needs. The notion that socially prescribed perfectionism is characterized by externally-imposed goals may hinder autonomy, for example, and the unrealistic demands and harsh criticism of significant others may prevent feelings of competence (Appleton et al., 2009). The perfectionism literature (see Habke & Flynn, 2002) also indicates that socially prescribed perfectionism can predict interpersonal difficulties, which may subsequently impede feelings of relatedness. A recent study with young athletes confirms that socially prescribed perfectionism is positively associated with psychological need thwarting in the sport context (Mallinson & Hill, 2011), and thus, future research should examine whether need thwarting mediates the relationship between socially prescribed perfectionism, amotivation, and symptoms of athlete burnout.

Self-Oriented Perfectionism and Burnout: The Mediating Role of Intrinsic Motivation and Non-Self-Determined Extrinsic Motivation

Previous research has reported an inverse relationship between self-oriented perfectionism and athlete burnout (Appleton et al., 2009; Hill et al., 2008, 2010). As hypothesized, the current findings substantiate this finding and suggest that the negative correlation can be explained by the mediating role of intrinsic motivation. Specifically, the relationship between self-oriented perfectionism and two symptoms of burnout (reduced accomplishment and devaluation) was mediated by intrinsic motivation. This finding builds upon the association between self-oriented perfectionism and intrinsic motivation reported elsewhere (Gaudreau & Antl, 2008; McArdle & Duda, 2004; Miquelon et al., 2005; Mouratidis & Michou, 2011). It appears that because self-oriented perfectionism reflects an intrinsic desire to be “perfect,” the achievement behavior emanating from this perfectionism dimension may at times be self-determined, and this may afford protection against the symptoms of athlete burnout. This possibility complements the recent conclusion of Hill et al. (2010) that self-oriented perfectionism includes growth tendencies that are unrelated to burnout symptoms.

The null findings regarding the mediating role of non-self-determined extrinsic regulations in the relationships between self-oriented perfectionism and symptoms of athlete burnout were contrary to our hypothesis. As with socially prescribed perfectionism, it was expected that non-self-determined extrinsic motivation would emerge as mediators because the achievement striving associated with self-oriented perfectionism is regulated by a desire to boost self-worth (introjected) and to achieve external indicators (e.g., prizes, awards; external) that equate to the successful attainment of high standards (Hewitt & Flett, 1991). One possible

explanation for the nonsignificant mediating role of introjected and external regulation in the relationship between self-oriented perfectionism and athlete burnout concerns the measurement of motivation in the current study. In a recent overview of the research that has examined the association between motivation regulations and athlete burnout using the Sport Motivation Scale, Lonsdale and colleagues (2009) identified inconsistent findings between extrinsic forms of motivation and burnout symptoms. In response to these inconsistencies, Lonsdale et al. (2008, 2009; Lonsdale & Hodge, 2011) reexamined the relationships with an alternative measure of motivation regulation (Behavioral Regulations in Sport, BRSQ). The BRSQ addresses reported limitations associated with the SMS (see Lonsdale et al., 2008), including removing the ambiguity in a number of items and capturing the central hallmarks of non-self-determined extrinsic regulations. The findings reported by Lonsdale and colleagues demonstrate significant positive correlations between non-self-determined extrinsic motivation regulations and athlete burnout dimensions. The SMS was used in the current study because it is the most widely used measure of motivation in sport and thus allows for a comparison with previous findings. Future research, however, may clarify the mediating role of motivation regulations in the relationships between perfectionism dimensions and athlete burnout by using the BRSQ.

Although introjected and external regulation failed to mediate the hypothesized effects of self-oriented and socially prescribed perfectionism, it should be noted that both perfectionism dimensions were significantly and positively correlated with non-self-determined extrinsic regulations at the bivariate level. This finding is important with regards to understanding self-oriented perfectionism in sport, because it helps prevent the conclusion that this perfectionism dimension is associated with a completely adaptive pattern of motivation regulation. In light of the bivariate correlations, it is possible that self-oriented perfectionism does entail a complex mix of intrinsic and non-self-determined extrinsic motivation regulations that may eventually lead to adaptive or maladaptive outcomes. Future research should therefore continue to investigate whether introjected and external regulations mediate the effects of perfectionism dimensions in sport and determine whether self-oriented perfectionism is positively correlated with debilitating outcomes via third-order variables.

Self-Oriented Perfectionism and Burnout: The Mediating Role of Amotivation

Although we did not hypothesize that amotivation would mediate the effects of self-oriented perfectionism, the current findings suggest this motivation regulation is central to understanding the inverse relationship between self-oriented perfectionism and all symptoms of athlete burnout. Multiple mediation analysis revealed that self-oriented perfectionism was negatively correlated with amotivation, and amotivation was a positive predictor of athlete burnout symptoms. This is a novel finding, as the relationship between self-oriented perfectionism and amotivation has not emerged in previous research. It may be that self-oriented perfectionism negatively correlates with a sense of helplessness that characterizes amotivation, because this perfectionism dimension is defined by internally set performance goals. Thus, it is possible that even when presented with performance setbacks

and failure, athletes reporting high levels of self-oriented perfectionism may retain some ownership over the standards they strive toward. If this is the case, this may result in the athlete avoiding feelings of helplessness when reengaging with their goals and subsequently, lower levels of reduced accomplishment, exhaustion, and sport devaluation. Appleton et al. (2009) also argued that as a result of intense achievement striving associated with self-oriented perfectionism, this perfectionism dimension often leads to positive performance outcomes, heightened efficacy, reduced threat, and a tolerance of failure (see Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000). Such positive outcomes may reduce the potential for motivational debilitation in the form of amotivation, and thereby offers a further possible explanation for the negative correlation between self-oriented perfectionism and athlete burnout (Appleton et al., 2009).

Limitations and Conclusions

Although the results of the current study contribute to an understanding of the relationship between self-oriented and socially prescribed perfectionism dimensions and athlete burnout, the study has some limitations. One limitation concerns the sample and the large difference between the number of male and female athletes. As a result, it was not possible to examine whether the reported relationships were invariant across gender. This is an important limitation because previous research on perfectionism in sport has reported differences between male and females (Anshel, Kim, & Henry, 2009). A further limitation is the cross-sectional nature of the study, and thus causality between study variables cannot be inferred. Longitudinal research would help to address this limitation, by determining whether the perfectionism dimensions are associated with changes in motivation regulations and athlete burnout over time. This is especially important with regard to understanding the effects of self-oriented perfectionism in sport, as there may be crucial times in the season when the complex motivational profile associated with this perfectionism dimension comes to the fore. Capturing these times via cross-sectional research is difficult.

It should also be acknowledged that the mediating role of motivation regulations was tested in the current study using multiple mediator regression analyses. Although multiple mediator regression analysis has advantages compared with other common approaches, future studies should look to recruit a larger sample of athletes so that the hypothesized relationships can be examined through a full latent structural equation model. This would allow for the inclusion of measurement error and to determine whether the nonsignificant findings relating to introjected and external regulations were the result of a relatively low sample size.

Conclusion

The present findings suggest that intrinsic motivation and amotivation mediate the relationship between socially prescribed and self-oriented dimensions of perfectionism and burnout symptoms in junior elite athletes. Research continues to accrue that suggests socially prescribed perfectionism may be a psychological impediment to the sporting performance and athletic development of junior elite athletes. The current study suggests that a sense of helplessness and amotivation may be especially important in terms of understanding the effects of socially pre-

scribed perfectionism in sport and specifically, its contribution to athlete burnout. In contrast, self-oriented perfectionism does not appear to be as debilitating for athletes. The present investigation provides one possible explanation for the inverse relationship between self-oriented perfectionism and athlete burnout. Athletes reporting heightened self-oriented perfectionism may be partly characterized by higher levels of intrinsic motivation and lower levels of amotivation, and this pattern of motivation regulations may provide protection from burnout. The implications of other forms of motivation regulation associated with both perfectionism dimensions (i.e., introjected and external regulation) appear to be more tangential in terms of the development of athlete burnout. However, socially prescribed and self-oriented perfectionism appear to be characterized by a complex pattern of motivation regulations, a finding that confirms the potentially maladaptive nature of socially prescribed perfectionism and raises some doubts about the seemingly adaptive nature of self-oriented perfectionism in sport.

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