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Perfectionism and burnout in canoe polo and kayak slalom athletes: The mediating influence of validation and growth-seeking.

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Abstract

Recent research suggests that validation-seeking and dimensions of perfectionism may be antecedents of athlete burnout. The present investigation examined whether validation and growth-seeking mediate the relationship between self-oriented and socially prescribed perfectionism and burnout. One-hundred and fifty canoe polo and kayak slalom athletes recruited from the top two divisions in the UK completed measures of validation and growth-seeking (GOI), perfectionism (HMPS), and athlete burnout (ABQ). Analyses supported the mediating role of validation-seeking in the relationship between socially prescribed perfectionism and burnout. However, while bivariate correlations indicated that self-oriented perfectionism was positively related to both validation and growth-seeking, neither mediated the self-oriented perfectionism-burnout relationship. The findings suggest that validation-seeking may be an important psychological factor in the development of burnout for athletes exhibiting high levels of socially prescribed perfectionism. The relationship between self-oriented perfectionism and athlete burnout remains unclear because of its association with multiple motives and with socially prescribed perfectionism.

Perfectionism and burnout in canoe polo and kayak slalom athletes: The mediating influence of validation-seeking and growth-seeking.

When intense and prolonged achievement striving is accompanied by chronic failure, some athletes may be susceptible to the development of burnout (Lemyre, Hall, & Roberts, 2008). Athlete burnout is an extreme form of sport disaffection indicative of a shift from an intense desire to succeed to psychological, emotional and potential behavioural disengagement from a once valued activity (Schaufeli & Enzmann, 1998; Smith, 1986). The syndrome is believed to manifest in three core symptoms that include an enduring sense of reduced athletic accomplishment, physical and emotional exhaustion, and the eventual devaluation of participation (Raedeke & Smith, 2001). Collectively, these symptoms are purported to contribute to significant motivational and psychological difficulties which may extend beyond the sport domain (Cresswell & Eklund, 2006).

A number of theoretical models have identified potential antecedents as well as key psychological mechanisms that may explain the development of these symptoms (see Gould, 1996, for a review). Research based on a cognitive-affective model (Smith, 1986) has supported the possibility that the onset of athlete burnout involves prolonged exposure to chronic levels of psychosocial stress (e.g., Gould Tuffey, Udry & Loehr, 1996; Raedeke & Smith, 2004). Dissatisfied with the notion that burnout is solely the result of a stress response, however, sport psychologists have also sought to identify additional psychological processes that may explain the maintenance of participation in the face of recurrent aversive experiences. This research suggests that psychological over-investment may provide a further explanation of why the experience of stress leads to the development of burnout in only a small number of athletes (see Coakley, 1992; Raedeke, 1997; Schmidt & Stein, 1991).

Consistent with this perspective, Lemyre and colleagues (Lemyre et al., 2008) have recently argued that the need to repeatedly validate a sense of self through sporting achievement may explain why some athletes may be unable to extricate themselves from the sporting environment when routine practice and competition has become a source of chronic stress. According to Dykman (1998), the pursuit of self-validation is an active vulnerability factor that interacts with the experience of negative events to predict psychological and motivational difficulties. He suggests that when achievement striving is underpinned by validation-seeking, behaviour is focused on proving basic worth, competence or likeability. Thus, while achievement settings provide an opportunity to affirm self-worth, repeated failure can also undermine one's sense of self. Moreover, when athlete motivation is underpinned by validation-seeking, a maladaptive pattern of engagement may emerge because individuals feel compelled to maintain investment and gain the approval of others, despite the fact that their continued achievement striving may evoke debilitating cognition and negative emotional experiences. Over time, this pattern of engagement is likely to render athletes vulnerable to the development of burnout. A very different pattern of engagement emerges when athlete motivation is underpinned by growth-seeking tendencies. Under these circumstances, concerns over the impact of failure become superseded by the realisation that continued investment can only increase opportunities for personal development. Consequently, achievement related cognition and affective responses tend to remain adaptive regardless of any perceived achievement difficulty (Dykman, 1998), meaning that this form of goal pursuit may provide resilience against the onset of burnout.

While validation-seeking may be one critical antecedent of athlete burnout, recent research has also implicated a number of other personality factors that may render athletes vulnerable to the condition (e.g., Appleton, Hall & Hill, 2009; Cresswell &

Eklund, 2006; Hill, Hall, Appleton & Kozub, 2008). One such personality characteristic is perfectionism (e.g., Gould et al., 1996; Lemyre et al., 2008). Perfectionism is considered to be a multidimensional disposition that broadly entails the endorsement of exceedingly high standards and a preoccupation with harsh self-critical evaluation (e.g., Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). While perfectionism has been conceptualised in a number of different ways (e.g., Frost et al, 1991; Hewitt & Flett, 1991; Terry-Short, Owens, Slade & Dewey, 1995), research suggests that perfectionistic striving in the absence of evaluative concerns will typically lead to adaptive consequences. In contrast, there is strong evidence that the pursuit of exceedingly high standards tends to have maladaptive consequences when achievement striving is accompanied by harsh evaluative tendencies (see Stoeber & Otto, 2006).

Recent research examining the association between perfectionism and athlete burnout has found that when the pursuit of high standards is combined with evaluative concerns, it contributes to a motivational profile that may render athletes vulnerable to burnout (Lemyre et al., 2008). This finding is believed to be, in part, because the combined effect of these dimensions predisposes athletes to elevated levels of existential threat. For some athletes, the perception of threat may contribute to anxiety, chronic stress and, if unmanaged, may subsequently lead to the onset of burnout (Frost & Henderson, 1991; Hall, Kerr, & Matthews, 1998; Koivula, Hassmen, & Fallby, 2002; Mor, Day, Flett, & Hewitt, 1995). A further possibility is that key defining characteristics of perfectionism elicit validation-seeking and this desire for validation initiates a psychological process that results in a pattern of cognition and affective responses to engagement which is reflective of the burnout syndrome.

The potential for specific dimensions of perfectionism to encourage validation-seeking is apparent in early descriptions of the perfectionism construct which suggest that

perfectionistic striving may be a strategy to compensate for a perceived lack of self-worth (e.g., Burns, 1980; Hollander, 1965). Research has since provided some support for these assertions by demonstrating a positive association between various dimensions of perfectionism and the belief that acceptance is conditional, meaning that self-worth can only be established through demonstrating accomplishment (e.g., Koivula et al., 2002; Flett, Besser, Davis, & Hewitt, 2003). Ordinarily, striving to reach exceedingly high goals ought to have few negative consequences for athletes. However, the combined effects of both conditional-acceptance and the pursuit of exceptionally high standards may lead to a more extreme pattern of achievement striving. Ultimately, because a strong desire for self-validation regulates perfectionistic striving, validation-seeking increases the potential for burnout when the goal of proving ones worth becomes thwarted (DiBartelo, Frost, Chang, LaSota & Grills, 2004; Lundh, 2004).

Susceptibility to burnout may be especially pronounced when athletes exhibit characteristics of either self-oriented or socially prescribed perfectionism. The enhanced vulnerability associated with these dimensions of perfectionism is because both conditional self-acceptance and perfectionistic striving are defining features of self-oriented and socially prescribed perfectionism (Hewitt & Flett, 1991). Self-oriented perfectionism involves the belief that self-acceptance is based on the attainment of exceedingly high personal standards, whereas socially prescribed perfectionism involves the belief that acceptance from self and others is contingent on the attainment of exceptionally high standards which are perceived to be externally imposed. Both dimensions of perfectionism have the potential to be associated with motivational debilitation; however, the mechanisms which lead from perfectionism to burnout may differ because each form of perfectionism evokes distinct motivational processes (see Hill et al., 2008).

The fact that both socially prescribed and self-oriented perfectionism are positively associated with conditional self-acceptance suggests that each dimension has the potential to energise validation-seeking (Flett et al., 2003). Clearly, therefore, both forms of perfectionism may lead to motivational debilitation if the goals against which perfection is evaluated become thwarted. However, unlike socially prescribed perfectionism, self-oriented perfectionism has also been associated with more adaptive patterns of achievement behaviour. These include intrinsic forms of regulation, as well as the pursuit of mastery goals (Miquelon, Vallerand, Grouzet, & Cardinal, 2005; Speirs-Neumeister & Finch, 2006; Van Yperen, 2006). Consequently, while socially prescribed perfectionism is likely to encourage a pattern of achievement striving characterised primarily by high levels of validation-seeking, self-oriented perfectionism may invoke a combination of validation-seeking and growth-seeking.

Because self-oriented and socially prescribed perfectionism are considered to elicit distinct regulatory processes, the purpose of the current study was to examine one mechanism by which multidimensional perfectionism may lead to athlete burnout. Specifically, the present investigation assessed the meditational influence of validation and growth-seeking on the relationship between multidimensional perfectionism and athlete burnout. Based on the preceding argument and previous research, it was hypothesised that socially prescribed perfectionism would have a direct positive relationship with athlete burnout, and that self-oriented perfectionism would have a direct inverse relationship with athlete burnout. It was also hypothesised that the association between socially prescribed perfectionism and athlete burnout would be partially mediated by high levels of validation-seeking and low levels of growth-seeking. Furthermore, it was hypothesised that the association between self-oriented perfectionism and athlete burnout would be partially mediated by high levels of both validation-seeking

and growth-seeking. The combination of higher levels of validation-seeking and growth-seeking would lead to two contrasting pathways indicative of the potential for both higher and lower levels of burnout. The hypothesised structural relations between dimensions of perfectionism, validation-seeking, growth-seeking and athlete burnout are depicted in Figure 1.

Method

Participants

Participants were 150 (86 males, 64 females) canoe polo and kayak slalom athletes recruited from the top divisions in the UK (age *M* = 26.05 years, *SD* = 9.57 years, range = 13 to 55). Sixty-five of the athletes were members of Great Britain development squads or were members of Great Britain national teams. Participants were approached at club and regional competitions and were asked to complete a multi-sectional questionnaire at their leisure. Informed consent was gained from each participant or parent/guardian when appropriate. As a non-professional sport, these athletes can face considerable challenges with regards to balancing life and sport commitments which may render them susceptible to high levels of participation related stress. The athletes reported that, on average, they considered their sport very important in comparison to other things in their lives (*M* = 7.40, *SD* = 1.18; 1 = *not at all important* to 9 = *extremely important*). Most were experienced participants (*M* = 9.32 years, *SD* = 7.03) who reported that they spent 6.86 hours per week (*SD* = 5.42) training for their sport.

Measures

Athlete Burnout: Raedeke and Smith's (2001) Athlete Burnout Questionnaire (ABQ) was used to assess athlete burnout. This instrument contains three 5-item subscales that are scored on a five-point Likert scale (1 = *almost never* to 5 = *almost always*). The scale assesses an athletes' experience of a reduced sense of athletic

accomplishment (RA) (e.g., “I’m accomplishing many worthwhile things.” (reversed)), perceived emotional and physical exhaustion (E) associated with their sports participation (e.g., “I feel so tired from my training that I have trouble finding energy to do other things.”), and the extent to which athletes devalue the activity (D) (e.g., “I feel less concerned about being successful than I used to.”). Raedeke and Smith (2001) have provided evidence to support the validity and the reliability of the measurement associated with the scale when measuring burnout symptoms in athletes. For example, internal consistency (α = RA .84, α = E .89 and α = D .89) and test-retest reliability of the scale (r = RA .86, r = E .92 and r = D .92) were found in high school and collegiate athletes (age 14- 23 years) (Raedeke & Smith, 2001). This instrument is currently considered the most appropriate measure of burnout symptoms in athletes (Raedeke & Smith, 2001).

Multidimensional Perfectionism: Self-oriented (SOP) and socially prescribed perfectionism (SPP) were assessed using Hewitt and Flett’s (1991) Multidimensional Perfectionism Scale (MPS). The third dimension measured by this scale, other-oriented perfectionism, is unrelated to self-focused personal consequences and was, therefore, not included in the study. The stem of the instrument was adapted to ensure that the athletes focused on cognitions and beliefs associated with participation in their sport when responding to the items (“Listed below are a number of statements concerning how you view your participation in your sport…”). The two subscales of the MPS each contain 15-items measured on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Responses on the self-oriented perfectionism subscale reflect excessive striving for high personal standards and self-critical tendencies (e.g., “I must always be successful in activities that are important to me.” “I demand nothing less than perfection of myself.”). In contrast, responses to the socially prescribed perfectionism subscale reflect

the belief that significant others have exceedingly high standards and that acceptance is based on the attainment of those standards (e.g., "The people around me expect me to succeed at everything I do." "Others will like me even if I don't excel at everything."(reversed scored)). Evidence to support the validity and reliability of measurement associated with the scale has been provided by Hewitt and Flett (1991, 2004). This evidence includes good internal consistency (α = SOP .89 and α = SPP .86) and test-retest reliability for these scales (*r* = SOP .88 and *r* = SPP .75) in student and general samples (Hewitt & Flett, 1991). This instrument is currently the only available measure of self-oriented and socially prescribed perfectionism with extensive evidence for its reliability and validity (Hewitt & Flett, 1991, 2004).

Validation-seeking and growth-seeking: Validation-seeking (VS) and Growth-seeking (GS) were assessed using Dykman's (1998) Goal Orientation Inventory (GOI). The stem of the instrument was adapted to focus the participants on their participation in sport, rather than on how they think and act in general. The validation-seeking and growth-seeking subscales of the GOI contain 18-items each and are measured on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The validation subscale reflects a strong motivational need to prove self-worth, competence or likeability (e.g., "I feel like I'm constantly trying to prove that I'm as competent as the people around me."). In contrast, response to the growth-seeking subscale reflects a strong motivational need to improve and realise ones' potential (e.g., "My natural tendency is to view problem situations as providing opportunities for growth and self-improvement."). Dykman (1998) has provided support for the validity and reliability of the measurement associated with the scale in student samples. This evidence includes internal consistency (α = VS .97 and α = GS .96) and test-retest reliability (*r* = VS .76 and *r* = GS .78; Dykman, 1998). Prior to the current study, this instrument has not been used in an athlete sample.

Results

Preliminary analysis

Prior to the main analyses, a missing value analysis was conducted on the data. Due to large amounts of missing data from individual respondents (> 5%), nine participants were removed from the sample. The missing value analysis indicated that for the remaining sample the percentage of missing data due to item non-response was extremely small (M = 0.39, SD = 0.52, range = 0 to 2.80%). There were 112 complete cases and 29 cases with incomplete data. For those with incomplete data, the average percentage of missing values due to item non-response was 1.90% (SD = 1.04, range = 1.20 to 4.99%). This percentage of missing data is the equivalent of less than 2 items (M = 1.55, SD = 0.83, range 1 to 4). An inspection of the pattern of missing data suggested a non-systematic mechanism for the missing data. Specifically, there was a high ratio of unique patterns of missing data to the number of participants with missing data = .97, and only one common pattern shared by two participants (same item not complete). Consequently, each missing item was replaced using the mean of the each case's available non-missing items from the relevant subscale. This method of imputation is considered to be an appropriate strategy when the amount of missing data is low and items are highly correlated (Graham, Cumsille & Elek-Fisk, 2000)[1].

Next, the data was screened for univariate and multivariate outliers (see Tabachnick & Fidell, 2007). Standardised z-scores larger than 3.29 (p <.001, two-tailed) and variables with a Mahalanobis distance greater than $\chi^2_{(7)} = 24.73$ were used as criteria for univariate and multivariate outliers. This procedure did not lead to the removal of any participants. The remaining data (n = 141) was considered to be approximately univariate and multivariate normal (absolute skewness M = .24, SD = .16, SE = .20, absolute

kurtosis M = .28, SD = .21, SE = .41, Mahalanobis distance M = 6.95, SD = 3.89, Mardia's normalised multivariate kurtosis = 1.12).

The homogeneity of the covariance matrix of the variables included in the model across competitive level (club level athlete only/ GB representative or development squad representative) was assessed using Box's M test. These analyses indicated that the covariance matrix was homogenous across competitive level, Box's M (28.00, 59769.34) = 1.35 (p >.05). The data were, therefore, analysed in an ungrouped fashion. Finally, internal reliability analysis (Cronbach's alpha) indicated that all instruments demonstrated internal consistency above that typically considered acceptable (α = .70). The values are displayed in Table 1.

Descriptive Analyses

The descriptive statistics displayed in Table 1 indicate that the sample reported moderate-to-high levels of self-oriented perfectionism and low-to-moderate levels of socially prescribed perfectionism. These mean scores are of a similar magnitude to those observed in junior-elite samples suggesting that athletes may typically score higher in self-oriented perfectionism than socially prescribed perfectionism (Hill et al., 2008). The sample also reported low-to-moderate burnout scores across all symptoms of burnout. These mean scores are also of a similar magnitude to those reported elsewhere (e.g., Cresswell & Eklund, 2005). This suggests that levels of burnout symptoms may be comparable across sports in similar samples. Finally, participants reported moderate-to-high levels of growth-seeking and low-to-moderate levels of validation-seeking. No scores from athlete samples are available for comparison.

Bivariate Correlations between Burnout, Perfectionism, and Validation and Growth-Seeking

The bivariate associations between dimensions of perfectionism, validation-seeking, growth-seeking and dimensions of athlete burnout are displayed in Table 1. Socially prescribed perfectionism was positively related to all symptoms of burnout (reduced sense of accomplishment, emotional and physical exhaustion, and devaluation). In contrast, self-oriented perfectionism was unrelated to burnout symptoms. The correlational analyses further indicated that socially prescribed perfectionism was positively related to validation-seeking and inversely related to growth-seeking. As hypothesised, self-oriented perfectionism was positively related to both growth-seeking and validation-seeking. Also consistent with the hypotheses, validation-seeking was positively related to all symptoms to burnout symptoms and growth-seeking was inversely related to all burnout symptoms. The relationship between growth-seeking and physical and emotional exhaustion was not statistically significant, however.

Assessment of a model specifying the relationship between dimensions of perfectionism, validation and growth-seeking and athlete burnout

AMOS statistical software package (Version 6.0.1; Arbuckle, 2006) utilising maximum likelihood estimation was employed to test the hypothesised model. Dimensions of perfectionism, validation-seeking and growth-seeking were represented as measured variables, while burnout was represented as a latent variable reflecting scores on the three dimensions of the ABQ to enable a measure of the burnout syndrome[2]. One limitation of this mixed model approach is that measurement error in the observed predictor variables is not modelled. However, this approach was considered appropriate due to the small sample size (< 150) and the requirement for a minimum participant to estimated parameter ratio (5:1; Bentler, 1995).

The fit of the hypothesised model was assessed using a combination of absolute and incremental fit indices; chi-square statistic (χ^2), χ^2/ *df* ratio, standardised root mean

squared residual (SRMR), comparative fit index (CFI) and the incremental fit index (IFI). These indices were selected based on their performance with small samples (Bentler, 1995; Hoyle & Panter, 1995). Acceptable fit was considered to be indicated by χ^2/df ratio < 3.00, SRMR < .10, CFI > .90, and IFI >.90 (Marsh, Hau, & Wen, 2004; Schermelleh-Engel et al., 2003). Fit indices for each estimated model are displayed in Table 2.

An assessment of the proposed mediation and post-hoc probing of significant meditational effects were conducted using a procedure described by Holmbeck (1997, 2002). In this approach, establishing mediation involves three steps. The first is an assessment of the direct relationship between the predictor variable and the outcome variable in the absence of the mediating variable. The second is an examination of the path coefficients included in the mediation pathway. The third is a comparison of the direct effect of the predictor variable in the presence and absence of the mediator. In order for full mediation to be supported: (i) the direct effect of the predictor variable in the absence of the mediator must be statistically significant, (ii) the path coefficients between the predictor variable and mediator, and the mediator and outcome variable after controlling for the effect of the predictor, must be statistically significant, and (iii) following the introduction of the mediator, the direct effect of the predictor on the outcome variable must be reduced to zero and there must be no significant improvement in fit from the introduction of the additional direct pathway (p <.05). If the direct effect remains statistically significant, and the model provides statistically significant improved fit, partial mediation rather than full mediation is supported.

First a model was estimated to assess the direct effect of the two dimensions of perfectionism on athlete burnout in the absence of validation and growth-seeking (M1). This model provided acceptable fit and the path coefficients from dimensions of perfectionism to athlete burnout were statistically significant (SOP β = -.27 & SPP β =

.47, p <.05). Next, a partial mediation model that included both direct and indirect pathways from dimensions of perfectionism to athlete burnout via validation and growth-seeking was estimated (M2; see figure 1). This model allowed for an inspection of path coefficients from the dimensions of perfectionism to the mediating variables, and from the mediating variables to athlete burnout after controlling for the effect of dimensions of perfectionism. The model provided an acceptable fit; however, the path coefficient from self-oriented perfectionism to validation-seeking, and the path coefficient from growth-seeking to burnout, was not statistically significant. Consequently, only the mediation pathway from socially prescribed perfectionism to athlete burnout via validation-seeking was tenable. Finally, the partial mediation model was compared to a more parsimonious model depicting full mediation (M3). In the full mediation model, the direct pathways from dimensions of perfectionism to athlete burnout were constrained to zero. A chi-square difference test indicated that the partial mediation model provided a significantly better fit than the full mediation model. This finding indicates that the direct pathways from dimensions of perfectionism to athlete burnout contribute significantly to the model and supports partial mediation, rather than full mediation. The indirect effect of socially prescribed perfectionism on athlete burnout via validation-seeking was statistically significant (standardised indirect effect = .13, unstandardised indirect effect = .06 SE = .03, p <.05, 95% CI 0.01 to 0.11). The partial mediation model was subsequently accepted as the more tenable model and is displayed in Figure 2.

The final model indicated that the relationship between socially prescribed perfectionism and athlete burnout was partially mediated by validation-seeking. The dimensions of perfectionism explained 27% of variance in validation-seeking and 16% of variance in growth-seeking. Validation-seeking and the two dimensions of perfectionism accounted for 31% of behavioural variance in athlete burnout. Calculation of standardised

total direct and indirect effects indicated that SPP (.48) made the largest contribution to the prediction of burnout followed by both validation-seeking (.27) and self-oriented perfectionism (-.27) and, finally, growth-seeking (-.15).

Potential confounding and suppression effects

Comparison of the effect of self-oriented perfectionism on validation-seeking and athlete burnout in the absence and presence of socially prescribed perfectionism indicated that these relationships may be either confounded or suppressed by socially prescribed perfectionism (Cohen, Cohen, Aiken, & West, 2003; MacKinnon, Krull, & Lockwood, 2000). Suppression is evident when the relationship between a predictor and an outcome variable becomes larger or changes direction in the presence of another predictor variable (Cohen et al., 2003). In the current study, after controlling for socially prescribed perfectionism, the positive bivariate relationship between self-oriented perfectionism and validation-seeking was reduced to non-significance. The opposite effect was observed in the relationship between self-oriented perfectionism and athlete burnout. Specifically, when socially prescribed perfectionism was controlled, the predictive ability of self-oriented perfectionism was enhanced. The implications of these effects are considered in the discussion.

Discussion

Previous research suggests that maladaptive dimensions of perfectionism may predispose athletes to the development of burnout because perfectionism encourages validation-seeking (Hill et al., 2008; Lemyre et al., 2008). The present investigation tested a model in which the relationships between self-oriented and socially prescribed dimensions of perfectionism and athlete burnout are mediated by validation and growth-seeking (Dykman, 1998). Specifically, it was proposed that validation and growth-seeking would partially mediate the relationship between both self-oriented and socially

prescribed perfectionism and athlete burnout. Based on previous research, it was hypothesised that socially prescribed perfectionism would have a direct positive relationship, and self-oriented perfectionism would have a direct inverse relationship, with athlete burnout. It was also hypothesised that with higher levels of socially prescribed perfectionism, increased validation-seeking and decreased growth-seeking would be reported, leading to an elevation in burnout symptoms. In contrast, with higher levels of self-oriented perfectionism, increases in both validation-seeking and growth-seeking were hypothesised, leading to two contrasting pathways indicative of the potential for both higher and lower levels of athlete burnout.

The findings provided partial support for the hypothesised model. Direct pathways from dimensions of perfectionism to athlete burnout were as predicted, and the relationship between socially prescribed perfectionism and burnout was partially mediated by validation-seeking. However, there was no indirect relationship between self-oriented perfectionism and athlete burnout. The variables in the structural model explained 27% variance in validation-seeking, 16% variance in growth-seeking and 31% variance in athlete burnout.

Socially prescribed perfectionism and burnout: The mediating effect of validation-seeking

The finding that socially prescribed perfectionism had both a positive direct and indirect association with elevated symptoms of athlete burnout is consistent with previous research and the theoretical framework presented. In particular, the findings provide further support for suggestions that it is a belief that one must achieve socially imposed perfectionistic standards in order to gain approval from self and others that will lead to elevated burnout symptoms in athletes (Gould et al., 1996; Lemyre et al., 2008). Extending previous research, the current findings indicate that this relationship may, in

part, be due to a strong desire for self-validation. Clearly, the attraction of sporting achievement as a vehicle for self-validation may explain why some athletes are unable to extricate themselves from athletic environments when they begin to experience debilitating cognition and affect associated with burnout.

Self-oriented perfectionism and burnout

The findings from the test of the structural model confirmed an inverse relationship between self-oriented perfectionism and athlete burnout which replicates previous research (e.g., Appleton et al., in press; Hill et al. 2008). However, the hypothesis that self-oriented perfectionism would be indirectly related to athlete burnout via a positive association with both validation-seeking and growth-seeking was not supported. This finding was because in the final model growth-seeking was unrelated to athlete burnout and self-oriented perfectionism was unrelated to validation-seeking. There was, however, some support for the hypothesised relationships at a bivariate level. Specifically, growth-seeking was negatively correlated with a reduced sense of athletic accomplishment and sports devaluation, and self-oriented perfectionism was positively associated with validation-seeking.

The inverse association between growth-seeking and some symptoms of burnout may, therefore, still explain why self-oriented perfectionism is inversely associated with burnout. Specifically, despite the potential for self-oriented perfectionism to contribute to undesirable psychological consequences (see Flett & Hewitt, 2005, 2006), growth-seeking may contribute to positive achievement experiences, foster intrinsic motivation, and enhance the development of perceived competence. While the association between self-oriented perfectionism and growth-seeking is not consistent with Hewitt and Flett's (1991) assertion that this dimension of perfectionism is fundamentally maladaptive, it supports research in other achievement contexts that has found that self-oriented

perfectionism contributes to positive motivational outcomes in non-clinical samples (e.g., Bieling, Israeli, Smith & Anthony, 2003; Mills & Blankstein, 2000). Although there is currently insufficient evidence to draw any firm conclusions regarding the consequences of self-oriented perfectionism for athletes, the present findings provide some initial evidence that growth-seeking may be a source of a number of positive consequences that may include resilience against a reduced sense of athletic accomplishment and sport devaluation.

The finding that self-oriented perfectionism was unrelated to validation-seeking in the final structural model despite being positively related to validation-seeking at a bivariate level was also unexpected. One reason why there was no significant association between self-oriented perfectionism and validation-seeking in the structural model may be due to the confounding or suppressor effects of socially prescribed perfectionism. A comparison of the relationship between self-oriented perfectionism and validation-seeking before and after controlling for socially prescribed perfectionism suggests that the relationship differs depending on whether socially prescribed perfectionism is included in the model. In the current study, this suppressor effect may also extend to burnout because controlling for socially prescribed perfectionism also lead to an increase in the predictive ability of self-oriented perfectionism with regards to burnout symptoms.

Similar patterns of suppression have been noted in other research that has examined the mediating influence of third-order variables on the relationship between dimensions of perfectionism and distress (e.g., Aldea & Rice, 2006; Flett et al. 2003; Scott 2007; Wu & Wei, 2008). Commenting on this issue, Aldea and Rice (2006) have noted that when examining the effects of correlated dimensions of perfectionism simultaneously, each may act to suppress the other in a manner that provides more purified associations with other variables. As self-oriented and socially prescribed

perfectionism are typically positively correlated, their relationship may render it difficult to draw firm conclusions about their consequences when both are included in the same structural model. The current findings indicate that after controlling for socially prescribed perfectionism, self-oriented perfectionism may appear more adaptive. This possibility suggests that shared variance between the two dimensions of perfectionism may be a fundamental source of the psychological difficulties associated with self-oriented perfectionism (see Van Yperen, 2006). The issue of suppression therefore represents an important consideration for future research examining these dimensions of perfectionism.

Applied implications

The finding that socially prescribed perfectionism and validation-seeking may underpin the development of burnout symptoms for athletes has a number of applied implications. Those who have discussed the distinction between perfectionistic striving and conscientious achievement striving suggest that there is a qualitative difference between perfectionistic goals and the pursuit of exceptionally high standards (e.g., Greenspon, 2000; Hall, 2006; Lundh, 2004). Most notably, perfectionistic goals are suggested to include a conditional sense of self-acceptance. The combination of conditional self-acceptance and external standards in the form of socially prescribed perfectionism appears especially debilitating. High standards are obviously an important part of skill development; however, when these standards are perceived to be necessary in order to attain approval of significant others they are likely to be have a negative impact on athlete development.

Thus, athletes should be encouraged to consider achievement in self-referenced terms and deemphasise the association between attainment and a sense of acceptance. The promotion of mastery involvement is one possible way of promoting adaptive

patterns of engagement (Flett & Hewitt, 2005; Hall 2006). Mastery involvement may have the potential to shift focus away from external standards and reduce the concern over mistakes and self-criticism that are purported to underpin a number of the negative consequences associated with perfectionism. This possibility requires empirical examination. Flett and Hewitt (2005) have also argued that other factors such as enhanced self-efficacy and effective coping strategies may protect athletes against the perils of perfectionism. It may be that utilising problem-focused coping, and eschewing avoidant coping, may provide direct protection against the onset of burnout by reducing the stress associated with validation-seeking (Flett & Hewitt, 2006), as well as providing indirect protection by increasing efficacy through goal attainment (Gaudreau & Antel, 2008; Gaudreau & Blondin, 2002).

Limitations and other future directions

The findings from the current investigation must be considered in context of the study's limitations. Dimensions of perfectionism, validation-seeking and growth-seeking were modelled without measurement error. This approach can lead to an underestimate of indirect effects due to attenuated relations between the meditating variable and the predictor and outcome variables (Shrout & Bolger, 2002; Cheung & Lau, 2008). The absence of mediation via growth-seeking may be a result of this attenuation. A relatively small sample size was also used in the current study. The non-significant pathways in the model may have been statistically significant in a larger sample and supported the mediating role of growth-seeking. Future studies can address this issue by examining whether the model structure can be replicated across larger samples.

In terms of the psychological processes outlined, the concurrent measurement of the variables within the model precludes inference of causality. While the mechanisms implied are supported by previous research (e.g., Flett et al., 2003), without longitudinal

work it is not possible to begin to address this issue. Longitudinal examination of these relationships would also allow for a meaningful comparison of alternative models that reflect other potential relations between perfectionism and validation-seeking. For example, it remains a possibility that the pursuit of perfectionistic standards arises as a consequence of validation-seeking, rather than vice-versa. Finally, while the validity of the instrument used to assess validation and growth-seeking has been established outside of a sport context, further examination of its psychometric properties (e.g., factor structure) using athlete samples is required.

Conclusions

The findings from the current study support those observed elsewhere and indicate that socially prescribed perfectionism may be a critical antecedent of burnout in athletes (Appleton et al., 1996; Hill et al., 2008). The findings extend research in this area by indicating that the association can, in part, be explained by validation-seeking through athletic achievement. It is still unclear, however, whether self-oriented perfectionism will lead to athlete burnout or provide resilience against its development. To date, no study has demonstrated a direct positive relationship between self-oriented perfectionism and symptoms of burnout. Moreover, a positive association with growth-seeking in the current study supports the view that self-oriented perfectionism may have some desirable motivational consequences. There is, however, also some evidence from this study and research by Hill et al. (2008) that suggests self-oriented perfectionism may not be wholly adaptive for athletes (see also Flett & Hewitt, 2006). Finally, the current findings suggest that when examining the possible association between self-oriented perfectionism and maladaptive patterns of cognition, affect and behaviour, psychological maladjustment may be less apparent when socially prescribed perfectionism is controlled.

[1] Based on the recommendations of Tabachnick and Fidell (2007), the analysis was repeated using only cases with complete data. Estimation of the final partial mediation model using this sample was similar to that observed with the full imputed data set (χ^2 (4) = 21.69, χ^2/df = 2.41, CFI = .92, IFI = .93).

[2] Standardised residual covariances were inspected for the burnout latent factor. Apart from one residual (= 2.04), all residuals were below 2.00. Average absolute residual was .44 (*SD* = .57, median = .17, range 0.00-2.04).

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Figure Caption

Figure 1 *Proposed structural model: The mediating influence of validation-seeking and growth-seeking on the relationship between perfectionism and athlete burnout*

Figure Caption

Figure 2 *Structural model: The mediating influence of validation and growth-seeking on the relationship between perfectionism and athlete burnout*

Table 1 *Descriptive statistics, bivariate correlations, and internal reliability coefficients for dimensions of perfectionism, validation-seeking, growth-seeking and symptoms of athlete burnout*

Variable	1	2	3	4	5	6	*M*	*SD*	α
1. Self-oriented perfectionism							4.70	0.86	.86
2. Socially prescribed perfectionism	.26**						3.62	0.71	.78
3. Validation-seeking	.21*	.52**					3.73	1.23	.95
4. Growth-seeking	.31**	-.15	-.19*				4.89	0.80	.91
5. Reduced athletic accomplishment	-.09	.34**	.31**	-.27**			2.56	0.68	.73
6. Physical and emotional exhaustion	.04	.26**	.31**	-.12	.14		2.57	0.86	.88
7. Devaluation	-.14	.22**	.23**	-.19*	.53**	.32**	2.23	0.84	.78

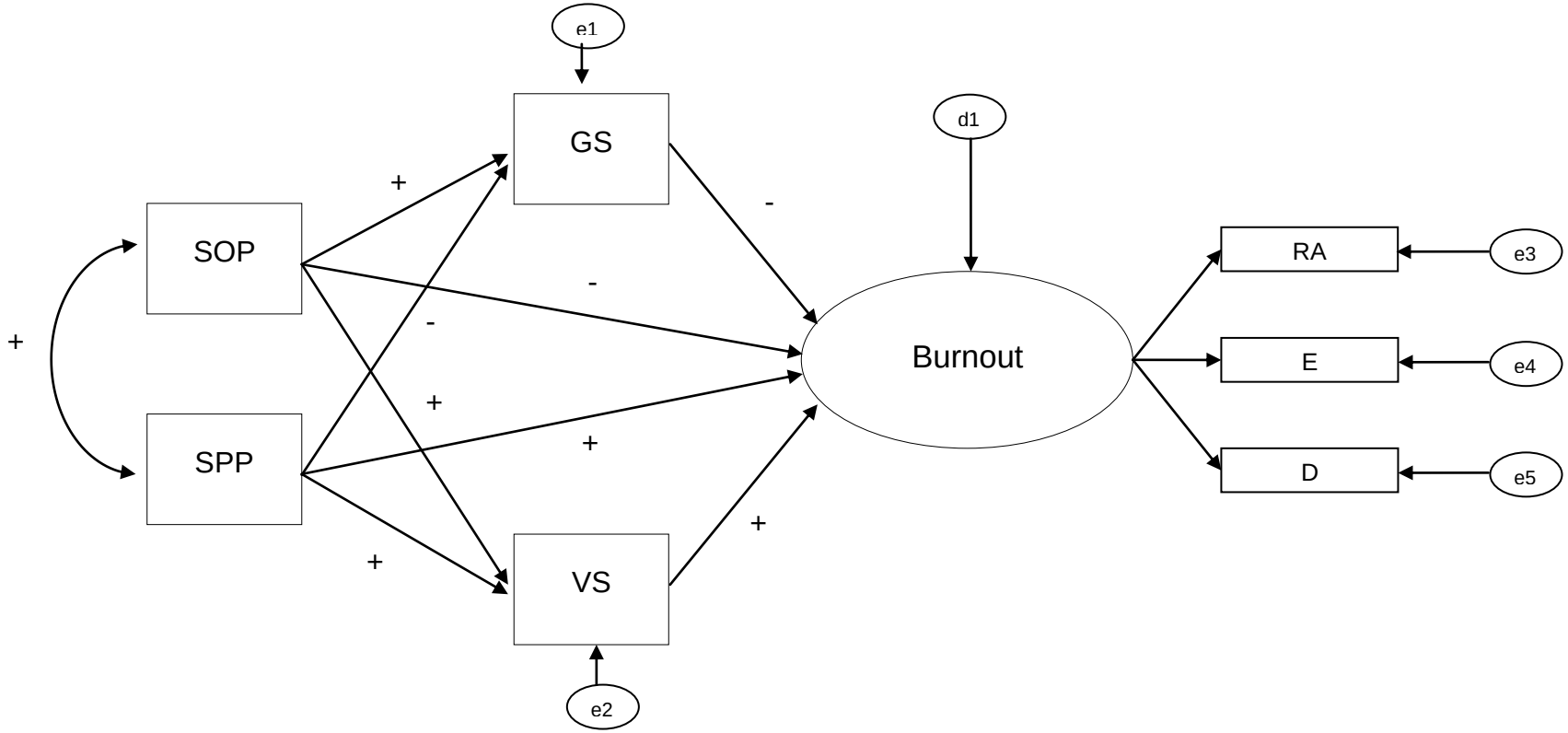
* $p < .05$ ** $p < .01$

Table 2 *Assessment of fit of measurement and structural models*

	χ^2	df	χ^2/df	CFI	IFI	SRMR	$\Delta\chi^2_{(df)}$
Test of mediation							
M1: Absence of mediators	12.57	4	3.14	.91	.92	.06	
M2: Partial mediation	22.44	9	2.49	.92	.93	.06	
M3: Full mediation	33.39	11	3.03	.87	.88	.08	M2 vs. M3 $=_{(2)}$ 10.95**

Note. M1 = In this model both dimensions of perfectionism have a direct pathway to athlete burnout. No mediators are included in the model; M2 = In this model both direct and indirect pathways from dimensions of perfectionism to athlete burnout are included (see figure 1); M3 = In this model dimensions of perfectionism have only indirect pathways to athlete burnout via validation and growth-seeking.

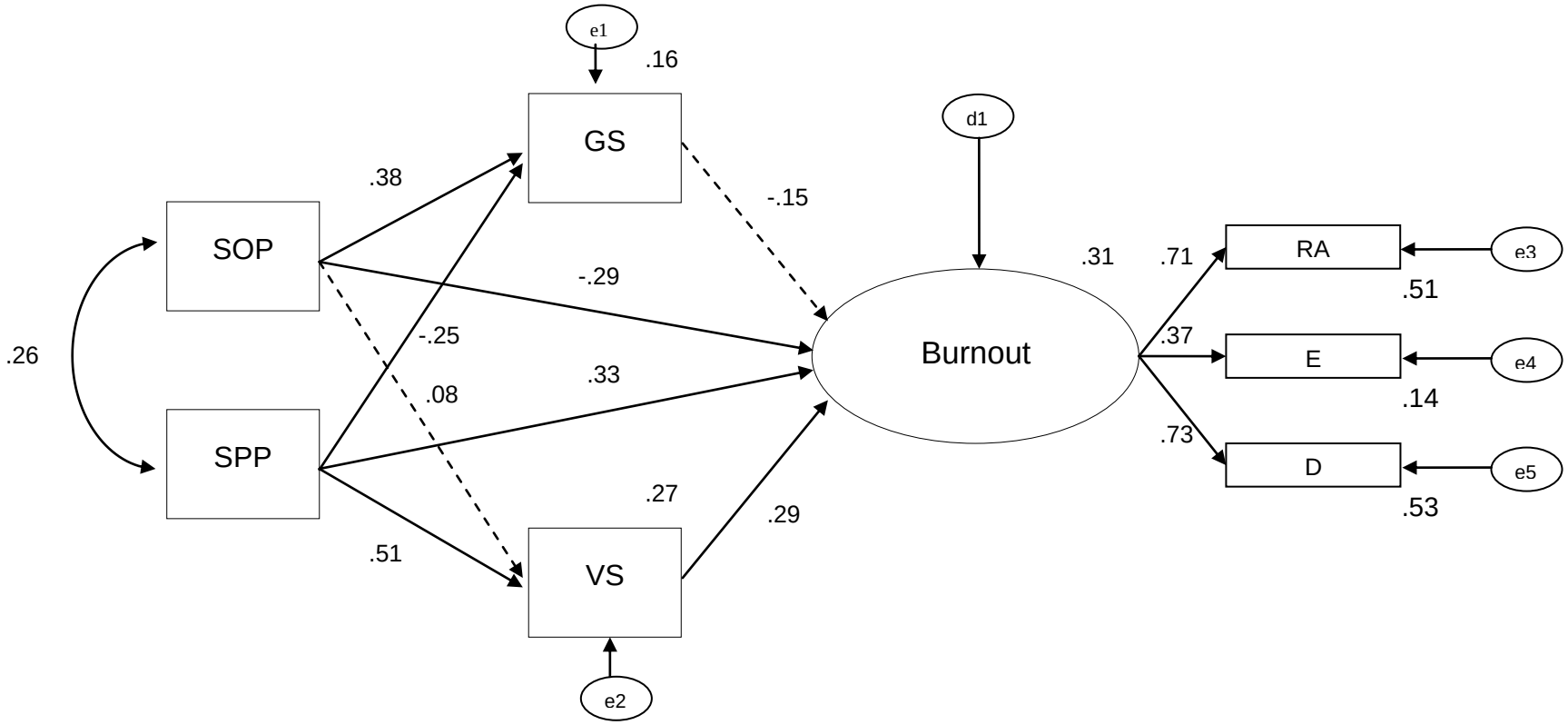
* $p < .05$ ** $p < .01$



Note: SOP = Self-oriented perfectionism, SPP = Socially prescribed perfectionism, VS = Validation-seeking, GS = Growth-seeking, RA = Reduced accomplishment, E = Emotional and physical exhaustion, and D = Sport devaluation. The direction of the hypothesised relationship is indicated by + or -.

1
2

1



Note: SOP = Self-oriented perfectionism, SPP = Socially prescribed perfectionism, VS = Validation-seeking, GS = Growth-seeking, RA = Reduced accomplishment, E = Emotional and physical Exhaustion, and D = Sport devaluation. Pathways that are not statistically significant are displayed using a dashed line (p >.05). Variance accounted for in each endogenous variable is displayed.

2