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

9  
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## 1 Abstract

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

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

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

14 A number of theoretical models have identified potential antecedents as well as  
15 key psychological mechanisms that may explain the development of these symptoms (see  
16 Gould, 1996, for a review). Research based on a cognitive-affective model (Smith, 1986)  
17 has supported the possibility that the onset of athlete burnout involves prolonged  
18 exposure to chronic levels of psychosocial stress (e.g., Gould Tuffey, Udry & Loehr,  
19 1996; Raedeke & Smith, 2004). Dissatisfied with the notion that burnout is solely the  
20 result of a stress response, however, sport psychologists have also sought to identify  
21 additional psychological processes that may explain the maintenance of participation in  
22 the face of recurrent aversive experiences. This research suggests that psychological  
23 over-investment may provide a further explanation of why the experience of stress leads  
24 to the development of burnout in only a small number of athletes (see Coakley, 1992;  
25 Raedeke, 1997; Schmidt & Stein, 1991).

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

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

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

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

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

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

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

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

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



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

## 6 Method

### 7 *Participants*

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

### 21 *Measures*

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

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

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

1 the belief that significant others have exceedingly high standards and that acceptance is  
2 based on the attainment of those standards (e.g., “The people around me expect me to  
3 succeed at everything I do.” “Others will like me even if I don’t excel at  
4 everything.”(reversed scored)). Evidence to support the validity and reliability of  
5 measurement associated with the scale has been provided by Hewitt and Flett (1991,  
6 2004). This evidence includes good internal consistency ( $\alpha = \text{SOP } .89$  and  $\alpha = \text{SPP } .86$ )  
7 and test-retest reliability for these scales ( $r = \text{SOP } .88$  and  $r = \text{SPP } .75$ ) in student and  
8 general samples (Hewitt & Flett, 1991). This instrument is currently the only available  
9 measure of self-oriented and socially prescribed perfectionism with extensive evidence  
10 for its reliability and validity (Hewitt & Flett, 1991, 2004).

11 *Validation-seeking and growth-seeking:* Validation-seeking (VS) and Growth-  
12 seeking (GS) were assessed using Dykman’s (1998) Goal Orientation Inventory (GOI).  
13 The stem of the instrument was adapted to focus the participants on their participation in  
14 sport, rather than on how they think and act in general. The validation-seeking and  
15 growth-seeking subscales of the GOI contain 18-items each and are measured on a seven-  
16 point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The validation subscale  
17 reflects a strong motivational need to prove self-worth, competence or likeability (e.g., “I  
18 feel like I’m constantly trying to prove that I’m as competent as the people around me.”).  
19 In contrast, response to the growth-seeking subscale reflects a strong motivational need to  
20 improve and realise ones’ potential (e.g., “My natural tendency is to view problem  
21 situations as providing opportunities for growth and self-improvement.”). Dykman  
22 (1998) has provided support for the validity and reliability of the measurement associated  
23 with the scale in student samples. This evidence includes internal consistency ( $\alpha = \text{VS } .97$   
24 and  $\alpha = \text{GS } .96$ ) and test-retest reliability ( $r = \text{VS } .76$  and  $r = \text{GS } .78$ ; Dykman, 1998).  
25 Prior to the current study, this instrument has not been used in an athlete sample.

## 1 Results

2 *Preliminary analysis*

3 Prior to the main analyses, a missing value analysis was conducted on the data.  
4 Due to large amounts of missing data from individual respondents (> 5%), nine  
5 participants were removed from the sample. The missing value analysis indicated that for  
6 the remaining sample the percentage of missing data due to item non-response was  
7 extremely small ( $M = 0.39$ ,  $SD = 0.52$ , range = 0 to 2.80%). There were 112 complete  
8 cases and 29 cases with incomplete data. For those with incomplete data, the average  
9 percentage of missing values due to item non-response was 1.90% ( $SD = 1.04$ , range =  
10 1.20 to 4.99%). This percentage of missing data is the equivalent of less than 2 items ( $M$   
11 = 1.55,  $SD = 0.83$ , range 1 to 4). An inspection of the pattern of missing data suggested a  
12 non-systematic mechanism for the missing data. Specifically, there was a high ratio of  
13 unique patterns of missing data to the number of participants with missing data = .97, and  
14 only one common pattern shared by two participants (same item not complete).  
15 Consequently, each missing item was replaced using the mean of the each case's  
16 available non-missing items from the relevant subscale. This method of imputation is  
17 considered to be an appropriate strategy when the amount of missing data is low and  
18 items are highly correlated (Graham, Cumsille & Elek-Fisk, 2000)<sup>1</sup>.

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

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

3 The homogeneity of the covariance matrix of the variables included in the model  
4 across competitive level (club level athlete only/ GB representative or development squad  
5 representative) was assessed using Box's  $M$  test. These analyses indicated that the  
6 covariance matrix was homogenous across competitive level, Box's  $M$  (28.00, 59769.34)  
7 = 1.35 ( $p > .05$ ). The data were, therefore, analysed in an ungrouped fashion. Finally,  
8 internal reliability analysis (Cronbach's alpha) indicated that all instruments  
9 demonstrated internal consistency above that typically considered acceptable ( $\alpha = .70$ ).  
10 The values are displayed in Table 1.

#### 11 *Descriptive Analyses*

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

#### 23 *Bivariate Correlations between Burnout, Perfectionism, and Validation and Growth-* 24 *Seeking*

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

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

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

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

1 squared residual (SRMR), comparative fit index (CFI) and the incremental fit index (IFI).  
2 These indices were selected based on their performance with small samples (Bentler,  
3 1995; Hoyle & Panter, 1995). Acceptable fit was considered to be indicated by  $\chi^2/df$  ratio  
4  $< 3.00$ ,  $SRMR < .10$ ,  $CFI > .90$ , and  $IFI > .90$  (Marsh, Hau, & Wen, 2004; Schermelleh-  
5 Engel et al., 2003). Fit indices for each estimated model are displayed in Table 2.

6 An assessment of the proposed mediation and post-hoc probing of significant  
7 mediational effects were conducted using a procedure described by Holmbeck (1997,  
8 2002). In this approach, establishing mediation involves three steps. The first is an  
9 assessment of the direct relationship between the predictor variable and the outcome  
10 variable in the absence of the mediating variable. The second is an examination of the  
11 path coefficients included in the mediation pathway. The third is a comparison of the  
12 direct effect of the predictor variable in the presence and absence of the mediator. In  
13 order for full mediation to be supported: (i) the direct effect of the predictor variable in  
14 the absence of the mediator must be statistically significant, (ii) the path coefficients  
15 between the predictor variable and mediator, and the mediator and outcome variable after  
16 controlling for the effect of the predictor, must be statistically significant, and (iii)  
17 following the introduction of the mediator, the direct effect of the predictor on the  
18 outcome variable must be reduced to zero and there must be no significant improvement  
19 in fit from the introduction of the additional direct pathway ( $p < .05$ ). If the direct effect  
20 remains statistically significant, and the model provides statistically significant improved  
21 fit, partial mediation rather than full mediation is supported.

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

1 .47,  $p < .05$ ). Next, a partial mediation model that included both direct and indirect  
2 pathways from dimensions of perfectionism to athlete burnout via validation and growth-  
3 seeking was estimated (M2; see figure 1). This model allowed for an inspection of path  
4 coefficients from the dimensions of perfectionism to the mediating variables, and from  
5 the mediating variables to athlete burnout after controlling for the effect of dimensions of  
6 perfectionism. The model provided an acceptable fit; however, the path coefficient from  
7 self-oriented perfectionism to validation-seeking, and the path coefficient from growth-  
8 seeking to burnout, was not statistically significant. Consequently, only the mediation  
9 pathway from socially prescribed perfectionism to athlete burnout via validation-seeking  
10 was tenable. Finally, the partial mediation model was compared to a more parsimonious  
11 model depicting full mediation (M3). In the full mediation model, the direct pathways  
12 from dimensions of perfectionism to athlete burnout were constrained to zero. A chi-  
13 square difference test indicated that the partial mediation model provided a significantly  
14 better fit than the full mediation model. This finding indicates that the direct pathways  
15 from dimensions of perfectionism to athlete burnout contribute significantly to the model  
16 and supports partial mediation, rather than full mediation. The indirect effect of socially  
17 prescribed perfectionism on athlete burnout via validation-seeking was statistically  
18 significant (standardised indirect effect = .13, unstandardised indirect effect = .06 SE =  
19 .03,  $p < .05$ , 95% CI 0.01 to 0.11). The partial mediation model was subsequently  
20 accepted as the more tenable model and is displayed in Figure 2.

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



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

#### 4 *Potential confounding and suppression effects*

5       Comparison of the effect of self-oriented perfectionism on validation-seeking and  
6 athlete burnout in the absence and presence of socially prescribed perfectionism indicated  
7 that these relationships may be either confounded or suppressed by socially prescribed  
8 perfectionism (Cohen, Cohen, Aiken, & West, 2003; MacKinnon, Krull, & Lockwood,  
9 2000). Suppression is evident when the relationship between a predictor and an outcome  
10 variable becomes larger or changes direction in the presence of another predictor variable  
11 (Cohen et al., 2003). In the current study, after controlling for socially prescribed  
12 perfectionism, the positive bivariate relationship between self-oriented perfectionism and  
13 validation-seeking was reduced to non-significance. The opposite effect was observed in  
14 the relationship between self-oriented perfectionism and athlete burnout. Specifically,  
15 when socially prescribed perfectionism was controlled, the predictive ability of self-  
16 oriented perfectionism was enhanced. The implications of these effects are considered in  
17 the discussion.

#### 18 Discussion

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

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

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

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

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

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

#### 5 *Self-oriented perfectionism and burnout*

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

17         The inverse association between growth-seeking and some symptoms of burnout  
18 may, therefore, still explain why self-oriented perfectionism is inversely associated with  
19 burnout. Specifically, despite the potential for self-oriented perfectionism to contribute to  
20 undesirable psychological consequences (see Flett & Hewitt, 2005, 2006), growth-  
21 seeking may contribute to positive achievement experiences, foster intrinsic motivation,  
22 and enhance the development of perceived competence. While the association between  
23 self-oriented perfectionism and growth-seeking is not consistent with Hewitt and Flett's  
24 (1991) assertion that this dimension of perfectionism is fundamentally maladaptive, it  
25 supports research in other achievement contexts that has found that self-oriented

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

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

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

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

#### 10 *Applied implications*

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

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

1 patterns of engagement (Flett & Hewitt, 2005; Hall 2006). Mastery involvement may  
2 have the potential to shift focus away from external standards and reduce the concern  
3 over mistakes and self-criticism that are purported to underpin a number of the negative  
4 consequences associated with perfectionism. This possibility requires empirical  
5 examination. Flett and Hewitt (2005) have also argued that other factors such as  
6 enhanced self-efficacy and effective coping strategies may protect athletes against the  
7 perils of perfectionism. It may be that utilising problem-focused coping, and eschewing  
8 avoidant coping, may provide direct protection against the onset of burnout by reducing  
9 the stress associated with validation-seeking (Flett & Hewitt, 2006), as well as providing  
10 indirect protection by increasing efficacy through goal attainment (Gaudreau & Antel,  
11 2008; Gaudreau & Blondin, 2002).

#### 12 *Limitations and other future directions*

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

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

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

### 9 *Conclusions*

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

25

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

5 <sup>2</sup> Standardised residual covariances were inspected for the burnout latent factor. Apart  
6 from one residual (= 2.04), all residuals were below 2.00. Average absolute residual was  
7 .44 ( $SD = .57$ , median = .17, range 0.00-2.04).

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- 1 Cohen, J., Cohen, P., Aiken, L. S., & West, S. G. (2003). *Applied multiple regression -*  
2 *correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence  
3 Erlbaum.
- 4 Cresswell, S. L., & Eklund, R.C. (2006). The nature of player burnout in rugby: Key  
5 characteristics and attributions. *Journal of Applied Sport Psychology, 18*, 219-239.
- 6 Cresswell, S. L., & Eklund, R., C. (2005). Motivation and burnout among top amateur  
7 rugby players. *Medicine & Science in Sports & Exercise, 37*, 469-477.
- 8 DiBartolo, P. M., Frost, R. O., Chang, P., LaSota, M., & Grills, A. E. (2004). Shedding  
9 light on the relationship between personal standards and psychopathology: The  
10 case for contingent self-worth. *Journal of Rational Emotive and Cognitive*  
11 *Behavior Therapy, 22*, 241-254.
- 12 Dykman, B. M. (1998). Integrating cognitive and motivational factors in depression:  
13 Initial tests of a goal orientation approach. *Journal of Personality and Social*  
14 *Psychology, 74*, 139-158.
- 15 Flett, G. L., Besser, A., Davis, R. A., & Hewitt, P., L. (2003). Dimensions of  
16 perfectionism, unconditional self-acceptance, and depression. *Journal of Rational*  
17 *Emotive and Cognitive Behavior Therapy, 21*, 119-138.
- 18 Flett, G. L., & Hewitt, P., L. (2005). The perils of perfectionism in sports and exercise.  
19 *Current Directions in Psychological Science, 14*, 14-18.
- 20 Flett, G. L., & Hewitt, P. L. (2006). Positive versus negative perfectionism in  
21 psychopathology. *Behaviour Modification, 30*, 472-495.
- 22 Flett, G. L., Besser, A., Davis, R. A., & Hewitt, P. L. (2003). Dimensions of  
23 perfectionism, unconditional self-acceptance, and depression. *Journal of Rational-*  
24 *Emotive and Cognitive-Behavior Therapy, 21*, 119-138.

- 1 Frost, R. O., & Henderson, K. J. (1991). Perfectionism and reactions to athletic  
2 competition. *Journal of Sport and Exercise Psychology*, *13*, 323–335.
- 3 Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of  
4 perfectionism. *Cognitive Therapy and Research*, *5*, 449–468.
- 5 Gould, D. (1996). Personal motivation gone awry: Burnout in competitive athletes.  
6 *Quest*, *48*, 275-289.
- 7 Gould, D., Tuffey, S., Udry, E., & Loehr, J. (1996). Burnout in competitive junior tennis  
8 players: I. A quantitative psychological assessment. *The Sport Psychologist*, *10*,  
9 332-340.
- 10 Graham, J.W., Cumsille, P.E. and Elek-Fisk, E. (2003) Methods for handling missing  
11 data. In Schinka, J.A. and Velicer, W.F. (eds.), *Research Methods in Psychology*,  
12 (pp.87-112). New York: Wiley.
- 13 Greenspon, T. S. (2000). "Healthy perfectionism" is an oxymoron! Reflections on the  
14 psychology of perfectionism and the sociology of science. *The Journal of*  
15 *Secondary Gifted Education*, *11*, 197-208.
- 16 Gaudreau, P., & Antl, S. (2008). Broad dimensions of perfectionism: Examining change  
17 in life-satisfaction and the mediating role of motivation and coping. *Journal of Sport*  
18 *and Exercise Psychology*, *30*, 356-382.
- 19 Gaudreau, P., & Blondin, J.-P. (2002). Development of a questionnaire for the  
20 assessment of coping strategies employed by athletes in competitive sport settings.  
21 *Psychology of Sport and Exercise*, *3*, 1-34.
- 22 Hall, H. K. (2006). Perfectionism: A hallmark quality of world class performers, or a  
23 psychological impediment to athletic development? In D. Hackfort & G.  
24 Tenenbaum (Eds.), *Perspectives in Sport and Exercise Psychology; Essential*

- 1        *processes for attaining peak performance* (Vol. 1, pp. 178-211). Oxford, UK:  
2        Meyer & Meyer Publishers.
- 3        Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The  
4        contribution of achievement goals and perfectionism. *Journal of Sport and*  
5        *Exercise Psychology*, 20, 194-217.
- 6        Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts:  
7        Conceptualization, assessment, and association with psychopathology. *Journal of*  
8        *Personality and Social Psychology*, 60, 456-470.
- 9        Hewitt, P. L., & Flett, G. L. (2004). *The Multidimensional Perfectionism Scale:*  
10        *Technical Manual*. Toronto: Multihealth Systems Inc.
- 11       Hill, A. P., Hall, H. K., Appleton, P. R., & Kozub, S. R. (2008). Perfectionism and  
12        burnout in junior elite soccer players: The mediating influence of unconditional  
13        self-acceptance. *Psychology of Sport and Exercise*, 9, 630-644.
- 14       Hollander, M. H. (1965). Perfectionism. *Comprehensive Psychiatry*, 6, 94-103.
- 15       Holmbeck G. N. (1997). Toward terminological, conceptual, and statistical clarity in the  
16        study of mediators and moderators: Examples from the child-clinical and pediatric  
17        psychology literatures. *Journal of Consulting and Clinical Psychology*, 65, 599–  
18        610.
- 19       Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational  
20        effects in studies of pediatric populations. *Journal of Pediatric Psychology*, 27, 87-  
21        96.
- 22       Hoyle, R.H., & Panter, A.T. (1995), "Writing about structural equation models", in  
23        Hoyle, R.H. (Eds), *Structural Equation Modeling: Concepts, Issues, and*  
24        *Applications*. Thousand Oaks, CA: Sage Publications Inc.

- 1 Koivula, N., Hassmen, P., & Fallby (2002). Self-esteem and perfectionism in elite  
2 athletes: Effects on competitive anxiety and confidence. *Personality and Individual*  
3 *Differences, 32*, 865–875.
- 4 Lemyre, P. N., Hall, H. K., & Roberts, G. C., (2008). A social cognitive approach to  
5 burnout in athletes. *Scandinavian Journal of Medicine & Science in Sports, 18*,  
6 221–234.
- 7 Lundh, L. G. (2004). Perfectionism and acceptance. *Journal of Rational Emotive and*  
8 *Cognitive Behavior Therapy, 22*, 255-269.
- 9 MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the  
10 mediation, confounding, and suppression effect. *Prevention Science, 1*, 173-181.
- 11 Marsh, H. W., Hau, K. T., & Wen, Z. L. (2004). In search of golden rules: Comment on  
12 hypothesis testing approaches to setting cutoff values for fit indexes and dangers in  
13 overgeneralising Hu & Bentler (1999) findings. *Structural Equation Modeling, 11*,  
14 320-341.
- 15 Mills, J. S., & Blankstein, K. R. (2000). Perfectionism, intrinsic vs. extrinsic motivation,  
16 and motivated strategies for learning: a multidimensional analysis of university  
17 students. *Personality and Individual Differences, 29*, 1191-1204.
- 18 Miquelon, P., Vallerand, R. J., Grouzet, F. M. E., & Cardinal, G. (2005). Perfectionism,  
19 academic motivation and psychological adjustment: An integrative model.  
20 *Personality and Social Psychology Bulletin, 31*, 913-924.
- 21 Mor, S., Day, H. I., Flett, G. L., & Hewitt, P. L. (1995). Perfectionism, control and  
22 components of performance anxiety in professional artists. *Cognitive Therapy and*  
23 *Research, 19*, 207–225.
- 24 Raedeke, T. D. (1997). Is athlete burnout more than just stress? A sport commitment  
25 perspective. *Journal of Sport & Exercise Psychology, 19*, 396-418.

- 1 Raedeke, T. D., & Smith, A. L. (2001). Development and preliminary validation of an  
2 athlete burnout measure. *Journal of Sport and Exercise Psychology, 23*, 281-306.
- 3 Raedeke, T. D., & Smith, A., L. (2004). Coping resources and athlete burnout: An  
4 examination of stress mediated and moderation hypotheses. *Journal of Sport and  
5 Exercise Psychology, 26*, 525-541.
- 6 Schaufeli, W. B., & Enzmann, D. (1998). The burnout companion to study and practice:  
7 A critical analysis. London: Taylor & Francis.
- 8 Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of  
9 structural equation models: Test of significance and descriptive goodness-of-fit  
10 measures. *Methods of Psychological Research - Online, 8*, 23-74.
- 11 Schmidt, G. W. & Stein, G. L. (1991). Sport commitment: A model integrating  
12 enjoyment, dropout and burnout. *Journal of Sport and Exercise Psychology, 8*,  
13 254-265.
- 14 Scott, J. (2007). The effect of perfectionism and unconditional self-acceptance on  
15 depression. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 25*, 35-65.
- 16 Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental  
17 studies: New procedures and recommendations. *Psychological Methods, 7*, 422-445.
- 18 Smith, R. E. (1986). Toward a cognitive-affective model of athletic burnout. *Journal of  
19 Sport Psychology, 8*, 36-50.
- 20 Spiers-Neumeister, K. & Finch, H. (2006). Perfectionism in high-ability students:  
21 Relational precursors and influences on achievement motivation. *Gifted Child  
22 Quarterly, 50*, 238-251.
- 23 Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches,  
24 evidence and challenges. *Personality and Social Psychology Review, 10*, 295-319.

1 Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston:  
2 Allyn and Bacon.

3 Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and  
4 negative perfectionism. *Personality and Individual Differences*, 18, 663–668.

5 Van Yperen, N., W. (2006). A novel approach to assessing achievement goals in the  
6 context of the 2 x2 framework: Identifying distinct profiles of individuals with  
7 different dominant achievement goals. *Personality and Social Psychology Bulletin*,  
8 32, 1432-1445.

9 Wu, T-F., & Wei, M. (2008). Perfectionism and negative mood: The mediating roles of  
10 validation from others versus self. *Journal of Counseling*, 2, 102-121.

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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*



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Figure Caption

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

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

Variable	1	2	3	4	5	6	<i>M</i>	<i>SD</i>	$\alpha$
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

3 \*  $p < .05$       \*\*  $p < .01$

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

	$\chi^2$	df	$\chi^2/df$	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**

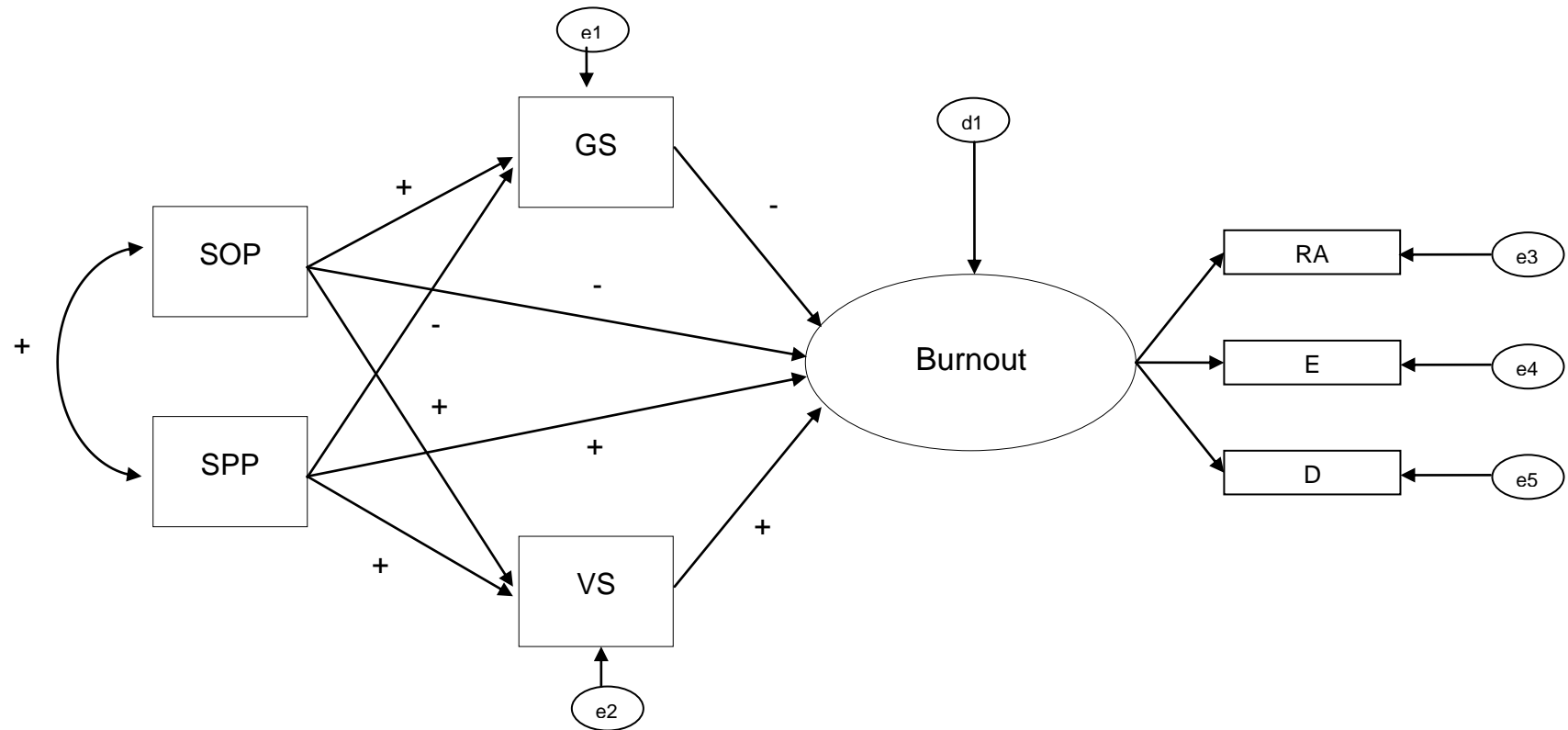
2 *Note.* M1 = In this model both dimensions of perfectionism have a direct pathway to athlete burnout. No mediators are included in the model;  
3 M2 = In this model both direct and indirect pathways from dimensions of perfectionism to athlete burnout are included (see figure 1); M3 = In  
4 this model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

5 \*  $p < .05$       \*\*  $p < .01$

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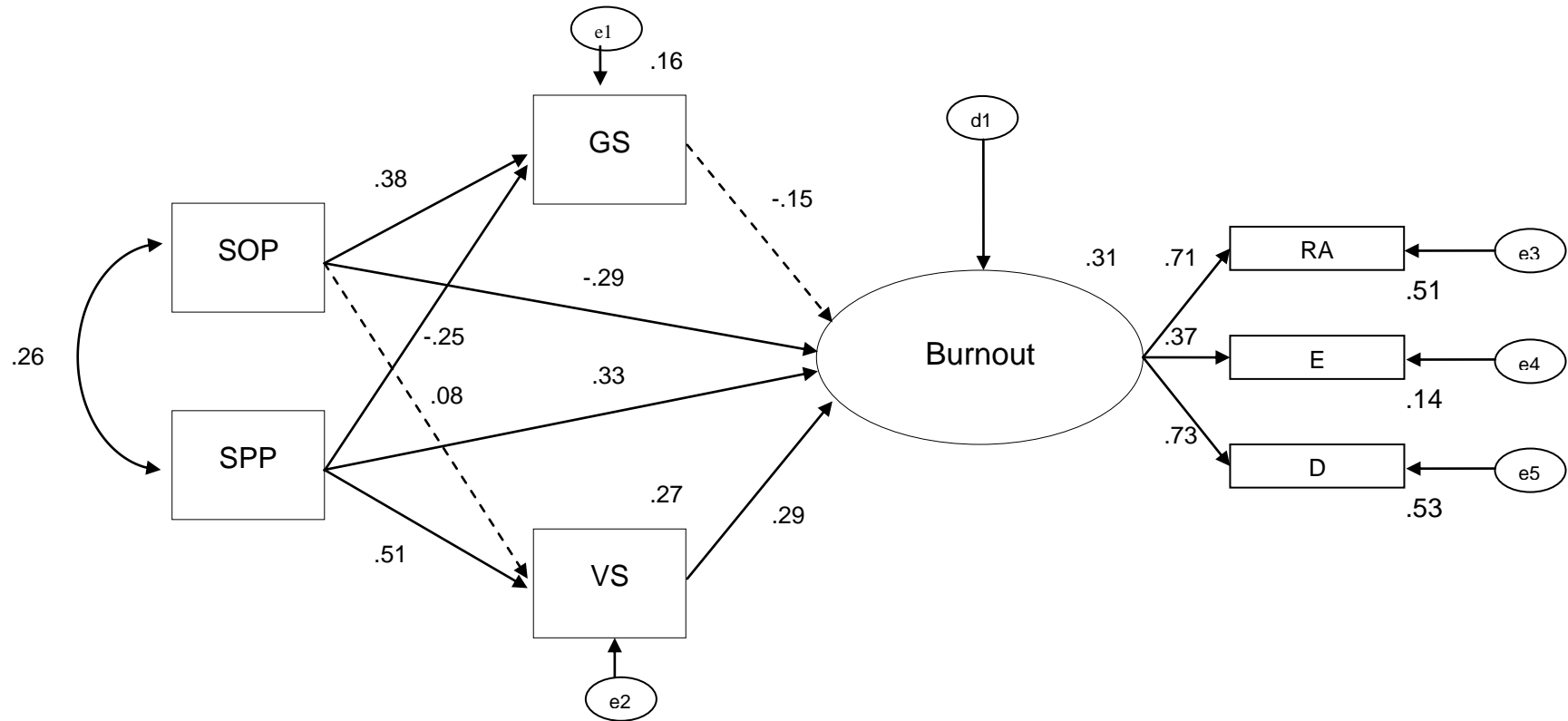
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Note: SOP = Self-oriented perfectionism, SPP = Socially prescribed perfectionism, VS = Validation-seeking, GS = Growth-seeking, RA = Reduced accomplishment, E = Emotional and physical exhaustion, and D = Sport devaluation. The direction of the hypothesised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

1



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