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Profiles of perfectionism, parental climate, and burnout among competitive junior athletes

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Abstract

Recent research suggests that groups of athletes can be identified that differ in terms of perfectionism and perceptions of achievement climate. Moreover, these groups also differ in terms of burnout symptoms. The purpose of the current study was to extend this research by examining whether discernable groups can be identified based on scores of perfectionism and perceptions of parent-initiated climate and, then, whether these groups differ in terms of burnout. Two-hundred and thirty-seven Swedish junior athletes (124 male and 113 female aged 16-19) from a variety of sports completed measures of athlete burnout, multidimensional perfectionism, and parent-initiated motivational climate. Latent profile analysis identified four groups: non-perfectionistic athletes in a task-oriented climate, moderately perfectionistic athletes in a task-oriented climate, highly perfectionistic athletes in a task-oriented climate, and highly perfectionistic athletes in a mixed climate. The latter two groups reported higher levels of burnout in comparison to other groups. The findings suggest that junior athletes high in perfectionism may be at comparatively greater risk to burnout and that this may especially be the case when they perceive their parents to emphasize concerns about failure and winning without trying one’s best.

Keywords: personality, performance, stress, motivation.
Profiles of perfectionism, parental climate, and burnout among competitive junior athletes

Participation in competitive youth sport can be stressful. Aspiring young athletes encounter issues associated with both being an adolescent (e.g., increasing school demands) as well as being an athlete (e.g., increasing training loads and competitive pressure) (Gustafsson, Kenttä, & Hassmén, 2011). As a consequence of this stressful environment, junior athletes are exposed to the risk of burnout. The most widely accepted definition of athlete burnout is that it is a syndrome comprised of three symptoms; emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke & Smith, 2001). The first symptom represents the depletion of the athlete’s emotional and physical resources. The second symptom describes an enduring perception that sport performances and abilities are deficient. The final symptom is a loss of interest, cynical attitude, and devaluation of the formerly loved sport. In combination, these symptoms undermine the performance, motivation, and wellbeing of athletes (Gustafsson, Hassmén, Kenttä, & Johansson, 2008).

There are a number of models that explain the onset of burnout (see Eklund & Cresswell, 2007, for a review). Arguably, the most influential has been Smith’s (1986) cognitive-affective model. In this model burnout is understood as part of the stress-process and, principally, the result of chronic stress. Specifically, mirroring the stress process, burnout is thought to develop when demands are continuously appraised to outweigh personal resources and athletes are unable to employ appropriate coping strategies. In this model whether burnout develops is ultimately governed by a cognitive appraisal process whereby the personal meaning given to being unable to meet demands. This model has been popular in sport and has received empirical support with burnout symptoms consistently and strongly
associated with stress-related factors (e.g., anxiety and coping) (see Goodger, Gorely, Lavallee, & Harwood, 2007, for a review).

**Multidimensional perfectionism**

According to Smith’s (1986) model, personality factors contribute to burnout via their influence on the stress-process. One of the most investigated personality factors in relation to athlete burnout has been perfectionism. Broadly, perfectionism is a personality that entails a combination of exceedingly high standards and a preoccupation with extreme self-critical evaluation (e.g., Frost, Marten, Lahart, & Rosenblate, 1990). Perfectionism is considered to be multidimensional by most researchers. This is exemplified by the approach of Frost and colleagues (1990) who measure perfectionism using a combination of intrapersonal and interpersonal dimensions. The two core dimensions of this model, however, are personal standards (reflecting high personal standards of performance) and the tendency to evaluate oneself based on performance) and concern over mistakes (a preoccupation with minor errors and equating them with failure). Along with other similar dimensions, these two features predict a wide array of outcomes among athletes including burnout (see Gotwals, Stoeber, Dunn, & Stoll, 2012, for review).

Consistent with Smith’s (1986) model, one of the reasons why dimensions of perfectionism are thought to be important when considering the likelihood of athlete burnout is due to their influence on stress-related processes (e.g., Hill et al., 2010). Specifically, concern over mistakes and similar dimensions are thought to predispose individuals to more pronounced and prolonged periods of stress (Hewitt & Flett, 2002). This is because they encompass a self-evaluative process whereby continual achievement is necessary in order to maintain a sense of self-worth (Greenspon, 2000). Athletic achievement therefore carries an irrational sense of importance that evokes higher levels of threat and anxiety via the cognitive appraisal process. As described by Lemyre, Hall, and Roberts (2008), when athletes give
meaning to achievement in this manner, it is simply a matter of time before chronic and
overwhelming levels of anxiety develop, rendering athletes disaffected and burned out. In
accord with this perspective, research has found that it is not the presence of high personal
standards, per se, that contributes to higher burnout but the presence of high concern over
mistakes (for a recent meta-analysis of the perfectionism-burnout relationship, see Hill &
Curran, in press).

While research has helped establish the perfectionism-burnout relationship, to date
research has largely focused on the influence of perfectionism on burnout separate from the
social environment in which perfectionism is exhibited. This reflects a wider absence in this
area which has prompted a number of researchers to note that the influence of the social
environment on the development of burnout has been neglected (e.g., Goodger et al., 2007).

Here we focus on the notion that perfectionistic junior athletes will find themselves in
different social environments initiated by parents and this will contribute to vulnerability to
burnout. We center on parents for a number of reasons. Firstly, they are known to play an
influential role in shaping the experience of junior athletes (Keegan, Spray, Harwood, &
Lavallee, 2010). Secondly, they have also been identified as both a source of pressure or
potential support that may foster or waylay athlete burnout (e.g., Gould, et al., 1996; Raedeke
et al., 2002). Thirdly, perfectionism is thought to be acquired in part in response to parental
behavior with perceptions of parents’ expectations and criticism so may be especially
relevant for adolescents (Flett, Hewitt, Oliver, & Macdonald, 2002).

Achievement goal theory and parent-initiated motivational climate

Achievement goal theory (Nicholls, 1984) offers a means of understanding the
influence of parents on burnout. According to this theory, achievement contexts are
conceptualized through the goal structures and expectations that shape perspectives on
success, referred to as achievement climates. Ames (1992) identified two motivational
climates, a task-involving climate and ego-involving climate. A task-involving climate entails emphasizing and rewarding effort and cooperation, focusing on learning, and self-referenced criteria for success. In contrast, an ego-involving climate entails reinforcement of social comparison and evaluation, within-group competition, and punishment of mistakes. In combination with dispositional tendencies to be task-involved and ego-involved (goal-orientations), the motivational climate determines goal involvement and motivational outcomes. In general, a task-involving climate is associated with adaptive motivation-related responses and an ego-involving climate with maladaptive motivation-related responses. This is evident in sport where the comparative benefits of a task-involving climate have received extensive support (e.g., Harwood, Keegan, Smith, Raine, 2015; Braithwaite, Spray, Warburton, 2011).

Along with coaches and peers, parents are an important source of motivational climate (White, 1996; White, Duda, & Hart, 1992). Parent-initiated motivational climate includes three main elements: (a) learning/enjoyment, that is the extent to which parents emphasize enjoyment, effort, and learning new skills; (b) worry-conducive, which is the extent to which parents emphasize concerns about failure and mistakes; and (c) success-without-effort, which is to what extent parents emphasize performing without trying one’s best. The first element reflects a task-involving climate, whereas the other two reflect an ego-involving climate (White et al, 1992). Although few studies have examined parent-initiated climate in sport, findings so far are similar to wider research with elements of a task-involving parent-initiated climate predicting more adaptive patterns of achievement goals (e.g., Morris & Kavussanu, 2008), sportsmanship (e.g., LaVoi & Babkes Stellino, 2008), and anxiety (e.g., O’Rourke, Smith, Small, & Cumming, 2011), in comparison to elements of an ego-involving parent-initiated climate.
The divergence between the two motivational climates extends to athlete burnout. In describing the relationship between motivational climates and burnout, Lemyre et al. (2008) argued that a task-involving climate provides situational cues that promote a desire for challenge, intrinsic interest, and motivationally enhancing attributions for achievement outcomes, protecting athletes from burnout. In contrast, an ego-involving climate provides situational cues that promote an intense focus on validating self-worth, fosters perceptions of incompetence, and heightens a sense of personal threat and anxiety, rendering athletes vulnerable to burnout. Research has provided some support for these suggestions, with coach- and peer-created task-involving climates typically negatively related to burnout and coach- and peer-created ego-involving climates positively related to burnout (e.g., Lemyre et al., 2008; Smith, Gustafsson, & Hassmén, 2010). Surprisingly, no research to date has examined the influence of parent-initiated climate on burnout; however, findings regarding motivational climate more generally suggest that athletes who perceive the parent-initiated climate to be more ego-involving are likely to also report higher levels of burnout.

Profiles of perfectionism and motivational climate

A small number of studies have examined if different profiles of perfectionism and motivational climate are associated with different patterns of burnout. In this regards two studies are especially relevant. Gotwals (2011) found four groups of perfectionists among varsity student-athletes (‘parent-oriented unhealthy perfectionists’, ‘doubt-oriented unhealthy perfectionists’, ‘healthy perfectionists’, and ‘non-perfectionists’) and that these four groups exhibited differences in levels of burnout symptoms so that the healthy perfectionists group was the most maladaptive. In the only study to seek to also integrate measures of the social environment, Lemyre et al (2008) identified two groups among elite senior and junior athletes who differed in terms of personal standards, concern over mistakes and perceptions of a coach created climate, along with other motivational variables. Notably, the group who
reported higher concern over mistakes and personal standards in combination with higher
levels of an ego-involving coach created climate and lower levels of a task-involving coach
created climate (‘maladaptive motivation’) also reported higher levels of all symptoms of
burnout. Consequently, research suggests that different groups of perfectionists in different
achievement climates can be identified and they differ in terms of athlete burnout.

In seeking to identify different groups, these two studies exemplify a person-centred
approach. A person-oriented approach places emphasis on the individual rather than
variables. As such, the individual is viewed holistically and his/her interwoven characterises
considered simultaneously (Bergman & Andersson, 2010). As highlighted by Gotwals
(2011), in context of examining perfectionism and burnout, this approach is highly
appropriate as it more readily treats perfectionism as a multidimensional construct and
identifies burnout as a phenomenon that inflicts individuals, not variables. However, Gotwals
(2011) and Lemyre et al (2008) also used cluster analysis. This is a useful technique when
seeking to identify naturally occurring groups and examine their differences but, despite its
strengths, it is also an exploratory technique that can provide highly unstable solutions with
few means of differentiating between cluster solutions objectively. For these reasons,
researchers have begun to utilise other techniques such as latent profile analysis. Latent
profile analysis offers an alternative model-based approach to identifying naturally occurring
groups with the notable advantages of providing probability estimates of group membership
and providing fit indices to differentiate between multiple possible cluster solutions (Marsh,
Lüdtke, Trautwein, & Morin, 2009). In light of these advantages, we adopt this approach here
for the first time among research examining the relationship between perfectionism and
burnout.

In summary, the purpose of the current study was to build upon research in this area
that has examined perfectionism, achievement climates, and burnout, as well as research
using person-oriented approaches, by (i) examining whether discernable groups can be identified among junior athletes based on levels of perfectionism and perceptions of parent-initiated climate in sport, and (ii) whether these groups differ in terms of athlete burnout symptoms. Based on the findings of others in this area, it was expected that groups would emerge that varied in both perfectionism and perceptions of parent climate and that higher levels of burnout would be evident among groups that reported higher concerns over mistakes and an ego-involving climate.

Method

Participants and procedure

Participants were 237 Swedish junior athletes (124 males, 113 females, $M_{age} = 16.99$ years, $SD = 0.80$ years, range = 16 to 19 years) recruited from a range of team ($n = 178$; e.g., football, hockey, and rugby) and individual sports ($n = 59$, athletics, tennis, and swimming). The athletes were recruited from a designated sport high school under the surveillance of the Swedish national sport federation. The junior athletes reported that they spent 8.71 ($SD = 5.44$) hours per week training and competing and had participated in their sport for 9.08 years ($SD = 2.71$). Ethical approval was gained from the research ethics committee of the first author’s university prior to conducting the study.

Instruments

Burnout. The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith. 2001) was used to measure burnout. This includes three 5-item subscales that assess three symptoms: reduced sense of athletic accomplishment (RA; e.g., ‘I am not performing up to my ability in my sport’), emotional and physical exhaustion (EE; e.g., ‘I feel overly tired from my sport participation’), and sport devaluation (D; e.g., ‘The effort I spend participating in my sport would be better spent doing other things’). Items are measured on a 5-point Likert scale (1 = almost never to 5 = almost always). Evidence for the validity and reliability of this instrument
has been provided by Raedeke and Smith (2001) via assessment of factorial structure (confirmatory factor analysis) and internal consistency (all αs ≥ .84). The scale has been used in a range of sports (e.g., swimmers and soccer) and has been used with junior athletes (e.g., Hill, 2013). The Swedish version of the ABQ has shown to have acceptable factor structure and internal reliability (e.g., Smith et al., 2010).

**Multidimensional Perfectionism.** Personal standards and concern over mistakes were measured using subscales from the short-version of Frost et al.’s (1990) Multidimensional Perfectionism Scale (Cox, Enns, & Clara, 2002). Specifically, personal standards (5-items, e.g., ‘I set higher goals than most people.’) and concern over mistakes (5-items, e.g., ‘If I fail partly, it is as bad as being a complete failure.’) were used. Responses are measured on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Evidence to support the validity and reliability of the instrument has been provided by Cox et al. (2002) in the form of assessing factor structure (confirmatory factor analysis) and internal consistency (α = .63 to .90). The subscales of the shortened version are highly correlated with the originals (r = .87 to .98) and has the advantage of better factor structure (see Cox et al., 2002). The Swedish version of MPS has been translated and successfully used with athletes (e.g., Koivula, Hassmén, & Fallby, 2002).

**Perceived Motivational Climate.** White and colleagues’ (White et al., 1992; White, 1996, 1998) Parent-Initiated Motivational Climate Questionnaire (PIMCQ-2) was used to assess perceptions of the parent-climate. This includes perceptions that the junior athletes’ mother or father promotes learning and enjoyment climate (LE; 9-items, e.g., ‘Believes enjoyment is very important in developing new skills’), a worry-conducive climate (WC; 5-items, e.g., ‘Makes me worried about failing.’), and a success-without-effort climate (SWE; 4-items, e.g., ‘Says it is important for me to win without trying hard’). This scale includes 36-items (18-items repeated twice and focused on either mother or father) measured on 5-point
Likert scale (1 = strongly disagree to 5 = strongly agree). Evidence to support the reliability and validity of the scale has been provided by White and colleagues (e.g., White et al., 1992; White, 1996, 1998). This includes explorative factor analysis with support for the three dimensional structure and internal consistency (α = .72 to .90). In the current study a Swedish version was created using a ‘translation-back-translation’ procedure (Geisinger, 2003). The original scale was translated into Swedish by a Swedish native speaker and then translated back to English by a bilingual translator. Minor adjustments were made to the items following this procedure. The two parent-climates were standardised and added together to create a measure of parent climate (rather than mother of father climates). This strategy has been used by others (e.g., Morris & Kavussanu, 2008) and was adopted here because we were interested in overall perceptions of parents and perceptions of the climate initiated by mothers and fathers were highly correlated (LE r = .67, WC r = .67, and SWE r = .68).

**Statistical Analysis**

Initial data screening, descriptive statistics and bivariate correlations were calculated with the IBM SPSS Statistics version 22. The latent profile analysis (LPA) was conducted with Mplus version 7.3 (Muthén & Muthén, 1998–2012). The LPA was conducted to uncover homogenous subgroups within the sample based on their scores on the perfectionism and parental climate variables (Marsh et al., 2009; Pastor, Barron, Miller, & Davis, 2007). These subgroups are considered latent because the participants’ class membership is not directly observed but instead inferred from the relationship between the measured variables.

Following Marsh et al. (2009) recommendations, we estimated solutions with varying numbers of classes and selected the solution that made most sense in relation to theory, previous research, interpretability of the classes, and also statistical criteria. We used nested model comparisons and tested whether more complex models (i.e., more classes) had a better fit to the data than more parsimonious models (i.e., fewer classes). In this study we estimated
l-6 classes to identify the appropriate number of classes. A number of statistical criteria were used to assess model fit. The Bootstrap Likelihood Ratio Test (BLRT) was used to compare a k-class model with a k-1 class model. A significant BLRT p value indicates a better model fit for k-class model compared to the k-1 class model (Nylund, Muthén, & Asparouhov, 2007). The Bayesian Information Criterion (BIC) and sample-size adjusted BIC (SSA-BIC) were also used and are relative measures of how well a model fit the data with lower values indicating a better model fit (Raftery, 1995). To examine the precision of the classification of the participants into classes, entropy values were used (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Entropy values range from 0 to 1 where a higher value indicates better precision (Berlin, Williams, & Parra, 2013). To further examine the precision of the latent class categorization, the average latent class probabilities were also inspected. Although no clear cut-offs have been proposed, Berlin et al. (2013) suggested that probabilities of .85 and higher indicate some degree of adequacy. In determining the appropriate number of classes, we considered the numbers of cases within each class as small numbers are considered less feasible (Berlin et al., 2013; Marsh et al. 2009). We used 500 random start values for each model, with the 50 best retained for the final solution. To avoid local maxima the final solution was replicated with 1500 random start values (Geiser, 2013).

A multivariate analysis of variance (MANOVA) was used to examine differences between the classes in terms of perfectionism and climate variables. This was followed by univariate analyses and pairwise Bonferroni corrected comparisons with 95% bias corrected bootstrap estimates of differences between classes. These were necessary so as to compensate for lack of homogeneity of covariance between groups and associated increased risk of type 1 error (Finch, 2005). An overall test and pairwise class comparisons between the latent class categorization and the three burnout symptoms were conducted using a Wald chi-square test (DU3STEP in Mplus). This procedure is referred to as the three-step method and uses...
auxiliary variables (i.e., the three burnout symptoms) as distal outcomes that are compared between the classes (Asparouhov & Muthén, 2014). Bonferroni correction of the significance level (.05/6 = .008) was applied within each of the burnout symptoms to reduce the risk of type 1 errors due to multiple tests.

Results

Preliminary Analysis

Prior to the main analyses, a missing value analysis was conducted on the data. Due to large amounts of missing data (> 5%), 20 participants were removed from the sample. Subsequently, there were then 209 complete cases and 8 cases with incomplete data. For those with incomplete data, the average number of missing values was the equivalent of less than 2 items ($M = 1.13$, $SD = 0.35$, range 1 to 2). An inspection of the pattern of missing data suggested a non-systematic mechanism for the missing data. Specifically, only two common missing data patterns were evident (i.e., the same two items missing) with all other individuals displaying a unique pattern (i.e., missing different items). Consequently, the missing data was considered as missing at random and estimated using the full information maximum likelihood (FIML) function (Enders, 2010). Following this procedure, the data was then screened for univariate outliers (standardised $z$-scores larger than 3.29, $p < .001$, two-tailed) using the protocol described by Tabachnick and Fidell (2007). This led to the removal of 1 of the participants. In the absence of outliers, the data was considered sufficiently univariate normal. Finally, internal reliability analysis (Cronbach’s alpha) indicated that all instruments demonstrated adequate internal consistency ($\alpha = .69$ to .94, see Table 1).

Descriptive statistics

Descriptive statistics are reported in Table 1. Overall, the junior athletes reported moderate-to-high perceptions of a parent-initiated climate that was task-oriented, low levels of a parent-initiated climate that was worry conducive, and moderate-to-low levels of a
parent-initiated climate that emphasised success-without-effort. The athletes reported low
levels of concern over mistakes and moderate levels of personal standards. They also reported
low-to-moderate levels of symptoms of burnout. A parent-initiated task-oriented climate was
negatively related to concern over mistakes. A parent-initiated climate that was worry
conducive was positively associated with concern over mistakes, personal standards, and all
three burnout symptoms, whereas a climate that emphasised success-without-effort was
positively related to concern over mistakes and two of the burnout symptoms (EXH and
DEV). Personal standards and concern over mistakes were positively related to all burnout
symptoms.

**Latent Profile Analysis**

The model fit of the six estimated latent profile solutions are displayed in Table 2. According to the statistical criteria, the model fit improved for each successive class that was added. Although the five-class solution, and to some extent the six-class solution, indicated a slight improvement in model fit, they contained very small classes ($n \approx 11$). Therefore, in order to avoid the possibility of low power and precision, we choose to retain a more parsimonious solution (Berlin et al., 2013). Hence, based on the combination of statistical criteria and interpretability, we retained the four-class solution as our final model.

Using the four-class solution, distinct profiles based on the athletes’ perfectionism and climate scores were generated (Table 3). Athletes in class 1 reported high levels of task-oriented climate and moderate levels of worry-conducive climate, success-without-effort climate, concern over mistakes, and personal standards. Class 1 is labeled as “moderately perfectionistic athletes in a task-oriented climate”. Athletes in class 2 reported relatively high levels on task-oriented climate and relatively low levels on worry-conducive climate, success-without-effort climate, concern over mistakes, and personal standards. Class 2 is labeled as “non-perfectionistic athletes in a task-oriented climate”. Athletes in class 3
reported relatively high levels on task-oriented climate, low levels on worry-conducive climate and success-without-effort climate, and relatively high levels on concern over mistakes and personal standards. Class 3 is labeled as “highly perfectionistic athletes in a task-oriented climate”. Finally, athletes in class 4 reported relatively high levels on the perceived parental climate and the perfectionism variables. Class 4 is labeled as “highly perfectionistic athletes in a mixed climate”.

The MANOVA showed that there were significant differences between the classes in terms of the combination of variables: Pillai’s Trace $(15, 630) = 0.99, p < .001$. Follow-up univariate tests confirmed differences between classes for all variables: concern over mistakes, $F(3, 212) = 195.25$, personal standards, $F(3, 212) = 36.37$, LOC $F(3, 212) = 13.51$, WCC, $F(3, 212) = 496.85$, and SWE, $F(3, 212) = 18.11$, $ps < .001$. Bonferroni pairwise comparisons are displayed in Table 3. Class 1 reported lower levels of task-oriented climate and higher levels of worry-conducive climate and success-without effort climate compared to class 2 and class 3. Class 1 also reported lower levels of worry-conducive climate compared to class 4, higher levels of concerns over mistakes and personal standards compared to class 2, and reported lower levels of concern over mistakes and personal standards compared to class 3 and 4. Class 2 reported higher levels of task-oriented climate and lower levels of worry-conducive climate and success-without effort climate compared to class 4. Class 2 also reported lower levels of success-without effort climate compared to class 4 and reported lower levels of concerns over mistakes and personal standards compared to class 3 and 4. Class 3 reported higher levels of task-oriented climate and lower levels of worry-conducive climate and success-without effort climate compared to class 4. Class 3 also reported higher levels of personal standards compared to class 4.

As seen in Table 4, the Wald chi-square tests showed that there were statistically significant overall differences between the four classes in all self-reported burnout symptoms.
Specific pairwise comparisons showed that the moderately perfectionistic athletes in a task-oriented climate (C1) reported lower levels of reduced sense of accomplishment and exhaustion compared to the highly perfectionistic athletes in a mixed climate (C4). The non-perfectionistic athletes in a task-oriented climate (C2) reported lower levels on reduced sense of accomplishment and devaluation compared to the highly perfectionistic athletes in a task-oriented climate (C3) and lower levels on all three burnout symptoms compared to the highly perfectionistic athletes in a mixed climate (C4).

Discussion

The purpose of the current study was to (i) examine whether discernable groups could be identified among junior athletes based on levels of perfectionism and perceptions of parent-initiated climate in sport, and (ii) whether these groups differed in terms of athlete burnout symptoms. It was hypothesized that groups would emerge that varied in both perfectionism and perceptions of parent climate and that higher levels of burnout would be evident among groups that reported higher concerns over mistakes and perceptions of an ego-involving climate. In partial support of these hypotheses, four groups emerged that varied in level of perfectionism and, to a lesser degree, perceptions of the achievement climate and groups that were characterized by higher perfectionism and comparable levels of an ego-involving climate to a task-involving climate reported higher levels of burnout.

In line with the first hypothesis, the four groups that emerged varied in terms of level of perfectionism they reported and in perceptions of the parent-initiated motivational climate. This included non-perfectionistic, moderately perfectionistic, and highly perfectionistic junior athletes who perceived largely task-involving climates or a mixed climate. The groups cannot be directly compared to groups from other research as the measures used to classify participants are different. However, the findings are consistent with other studies such as Gotwals (2011) and Lemyre et al (2008) in that, when using a person-oriented approach,
Proponents of perfectionism groups can be identified that differ in terms of perfectionism and measures of the social environment. Notably, for the first time we illustrate that this includes perceptions of the parent initiated climate.

Based on differences between the groups in terms of perfectionism and perceptions of the parent-initiated climate, differences emerged in terms of burnout symptoms. This was evident in two ways. Firstly, the presence of higher levels of perfectionism corresponded with the presence of comparatively higher levels of burnout regardless of the level of task-involving climate. Secondly, the only group to report similar levels of an ego-involving climate to a task-involving climate alongside high perfectionism reported higher burnout than two of the other groups. These findings suggest that higher perfectionism among junior athletes might be a risk factor for higher burnout and this may especially be the case when perceptions of an ego-involving climate are comparable to perceptions of a task-involving climate initiated by parents.

The findings were limited to groups of perfectionistic junior athletes who perceived largely task-involving climates. The tendency of junior athletes to report relatively higher task-involving climates is a common finding in research and has also been found in terms of parent initiated climate (e.g., Kavussanu, White, Jowett, & England, 2011). Therefore, in this regard, this particular finding is unsurprising. However, as a result we cannot comment on the influence of an increasingly ego-involving climate (unaccompanied by a task-involving climate) on burnout symptoms. Lemyre et al (2008) identified a group of athletes who reported higher perfectionism and higher perceptions of an ego-involving climate. Why such a group did not emerge here might reflect a number of differences between the two studies. For example, Lemyre et al included elite senior athletes and focused on coach created climates. It may be that in elite senior contexts and when coaches are assessed, perceptions of more ego-involving climates are more likely or varied. Equally, our more robust model-based
approach to identifying groups (i.e., latent class analysis) may explain the difference in findings. Future studies are required to examine these possibilities.

**Applied implications**

Our findings point to the importance of intervention aimed at altering the behaviors of parents of junior athletes. There are only a very small number of intervention studies in sport that have included parents (e.g., Harwood & Swain, 2002; Smoll, Smith, & Cumming, 2007). However, these have provided support for the notion that educational programmes can be used to change parental behavior and that the effects can be seen in junior athletes. In terms of the focus of any intervention, as perfectionism may prove more difficult to change, promoting a more optimal motivational atmosphere by discouraging an ego-involving climate and encouraging a task-involving climate may be more fruitful in terms of reducing burnout. This includes, for example, setting goals that emphasize task mastery and effort and deemphasize interpersonal competition and comparative ability. For the practicalities of doing so, readers are deferred to the studies cited above as they adopted interventions based on achievement goal theory in parents and to other studies that have done so with coaches (e.g., Smith, Cumming, & Smoll, 2007). These studies offer both empirical support and some practical guidance for implementing interventions based on this theory.

**Limitations and other future studies**

The study is cross-sectional and therefore causality cannot be inferred from the relationships between the variables. Longitudinal research can help address this issue. Perfectionism was also measured at a general level, rather than domain-specific level. This was primarily because we used the only measure of perfectionism that has been translated into Swedish and used in research in this area. Although perfectionistic tendencies of athletes can be measured at a global level (e.g., Gaudreau & Antl, 2008), research suggests that domain-specific measurement may be best as individuals tend to express perfectionism in
specific areas of their lives (e.g., Dunn, Causgrove Dunn, & McDonald, 2012). Therefore, once translated, researchers may wish to use domain-specific instruments to replicate the current study. Another noteworthy issue in this regard is that we used two specific dimensions of perfectionism from an array available. Other instruments and dimensions may result in the identification of different groups (e.g., doubt-oriented perfectionists; Gotwals, 2011). Therefore, our findings are likely to capture only a few of the multiple groups of perfectionists that may exist. Finally, as in most other research in this area, the levels of burnout observed was not high, even in the high perfectionism groups. As such, our findings speak to comparative risk or vulnerability to burnout, rather than burnout per se.

**Perspectives**

The findings build upon research that has used person-oriented approaches to identify groups of junior athletes who differ in terms of perfectionism and perceptions of the social environment and illustrated that these groups differ in terms of burnout. Consistent with this research, in the current study junior athletes with varying degrees of perfectionism and perceptions of a parent-initiated climate also reported different levels of burnout. Higher levels of perfectionism regardless of the parent-initiated climate corresponded with higher levels of burnout. In addition, junior athletes with higher perfectionism and comparable levels of an ego-involving climate to task-involving climate reported the highest levels of burnout. The findings suggest that junior athletes high in perfectionism may be at comparatively greater risk to burnout and that this may especially be the case when they perceive their parents to emphasize concerns about failure and winning without trying one’s best.

**Footnotes**

1 Confirmatory factor analysis indicated that the initial model provided unacceptable fit: $\chi^2_{(132)} = 467.98, p < .001$, CFI = .85, NNFI = .83, RMSEA = .11, 90% CI .10 to .12, SRMR = .14. Subsequently, 3 items from the learning and enjoyment climate subscale were removed.
due to low factor loadings (<.30): Item 1 (“Is most satisfied when I learn something new”),
item 5 (“Pays special attention to whether I’m improving my skills”), and item 7, (“makes
sure that I learn one thing before teaching me another”). The resulting model provided
acceptable fit: $\chi^2_{(87)} = 252.84, p < .001$, CFI = .92, NNFI = .90, RMSEA = .09, 90% CI .08 to
.11, SRMR = .09.

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Table 1

Descriptives, Coefficient Alphas, and Bivariate Correlations of the Study Variables (N = 216)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>LE</td>
<td>3.98 (0.71)</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WCC</td>
<td>1.77 (0.86)</td>
<td>.94</td>
<td>-.32***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWE</td>
<td>2.48 (0.71)</td>
<td>.75</td>
<td>-.10</td>
<td>.46***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>2.24 (0.94)</td>
<td>.85</td>
<td>-.14*</td>
<td>.46**</td>
<td>.18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS</td>
<td>2.77 (0.90)</td>
<td>.80</td>
<td>.10</td>
<td>.27***</td>
<td>.12</td>
<td>.68***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td>2.59 (0.69)</td>
<td>.69</td>
<td>-.08</td>
<td>.32***</td>
<td>.10</td>
<td>.48***</td>
<td>.49***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXH</td>
<td>2.41 (0.94)</td>
<td>.90</td>
<td>-.07</td>
<td>.32***</td>
<td>.17*</td>
<td>.49***</td>
<td>.31***</td>
<td>.37***</td>
<td></td>
</tr>
<tr>
<td>DEV</td>
<td>2.33 (0.96)</td>
<td>.85</td>
<td>-.11</td>
<td>.36***</td>
<td>.26***</td>
<td>.45***</td>
<td>.62***</td>
<td>.62***</td>
<td>.57***</td>
</tr>
</tbody>
</table>

Notes. L/E = Learning/enjoyment climate, WCC = worry-conducive climate, SWE = success without effort climate, COM = concern over mistakes, PS = personal standards, RA = reduced sense of accomplishment, EXH = exhaustion, DEV = devaluation.
Table 2

*Fit Indices of the Different Latent Profile Solutions (N = 216)*

<table>
<thead>
<tr>
<th>Classes</th>
<th>BIC</th>
<th>SSA-BIC</th>
<th>Entropy</th>
<th>BLRT</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2674.707</td>
<td>2643.019</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>2</td>
<td>2498.686</td>
<td>2447.984</td>
<td>.907</td>
<td>.000</td>
</tr>
<tr>
<td>3</td>
<td>2473.343</td>
<td>2403.629</td>
<td>.940</td>
<td>.000</td>
</tr>
<tr>
<td>4</td>
<td><strong>2446.010</strong></td>
<td><strong>2357.282</strong></td>
<td><strong>.879</strong></td>
<td><strong>.000</strong></td>
</tr>
<tr>
<td>5</td>
<td>2431.835</td>
<td>2324.094</td>
<td>.892</td>
<td>.000</td>
</tr>
<tr>
<td>6</td>
<td>2439.511</td>
<td>2312.758</td>
<td>.834</td>
<td>.008</td>
</tr>
</tbody>
</table>

Average Latent Class Probabilities for Most Likely Latent Class Membership

<table>
<thead>
<tr>
<th>Two-class model</th>
<th>≈ n (%)a</th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>Class 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>145.0 (67.1)</td>
<td>.984</td>
<td>.016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 2</td>
<td>71.0 (32.9)</td>
<td>.047</td>
<td>.953</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Three-class model | Class 1 (29.6) | .949    | .026    | .024    |         |         |         |
| Class 2 (62.8)    | .007    | .993    | .000    |         |         |         |         |
| Class 3 (7.6)     | .071    | .000    | .929    |         |         |         |         |

| Four-class model | Class 1 (11.9) | .890    | .001    | .100    | .010    |         |         |
| Class 2 (13.2)   | .000    | .899    | .000    | .101    |         |         |         |
| Class 3 (51.4)   | .035    | .000    | .960    | .005    |         |         |         |
| Class 4 (23.4)   | .008    | .049    | .023    | .920    |         |         |         |

| Five-class model | Class 1 (49.6) | .959    | .035    | .006    | .000    | .000    |         |
| Class 2 (12.9)   | .114    | .880    | .006    | .000    | .000    |         |         |
| Class 3 (18.5)   | .010    | .008    | .930    | .052    | .000    |         |         |
| Class 4 (13.9)   | .000    | .003    | .094    | .885    | .018    |         |         |
| Class 5 (5.1)    | .000    | .000    | .005    | .045    | .950    |         |         |

| Six-class model  | Class 1 (14.9) | .833    | .167    | .000    | .000    | .000    | .000    |
| Class 2 (37.4)   | .085    | .868    | .038    | .008    | .000    | .000    |         |
| Class 3 (10.1)   | .000    | .076    | .919    | .004    | .000    | .000    |         |
| Class 4 (18.3)   | .000    | .014    | .005    | .926    | .055    | .000    |         |
| Class 5 (14.0)   | .000    | .000    | .002    | .083    | .896    | .020    |         |
| Class 6 (5.2)    | .000    | .000    | .000    | .005    | .037    | .958    |         |

*Note.* NA = not applicable, BIC = Bayesian information criterion, SSA-BIC = sample-size adjusted Bayesian information criterion, BLRT = bootstrapped likelihood ratio test.

aapproximated class sizes based on the average latent class probabilities.
Table 3

Description (M, S.E.) of the Four Latent Classes (N = 216)

<table>
<thead>
<tr>
<th></th>
<th>Class 1 (n = 51)</th>
<th>Class 2 (n = 112)</th>
<th>Class 3 (n = 24)</th>
<th>Class 4 (n = 29)</th>
<th>Pairwise comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASK</td>
<td>3.608</td>
<td>.078</td>
<td>4.167</td>
<td>.066</td>
<td>4.316</td>
</tr>
<tr>
<td>WCC</td>
<td>2.443</td>
<td>.044</td>
<td>1.155</td>
<td>.021</td>
<td>1.313</td>
</tr>
<tr>
<td>SWE</td>
<td>2.689</td>
<td>.070</td>
<td>2.310</td>
<td>.063</td>
<td>2.042</td>
</tr>
<tr>
<td>COM</td>
<td>2.412</td>
<td>.099</td>
<td>1.630</td>
<td>.049</td>
<td>3.342</td>
</tr>
<tr>
<td>PS</td>
<td>2.828</td>
<td>.106</td>
<td>2.348</td>
<td>.069</td>
<td>3.825</td>
</tr>
</tbody>
</table>

*Note. a = class 1 differs from class 2; b = class 1 differs from class 3; c = class 1 differs from class 4; d = class 2 differs from class 3; e = class 2 differs from class 4; f = class 3 differs from class 4; S.E. and comparisons are based on 95% bias-corrected bootstrapped estimates. TASK = task-oriented climate, WCC = worry-conducive climate, SWE = success without effort climate, COM = concern over mistakes, PS = personal standards.*
Table 4

Description of the Four Latent Classes and χ² test for Differences between the Classes in Burnout Symptoms (N = 216)

<table>
<thead>
<tr>
<th></th>
<th>RA M</th>
<th>S.E.</th>
<th>EXH M</th>
<th>S.E.</th>
<th>DEV M</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>2.562</td>
<td>.105</td>
<td>2.516</td>
<td>.144</td>
<td>2.403</td>
<td>.164</td>
</tr>
<tr>
<td>Class 2</td>
<td>2.344</td>
<td>.064</td>
<td>2.051</td>
<td>.114</td>
<td>1.976</td>
<td>.097</td>
</tr>
<tr>
<td>Class 3</td>
<td>2.975</td>
<td>.137</td>
<td>2.858</td>
<td>.279</td>
<td>2.719</td>
<td>.237</td>
</tr>
<tr>
<td>Class 4</td>
<td>3.295</td>
<td>.070</td>
<td>3.227</td>
<td>.083</td>
<td>3.254</td>
<td>.329</td>
</tr>
</tbody>
</table>

Class comparisons

<table>
<thead>
<tr>
<th></th>
<th>RA χ²</th>
<th>p value</th>
<th>EXH χ²</th>
<th>p value</th>
<th>DEV χ²</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall test</td>
<td>104.544</td>
<td>.000</td>
<td>80.560</td>
<td>.000</td>
<td>27.185</td>
<td>.000</td>
</tr>
<tr>
<td>1 vs. 2</td>
<td>3.094</td>
<td>.079</td>
<td>6.104</td>
<td>.013</td>
<td>4.854</td>
<td>.028</td>
</tr>
<tr>
<td>1 vs. 3</td>
<td>5.651</td>
<td>.017</td>
<td>1.189</td>
<td>.276</td>
<td>1.199</td>
<td>.273</td>
</tr>
<tr>
<td>1 vs. 4</td>
<td>32.312</td>
<td>.000</td>
<td>16.703</td>
<td>.000</td>
<td>3.710</td>
<td>.054</td>
</tr>
<tr>
<td>2 vs. 3</td>
<td>15.369</td>
<td>.000</td>
<td>5.278</td>
<td>.022</td>
<td>6.929</td>
<td>.008</td>
</tr>
<tr>
<td>2 vs. 4</td>
<td>101.669</td>
<td>.000</td>
<td>69.408</td>
<td>.000</td>
<td>14.025</td>
<td>.000</td>
</tr>
<tr>
<td>3 vs. 4</td>
<td>4.327</td>
<td>.038</td>
<td>1.599</td>
<td>.206</td>
<td>1.745</td>
<td>.187</td>
</tr>
</tbody>
</table>

Note. The significance level was Bonferonni corrected within each variable (.05/6) and set to .008. RA = reduced sense of accomplishment, EXH = exhaustion, DEV = devaluation.